Application of Altman Z-score model for non-manufacturing organization organisation with reference to Infosys

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***Abstract*- Finance is like life and blood for an organization. If the financial health is not good of an organization than it cannot grow neither it can sustain for longer time phase hence proper management of financial resources is required further it needs proper attention in order to optimize the same for achieving organization goals and objectives. Altman Z- score is an technique for evaluation for financial wellbeing of the organization. z-score methodology is developed by renowned professor Altman and the model is named after him only. The Altman Z-score is recommended for manufacturing as well as for non-manufacturing organization. The Altman Z-score is modified and only four criteria's are being evaluated hence researcher had decided to conduct the study titled Application of Altman Z-score model for non-manufacturing organization organisation with reference to Infosys.**

ALTMAN'S Z-SCORE MODEL

Edward Altman Finance Professor of the Leonard N. Stern School of Business of New York University has developed the Financial Model in 1967 to predict the likelihood of bankruptcy of the company which is named as Altman's Z-Score Model. Later, in 2012 he released an updated version called the Altman's Z-Score plus Model that can be used to evaluate both manufacturing & non-manufacturing firms & public & privative companies in both U.S & non-U.S companies. The investors can use this model to determine whether to buy or sell a particular stock if they are concerned about the financial strength of the organization. The Altman Z-score Plus can be used to evaluate corporate credit risk. Altman added a statistical technique called multivariate analysis to the mix of traditional ratio analysis techniques, and this allowed him to consider not only the effects of several ratios on the "Predictiveness" of his bankruptcy model, but to consider how those ratios affected each other's usefulness in the model. The model formed by Altman for predicting a company's financial health is as follows;

Z-SCORE FORMULA FOR NON-MANUFACTURING FIRMS
X1 = Current Assets − / Total Assets
X2 = Retained Earnings / Total Assets
X3 = Earnings Before Interest and Taxes / Total Assets
X4 = Book Value of Equity / Total Liabilities
Z-Score bankruptcy model:
Z = 6.56X1 + 3.26X2 + 6.72X3 + 1.05X4[4]
Zones of discriminations:
Z > 2.6 -"Safe" Zone
1.1 < Z < 2.6 -"Grey" Zone
Z < 1.1 -"Distress" Zone

Research Methodology
Period of study
Study only considers a period of 6 years (2014-2019)

Data collection
Data collected from capital market data base

Tool used for data analysis
Altman z-score model for non-manufacturing is used for analysis

Data analysis and interpretation
Current Asset to total Asset ratio
An increasing Working Capital to Total Assets ratio is usually a positive sign, showing the company's liquidity is improving over time. A low or decreasing ratio indicates the company may have too many Total

Current Liabilities, reducing the amount of Working Capital available. From the table 1.1 it is evident that the Current Asset to total Asset ratio shows decreasing trend from the year 2019 to 2018 because of low investment in current asset further the ratio shows increasing trend from 2014 to 2016 which signifies good liquidity position.

Retained earnings to total assets ratio

The ratio of retained earnings to total assets helps measure the extent to which a company relies on debt, or leverage. The lower the ratio, the more a company is funding assets by borrowing instead of through retained earnings which, again, increases the risk of bankruptcy if the firm cannot meet its debt obligations. It is evident from the table 1.2 emphasizing the financial health as more funding is done by retained earnings for the simple reason of ploughing back of profit.

Return on total assets (ROTA)

Return on total assets (ROTA) is a ratio that measures a company's earnings before interest and taxes (EBIT) relative to its total net assets. The ratio is considered to be an indicator of how effectively a company is using its assets to generate earnings. It is evident from the table 1.3 that the ROTA is higher in the year 2015 which signifies growth in increase financial wealth and again from 2017 to 2019 ROTA shows increasing trend which signifies growth in increase financial wealth.

Book Value of Equity / Total Liabilities

Ratio signifies the financial leverage of the company. Higher the financial leverage more is the financial risk. It is evident from the table 1.4 that the Book Value of Equity / Total Liabilities ratio is higher in the year 2019 which signifies higher financial risk but overall analysis shows the ration below the alarming point and hence the financial risk involved in negligible.

z- score analysis

The table 1.5 shows that from the selected sample of 6 years. Infosys never show any sign of Distress. This means that the financial performances of Infosys are excellent & are far away from experience Bankrupt. The company is eligible to borrow the funds from banks & financial institutes & even the investors will be interested to invest as they have hopes to get excellent returns.

Z Value of Infosys also falls under safe Zone consistently for all years under the study. This indicates the excellent performance. Under this case the firm has generated good amount of profits in all the 6 years but the current assets are on higher side which indicates good liquidity position to meet its short term obligations. Management has taken tremendous caution in order to attract potential investors & can continue to survive in the market. Among the selected sample year Infosys is performing consistently high with ‘’safe zone’’ as far as financial health is concern.

CONCLUSION

This study investigated the applicability of the Altman’s bankruptcy model to examine the financial soundness of the firms belonging to non-manufacturing firms. The study covers the 6 years study period. According to findings For Most of years the Infosys are in safe Zone which clearly indicates that the top level management had design effective strategies for better control & management of financial resources which result in win-win situation for both management & investors

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Table 1.1 showing Current Asset to total Asset ratio for Infosys

Year	Current Asset	Total Asset	C.A/T.A
2019	40146	55137	0.728114
2018	38184	55643	0.686232
2017	38039	61428	0.619245
2016	46095	55172	0.835478
2015	42003	43694	0.961299
2014	36488	40177	0.908181

Table 1.2 showing Retained earnings to total assets ratio

Year	Retained earnings	Total Asset	RE/TA
2019	60533	55137	1.097865
2018	62410	55643	1.121615
2017	66869	61428	1.088575
2016	59934	55172	1.086312
2015	47494	43694	1.086968
2014	41806	40177	1.040546

Table 1.3 showing Return on total assets (ROTA) ratio

Year	EBIT	Total Assets	EBIT/TA
2019	19927	55137	0.361409
2018	19908	55643	0.357781
2017	18938	61428	0.308296
2016	17600	55172	0.319002
2015	16798	43694	0.384446
2014	14002	40177	0.348508

Table 1.4 Showing Book Value of Equity / Total Liabilities ratio

Year	Equity	Total Liability	E/TL
2019	2178	62711	0.034731
2018	1092	63502	0.017196
2017	1148	68017	0.016878
2016	1148	61082	0.018794
2015	574	48068	0.011941
2014	286	42092	0.006795

Table 1.5 Showing Z-score Analysis for Infosys

	X1	X2	X3	X4	z-score	Zone
2019	4.776425	3.513169	2.428668	0.036467	10.75473	Safe zone
2018	4.501681	3.589167	2.404287	0.018056	10.51319	Safe zone
2017	4.062249	3.483441	2.071748	0.017722	9.63516	Safe zone
2016	5.480737	3.476198	2.143696	0.019734	11.12036	Safe zone
2015	6.306122	3.478299	2.58348	0.012538	12.38044	Safe zone
2016	5.957669	3.329746	2.341973	0.007134	11.63652	Safe zone
AVG	5.180814	3.478337	2.328975	0.018609	11.00673	Safe zone
MAX	6.306122	3.589167	2.58348	0.036467	12.38044	Safe zone
MIN	4.062249	3.329746	2.071748	0.007134	9.63516	Safe zone