Discriminant Analysis on Financial Stability of Select IT Companies: Pre and Post Covid Scenario in India

By

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Abstract

Predicting the financial stability of a concern plays an important role in the life of any concern. It paves way for financial longevity of a business. The stakeholders of the concern will be interested in knowing the internal and external management of the concern. Forecasting the financial viability of the concern has gained wide importance in the current pandemic period. Covid 19 distress has hit all the economies vulnerably. It has brought a great shift and has challenged the lives and livelihood around the globe. IT sector has played a vital role during this period. The current study aims at predicting the financial stability of select IT sector companies for the past 10 years and analyses the financial soundness of the sector during pre and post covid period using altman's z score and springate model.

**Keywords:** Financial Stability, Financial Longevity, Covid 19, Altman's Z Score and Springate Model.

Introduction

Information technology sector is one among the most important and fastest growing industries in the world.over the years the IT sector has erected a valuable brand for itself in the global marketplace. The evolution, improvements and the outcomes of the IT sector is growing at a swift pace. Information technology sector has revolutionized and transfigured our daily lives via internet with possibilities of e- government measures. IT sector has revolutionized our everyday lives and the indian IT sector has played a significant role in laying india on the global map.exponential advances in technologies like artificial intelligence (AI), cloud computing, machine learning, robotics, augmented and virtual reality would pursue to transform each and every aspect of human life.

Evolution of IT sector
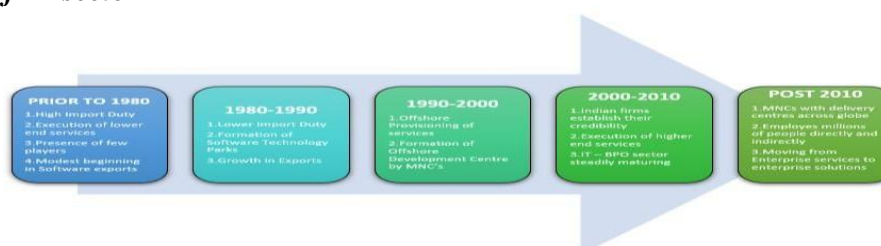
India is one of the largest sourcing destinations and service providers in the world. The export revenue of the IT sector grew by 8.3% in the last decade. The indian IT sector contributes 8% to gross domestic product (GDP) and expected to contribute around 10% to the gdp by 2025. Indian IT sector's growth and contribution to the global IT sector is of highest recognition. The government of india has allocated rs. 53,108 crore (us$ 7.31 billion) to the indian it and telecom sector in the budget 2021. There will be an increase of 2.5% in india's gdp due to a substantial increase in artificial intelligence (AI) by indian it companies in the immediate term. India's annual growth is estimated to spice up by 1.3% by 2035 due to artificial intelligence. Covid-19 pandemic has increased the demand for third-party data services in india.
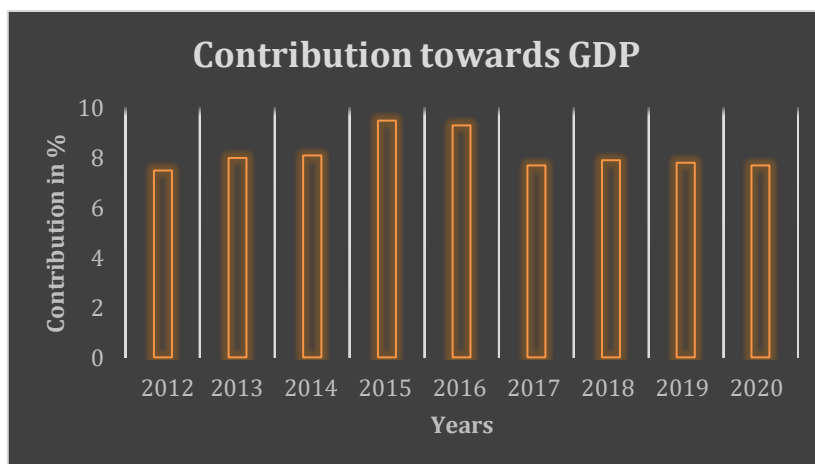
According to department for promotion of industry and internal trade (dpiit), indian IT sector ranked 2nd in foreign direct investments (FDI) Inflows. According to gartner, the expenditure of IT sector in india is calculated for Us$ 93 billion in 2021 - 7.3% yoy growth and further estimated an increase of Us$ 98.5 Billion By 2022. According To Software Technology Park Of India (STPI), the revenue of the software export by its registered units raised from Rs. 4,66,000 Crore (Us$ 62.82 Billion) In Fy 2019-20 To Reach Rs. 5,00,000 Crore (Us$ 67.40 Billion) In Fy 2020-21 By 7% Yoy, influenced by rapid digitization and the IT sector's timely transition to remote working environments that helped to continue the industry's growth amid coronavirus pandemics.
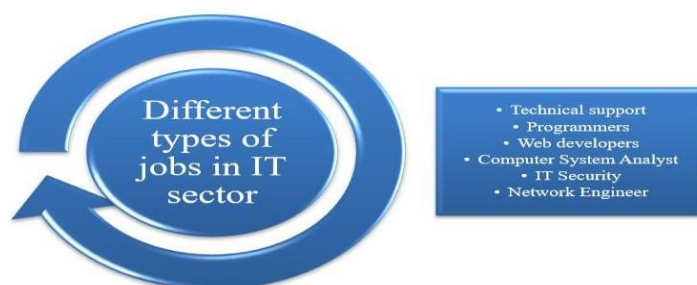
Objective of the Study

➢ To study present, past and future scenario of IT sector in india.
➢ To determine the financial health of indian IT sector and screen for bankruptcy.
➢ To study the challenges in it industry during covid-19.

Review of Literature

Predicting the financial stability of a concern plays an important role in the life of any concern. It paves way for financial longevity of a business. Dugan and Zavgren(1988), a prediction may be easily done without a decision, but a decision cannot be made without making a prediction. Al Rawi, Kiani and Vedd (2008) using altman's z score model predicted a firm's condition and analysed that the debt of the firm was facing an upward trend consequently and will be bankrupt in the near future. Gerantonis et al. (2009) concluded that Altman's z score predicts corporate and financial failures accurately. Hayes, hodge, hughes (2010), Mamo (2011) and Altman, 1993 has revealed that Alman's z score proved to be 94%,80% and 90% accurate in predicting the solvency levels. Md. Mostofa, sonia rezina and md. Hasan (2016), used z score model on 25 commercial banks to forecast the financial solvency and the probability of bankruptcy. Samik Shome and Sushma Verma (2020) used altman z score, p-score, fuzzy logic model, kroeze model to assess the financial health of the indian aviation sector for the period 2015-2018. He found that except indigo, all the other airlines have been under distress zone from 2015-2018.

Springate modified Altman's formula for canadian use (Doukas, 1986). Imanzadeh, Maran-Jouri, & Sepehri, 2011, tested 40 companies using springate model and concluded that it is 92.5 accurate. Arasu, Balaji, Kumar, & Thamizhselvi, 2013 tested springate model and found it to be 83% accurate.

The current study aims at predicting the financial stability of select IT sector companies for the past 10 years and analyses the financial soundness of the sector during pre and post covid period.

Sample of the Study

The sector chosen for the study is the information technology (it) sector. The companies which are listed both on NSE and BSE are selected. And the companies that have been taken are TATA consultancy service (TCS), Infosys, Wipro Limited, HCL tech, Tech Mahindra Ltd, L&T Infotech Ltd, Redington India ltd, Mphasis Ltd, Mind Tree ltd, Happiest Minds Technologies Ltd. The financial data for the period of 10 years from 2012 to 2021 is analysed.

Tools

I. Altman Z Score

Altman z-score model is helpful in the prediction and analysis of the possibilities of a business going bankrupt in the upcoming two years. Altman z-score model was developed by american finance professor Edward Altman in 1968 as a measure of the financial stability of manufacturing and non-manufacturing companies. The model is considered as one of the best and effective models to predict the financial stability of the company using the company's financial statement values. This model was started and developed when the businesses experienced the huge decline at the time of great depression.

$$\text{ALTMAN Z-SCORE} = 1.2A + 1.4B + 3.3C + 0.6D + 0.999E$$

Where:
- A = Working Capital / Total Assets
- B = Retained Earnings / Total Assets
- C = Earnings Before Interests And Taxes / Total Assets
- D = Market Value Of Equities / Total Liabilities
- E = Sales / Total Assets

>3	Safe Zone
1.8-3	Grey Zone
<1.8	Distress Zone

The higher the z score the lower the company is headed to bankruptcy. When the value of z score is below 1.8, then the company is in financial distress (with a high probability of bankrupt). When the value of z score is between 1.8 – 3, then the company is in grey zone (with a moderate chance of filing bankrupt). When the value of z score is above 3, then the company is in safe zone (unlikely to file for bankrupt).

II. *Springate Score*

Springate score is one of the popular and well-known bankruptcy prediction models, which is developed on the basis of the altman z score model. Springate score model was developed by gordon l.v. springate in 1978 at s.f.u. in the process of developing the model, 4 out of 19 common financial ratios were considered the best.

$$\text{SPRINGATE SCORE} = 1.03A + 3.07B + 0.66C + 0.4D$$

Where:
- A = Working Capital / Total Assets
- B = Earnings Before Interests And Taxes / Total Assets
- C = Profit Before Tax / Current Liabilities
- D = Revenue / Total Assets

>0.862	Stable state
<0.862	Distress state

If the value of springate score is below 0.862, then the company is under financial stress and with a high probability of bankrupt. If the value of springate score is above 1.8, then the company is in stable state.
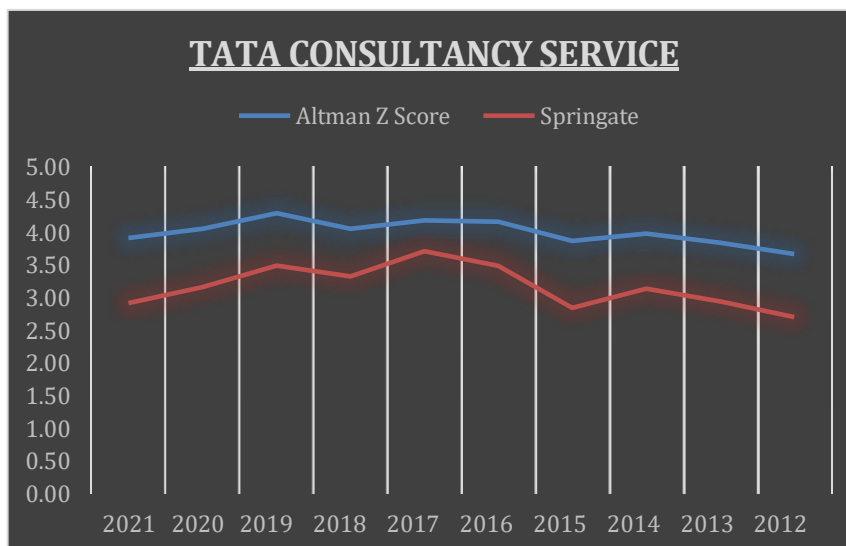
Analysis

I.TATA Consultancy Service (TCS)

		TCS-Altman Z Score									
	Coefficient	**Post - Covid**					**Pre - Covid**				
		2021	2020	2019	2018	2017	2016	2015	2014	2013	2012
A	**1.2**	0.50	0.52	0.61	0.60	0.64	0.53	0.39	0.41	0.38	0.31
B	**1.40**	0.66	0.69	0.77	0.80	0.83	0.80	0.68	0.73	0.73	0.71
C	**3.30**	0.34	0.35	0.36	0.32	0.33	0.36	0.35	0.38	0.35	0.34
D	**0.6**	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.03
E	0.999	1.26	1.30	1.27	1.16	1.14	1.22	1.28	1.22	1.21	1.18
Z Score		3.91	4.05	4.29	4.06	4.18	4.16	3.87	3.98	3.84	3.67
Zone		**Safe**	**Safe**	**Safe**	**Safe**	**Safe**	**Safe**	**Safe**	**Safe**	**Safe**	**Safe**

Table 1

		TCS-Springate Model									
	Coefficient	**Post - Covid**					**Pre - Covid**				
		2021	2020	2019	2018	2017	2016	2015	2014	2013	2012
A	**1.03**	0.50	0.52	0.61	0.60	0.64	0.53	0.39	0.41	0.38	0.31
B	**3.07**	0.34	0.35	0.36	0.32	0.33	0.36	0.35	0.38	0.35	0.34
C	**0.66**	1.28	1.56	1.88	1.91	2.38	2.05	1.29	1.62	1.53	1.33
D	**0.4**	1.26	1.30	1.27	1.16	1.14	1.22	1.28	1.22	1.21	1.18
Score		2.92	3.16	3.49	3.32	3.71	3.49	2.84	3.14	2.94	2.70
Zone		**Stable**	**Stable**	**Stable**	**Stable**	**Stable**	**Stable**	**Stable**	**Stable**	**Stable**	**Stable**

Table 2

Interpretation

According to the analysis of last 10 years of tcs, under altman z score in**table 1**, the z scores for the fys 2011-2012 to 2020-21 are above 3. This indicates that the company is in safe zone (i.e.) unlikely to get bankrupted. And during the before

Years there have been upward trend but due to covid there has been downward trendin the recent years.

Springate bankruptcy prediction model for tcs company states that the company performs well and had experienced a healthy period since incorporation. The **table 2** shows that the company have good value which is greater than 0.862 (between 2.70 to 3.71 range) for 10 consecutive fys 2011-2012 to 2020-21. This states that the company is in a stable state and very lower chances of getting bankrupt.

This clearly shows that the company has a stronger financial stability and a less probability of filing bankrupt. The company has compounded revenue growth of about 16% for the last 10 fys and the compounded profit growth results in 14% for last 10 fys. during the covid-19 pandemic, the company was leveraging the TCS'sR&D infrastructure to run multiple threads, to look up for more opportunities to support huge priority needs across the world. TCS is the 2nd most valuable firm next to reliance industries (ril) which has a market cap of nearly Rs. 12.9 trillion in india. The revenue for fy 2020-21 was Rs. 1,64,177 Crore, higher by 4.6 % over the previous year's 2019-2020 revenue of Rs. 1,56,949 Crore. The company has 29.63% - return on asset which shows a good sign for the future performance. The Revenue has seen a rapid growth in the last 7 Fys: The Fy 2020-21 revenue more than doubled that from the fy 2012-13.

II. *Infosys*

		Infosys-Altman Z Score									
	Coefficient	**Post - Covid**					**Pre - Covid**				
		2021	2020	2019	2018	2017	2016	2015	2014	2013	2012
A	**1.2**	0.34	0.36	0.40	0.45	0.48	0.51	0.48	0.55	0.59	0.61
B	**1.40**	0.68	0.68	0.74	0.80	0.81	0.80	0.76	0.78	0.81	0.81
C	**3.30**	0.25	0.24	0.25	0.25	0.24	0.25	0.26	0.26	0.28	0.31
D	**0.6**	0.07	0.08	0.11	0.07	0.08	0.08	0.04	0.02	0.03	0.04
E	**0.999**	0.93	0.98	0.98	0.88	0.82	0.83	0.80	0.88	0.87	0.88
Z Score		3.14	3.20	3.38	3.42	3.37	3.44	3.32	3.49	3.65	3.77
Zone		**Safe**	**Safe**	**Safe**	**Safe**	**Safe**	**Safe**	**Safe**	**Safe**	**Safe**	**Safe**

Table 3

		Infosys-Springate									
	Coefficient	**Post - Covid**					**Pre - Covid**				
		2021	2020	2019	2018	2017	2016	2015	2014	2013	2012
A	**1.03**	0.34	0.36	0.40	0.45	0.48	0.51	0.48	0.55	0.59	0.61
B	**3.07**	0.25	0.24	0.25	0.25	0.24	0.25	0.26	0.26	0.28	0.31
C	**0.66**	1.12	1.06	1.13	1.44	1.43	1.42	1.11	1.22	1.58	1.70
D	**0.4**	0.93	0.98	0.98	0.88	0.82	0.83	0.80	0.88	0.87	0.88
Score		2.21	2.19	2.31	2.55	2.50	2.56	2.35	2.52	2.85	3.03
Zone		**Stable**	**Stable**	**Stable**	**Stable**	**Stable**	**Stable**	**Stable**	**Stable**	**Stable**	**Stable**
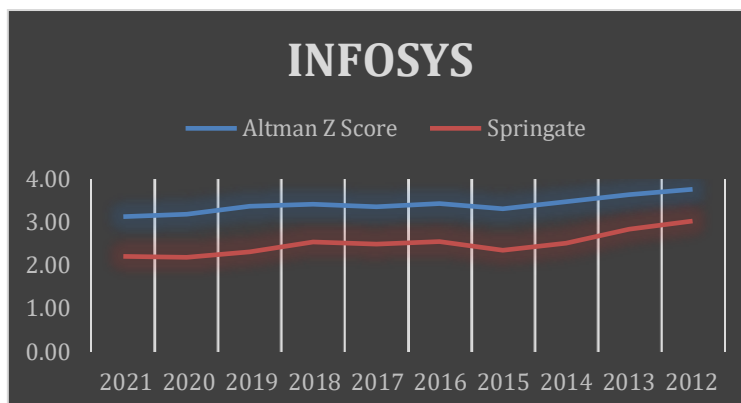
Table

Interpretation

From the analysis in **table 3**, the altman z score for the fys 2011-2012 to 2020-21 are above 3. This shows that the company is in favourable financial position and is unlikely to go bankrupt. Although there has been fluctuation in turnover due to covid the company is taking all the possible measures to revive the profit.

In the last 10 years of analysis, the springate score for the fys 2011-2012 to 2020-21 is greater than 0.862 in **table 4** and therefore with a very low probability of bankrupt which indicates it is financially sound in every year. Springate model analysis for infosys clearly shows that the company had experienced a healthy period for last 10 consecutive fys.

Infosys had become the 4th indian company to reach rs. 7 trillion in market cap after the company's shares surged over 71% in the last fy 2019-20. The company has compounded revenue growth of about 14% for the last 10 fys and the compounded profit growth results in 11% for last 10 fys. The company gives its strong presence in digital and cloud transformation which will remain the company a major beneficiary of the tech-upcycle that is going to last for next 3-4 years. The impact on the company's revenue due to covid-19 was not significant. Due to the pandemic, infosys will keep on to monitor recoveries and developments to identify the significant uncertainties relating to revenue of the company in the future fys. The revenue of the company gives a gradual increase yoy despite of economic hardships. Also, the company has better working capital management partially offset by huge income tax payments. The company have no outstanding borrowings as they believe that their working capital is sufficient for their requirements.
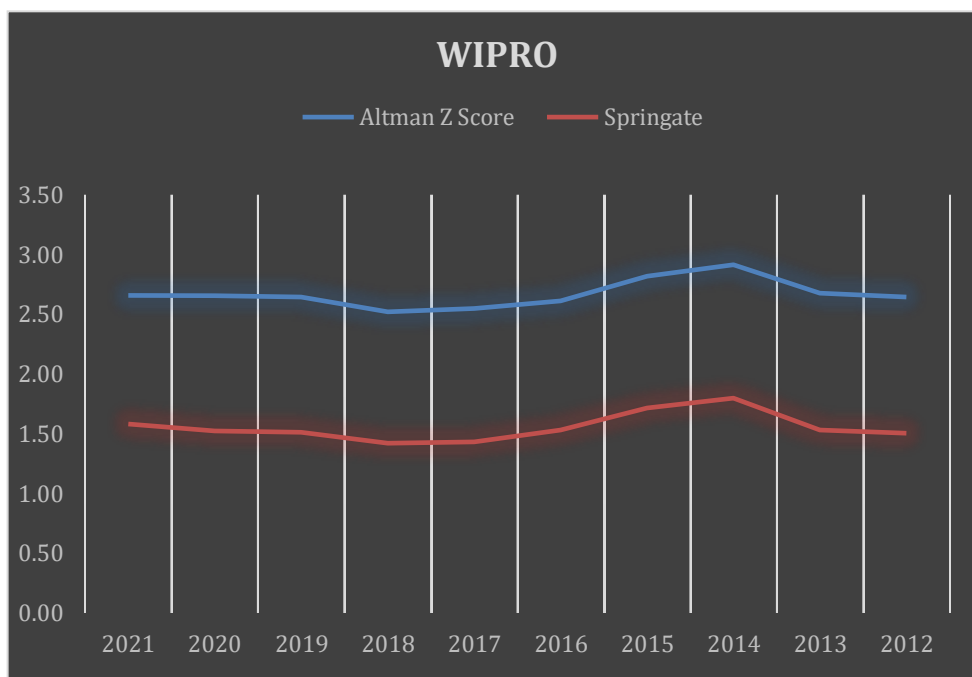
III. Wipro Limited

	Wipro-Altman Z Score									
	Coefficient	**Post - Covid**					**Pre - Covid**			
		2021	2020	2019	2018	2017	2016	2015	2014	2013	2012
A	**1.2**	0.35	0.37	0.43	0.39	0.39	0.39	0.41	0.38	0.31	0.31
B	**1.40**	0.65	0.66	0.67	0.62	0.65	0.63	0.63	0.64	0.60	0.61
C	**3.30**	0.17	0.15	0.14	0.14	0.14	0.16	0.19	0.20	0.18	0.16
D	**0.6**	0.04	0.04	0.05	0.03	0.02	0.02	0.02	0.03	0.03	0.03
E	**0.999**	0.75	0.75	0.71	0.72	0.70	0.71	0.80	0.87	0.86	0.86
Z Score		2.66	2.65	2.64	2.52	2.55	2.61	2.82	2.91	2.68	2.64
Zone		**Grey**	**Grey**	**Grey**	**Grey**	**Grey**	**Grey**	**Grey**	**Grey**	**Grey**	**Grey**

Table

	Coefficient	Post - Covid					Pre - Covid				
		Wipro-Springate									
		2021	2020	2019	2018	2017	2016	2015	2014	2013	2012
A	**1.03**	0.35	0.37	0.43	0.39	0.39	0.39	0.41	0.38	0.31	0.31
B	**3.07**	0.17	0.15	0.14	0.14	0.14	0.16	0.19	0.20	0.18	0.16
C	**0.66**	0.60	0.57	0.54	0.48	0.48	0.53	0.58	0.65	0.48	0.52
D	**0.4**	0.75	0.75	0.71	0.72	0.70	0.71	0.80	0.87	0.86	0.86
Score		1.58	1.52	1.51	1.42	1.43	1.53	1.71	1.80	1.53	1.50
Zone		Stable	Stable	Stable	Stable	Stable	Stable	Stable	Stable	Stable	Stable

Table 6

Interpretation

From the **table 5**, the z score of the wipro limited can be seen as in grey zone. The z score of all the fys from fy 2011-12 to 2020-21 is above 1.8 and below 3 which means they are in grey zone(i.e.) they have moderate chance of bankruptcy. Although the z scores for all the above financial years have been fluctuating and the liquid funds have been decreasing.

From the analysis the company has good operating efficiency and high cash flows. The **table 6** shows springate score of all the fys from fy 2011-12 to 2020-21 are above 0.862. This clearly indicates that the financial position of the company is steady.

Wipro limited had no material impact due to the covid-19 pandemic on the company's performance, revenue, profitability or even liquidity. The revenue of the company increased by 1.5% in the fy 2020-21. The company has compounded revenue growth of about 7% for the last 10 fys. But the company delivered a poor income growth of around 4% for past 3 fys. And the compounded profit growth results in 7% for last 10 fys. The company will soon report the fastest annual revenue growth among india's top five software services companies by immediate term.

IV. *HCL Technologies*

	Coefficient	Post - Covid					Pre - Covid				
HCL Technologies-Altman Z Score											
		2021	2020	2019	2018	2017	2016	2015	2014	2013	2012
A	**1.2**	0.30	0.18	0.30	0.30	0.33	0.39	0.37	0.34	0.23	0.14
B	**1.40**	0.69	0.61	0.70	0.75	0.71	0.39	0.37	0.34	0.23	0.14
C	**3.30**	0.18	0.17	0.22	0.23	0.23	0.18	0.26	0.26	0.24	0.18
D	**0.6**	0.02	0.02	0.02	0.02	0.02	0.02	0.03	0.01	0.02	0.02
E	0.999	0.87	0.85	1.03	1.05	1.04	0.79	1.04	1.07	1.14	1.14
Z Score		2.81	2.49	3.09	3.24	3.21	2.40	2.88	2.83	2.53	2.10
Zone		**Grey**	**Grey**	**Safe**	**Safe**	**Safe**	**Grey**	**Grey**	**Grey**	**Grey**	**Grey**

Table 7

	Coefficient	Post - Covid					Pre - Covid				
HCL Technologies-Springate											
		2021	2020	2019	2018	2017	2016	2015	2014	2013	2012
A	**1.03**	0.30	0.18	0.30	0.30	0.33	0.39	0.37	0.34	0.23	0.14
B	**3.07**	0.18	0.17	0.22	0.23	0.23	0.18	0.26	0.26	0.24	0.18
C	**0.66**	0.91	0.59	1.03	1.09	0.93	0.72	0.92	0.86	0.71	0.50
D	**0.4**	0.87	0.85	1.03	1.05	1.04	0.79	1.04	1.07	1.14	1.14
Score		1.82	1.43	2.06	2.15	2.08	1.73	2.20	2.15	1.88	1.47
Zone		Stable	Stable	Stable	Stable	Stable	Stable	Stable	Stable	Stable	Stable

Table 8
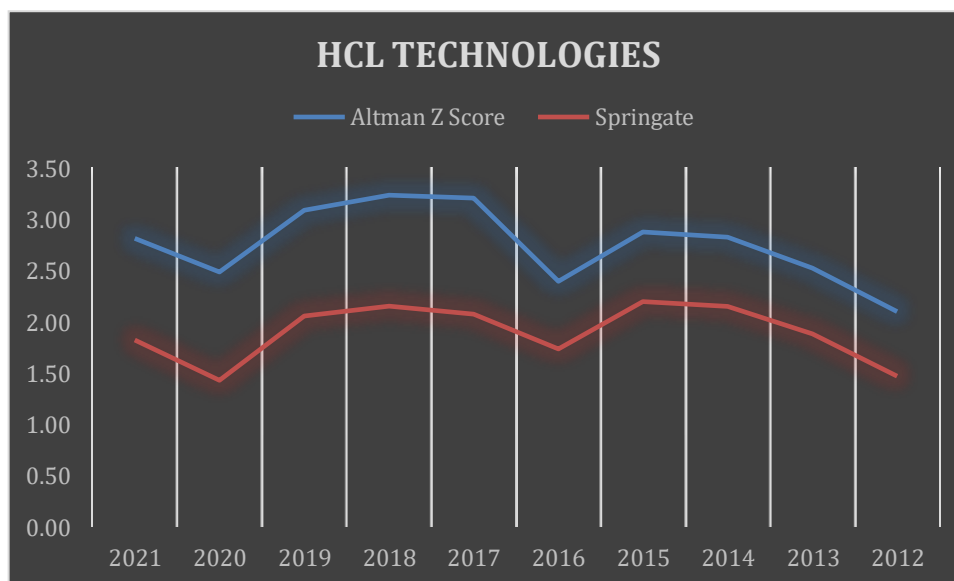
Interpretation

There has been an upward trend of liquid funds, profitability, operating efficiency and sales. In **table 7 t**he scores for the fy 2016-2017,2017-2018 and fy 2018-2019 are above 3 which indicates they are in safe zone. And the scores of all the other above financial years are above 1.8 which means they are in grey zone.

Although there have been fluctuations, there has been upward trend of liquid funds, operating efficiency and cash flow in recent years. The scores of all the fys from fy 2011-12 to 2020-21 are above 0.862 in **table 8**. This clearly indicates that the company is financially secure and sound.

HCL tech is one of the leading global it services companies, which is ranked amongst the top five it services companies in india in respect of revenues. The company has compounded revenue growth of about 20% for the last 10 fys and the compounded profit growth results in 24% for last 10 fys. HCL tech is debt free and has healthy operating margin of 40.41%. The company has 16.42% - return on asset which shows a good sign for the future performance. The company keep on delivering a strong growth momentum in fy 2020-21. The growth of the company's itbs business   was strong in the post-covid-19 pandemic due to increased global demand for digital transformation programs.
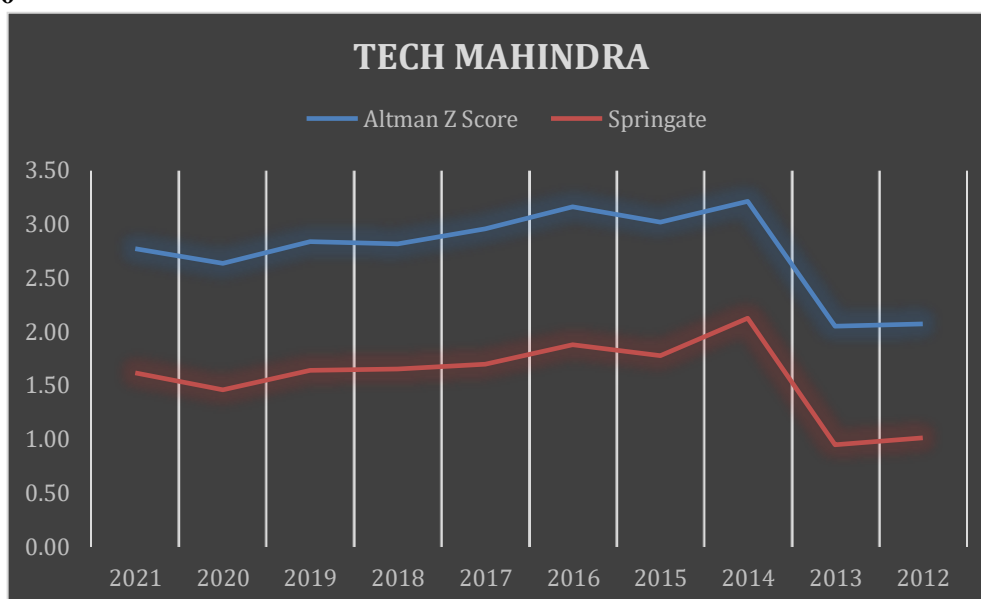
V. *Tech Mahindra Ltd*

	Coefficient	Post - Covid					Pre - Covid				
		2021	2020	2019	2018	2017	2016	2015	2014	2013	2012
A	**1.2**	0.38	0.33	0.34	0.33	0.38	0.42	0.33	0.37	0.04	0.08
B	**1.40**	0.60	0.56	0.58	0.60	0.61	0.63	0.59	0.56	0.59	0.57
C	**3.30**	0.15	0.14	0.17	0.16	0.15	0.17	0.18	0.23	0.12	0.11
D	**0.6**	0.03	0.03	0.04	0.04	0.05	0.07	0.08	0.04	0.04	0.04
E	**0.999**	0.95	0.99	1.04	1.01	1.12	1.18	1.14	1.18	0.77	0.79
Z Score		2.77	2.63	2.83	2.81	2.95	3.16	3.01	3.21	2.05	2.07
Zone		Grey	Grey	Grey	Grey	Grey	Safe	Safe	Safe	Grey	Grey

Tech Mahindra-Altman Z Score

Table 9

	Coefficient	Post - Covid					Pre - Covid				
		2021	2020	2019	2018	2017	2016	2015	2014	2013	2012
A	**1.03**	0.38	0.33	0.34	0.33	0.38	0.42	0.33	0.37	0.04	0.08
B	**3.07**	0.15	0.14	0.17	0.16	0.15	0.17	0.18	0.23	0.12	0.11
C	**0.66**	0.58	0.46	0.54	0.62	0.60	0.68	0.63	0.83	0.36	0.42
D	**0.4**	0.95	0.99	1.04	1.01	1.12	1.18	1.14	1.18	0.77	0.79
Score		1.61	1.45	1.63	1.65	1.69	1.87	1.77	2.12	0.94	1.01
Zone		Stable	Stable	Stable	Stable	Stable	Stable	Stable	Stable	Stable	Stable

Tech Mahindra-Springate

Table 10

TECH MAHINDRA

Interpretation

Tech Mahindra Ltd has high liquid funds, upward trend profitability and operating efficiency. The **table 9** shows the scores of the fy 2013-14, fy 2014-15 and fy 2015-16 are above 3. This indicates that the company is financially sound. And the altman z score for all the other financial years taken into study are above 1.8 and below 3 which indicates that the company is in grey zone(i.e.) has moderate chance of insolvency.

The table 10 shows that the company has upward trend of liquid fund, operating efficiency and cash flows, showing a good sign. As the scores of all the fys from fy 2011-12 to 2020-21 are above 0.862 and the company is in stable position.

Tech Mahindra Ltd has compounded revenue growth of about 22% for the last 10 fys and the compounded profit growth results in 16% for last 10 fys. The company estimated a poor profit growth of 2.01% for the last 3 fy. The company has 13.49% - return on asset which shows a bad sign for the future performance. The company delivered a declined revenue report of 1.4% in the fy 2020-21 compared to the fy 2019-20 due to the impact of covid-19 pandemic. The company decreased its bps headcount by 5000 to 38000 in the fy 2020-21 as the tasks get completed through artificial intelligence and automation, despite rising revenues. The company expects a huge growth in a double digit in the fy 2021-22.

VI.*Larsen & Toubro Infotech Ltd*

	Coefficient	Post - Covid							Pre - Covid		
		2021	2020	2019	2018	2017	2016	2015	2014	2013	2012
A	**1.2**	0.51	0.45	0.53	0.52	0.47	0.33	0.38	-	-	-
B	**1.40**	0.67	0.60	0.71	0.71	0.71	0.67	0.66	-	-	-
C	**3.30**	0.24	0.23	0.30	0.27	0.28	0.33	0.30	-	-	-
D	**0.6**	0.01	0.01	0.01	0.01	0.01	0.02	0.02	-	-	-
E	**0.999**	1.16	1.23	1.42	1.36	1.47	1.85	1.63	-	-	-
Z Score		3.51	3.36	4.05	3.87	3.94	4.26	4.02	-	-	-
Zone		**Safe**	**Safe**	**Safe**	**Safe**	**Safe**	**Safe**	**Safe**	-	-	-

L&T Infotech-Altman Z Score

Table 11

L&T Infotech-Springate

	Coefficient	Post - Covid							Pre - Covid		
		2021	2020	2019	2018	2017	2016	2015	2014	2013	2012
A	**1.03**	0.51	0.45	0.53	0.52	0.47	0.33	0.38	-	-	-
B	**3.07**	0.24	0.23	0.30	0.27	0.28	0.33	0.30	-	-	-
C	**0.66**	0.98	0.86	1.23	1.05	0.99	1.05	1.00	-	-	-
D	**0.4**	1.16	1.23	1.42	1.36	1.47	1.85	1.63	-	-	-
Score		2.38	2.22	2.86	2.60	2.58	2.77	2.64	-	-	-
Zone		**Stable**	**Stable**	**Stable**	**Stable**	**Stable**	**Stable**	**Stable**	-	-	-
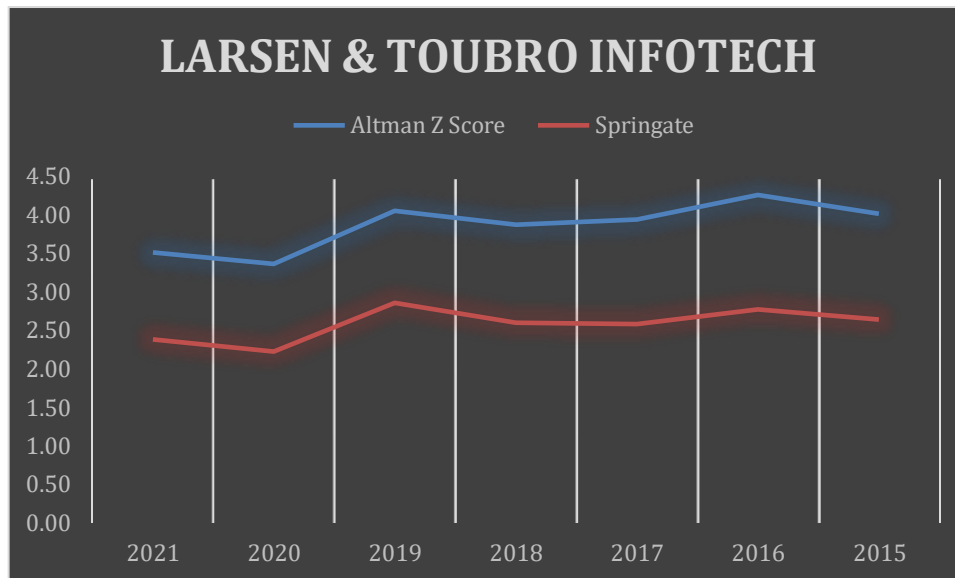
Table

Interpretation

L&T infotech ltd has adequate liquid funds and an upward trend in profitability which is a good sign. The **table 11** shows altman z scores for all the fys from fy 2014-15 to 2020-21 are above 3. This is an indication that the company is not likely to be in bankrupt.

The company has upward trend in working capital which means they have adequate liquid funds which are used to meet their short-term obligation. And as the company's springate score for all the fys from fy 2014-15 to 2020-21 are above 0.862 they are in a stable position from the **table 12.**

Though L&T infotech ltd delivered a largely flat growth over the fys 2019-20 and 2020-21 due to covid-19, the company expects a strong growth rebound. The company is postponing its capital expenditure plans to save the cash. The company has compounded revenue growth of about 12% for the last 5 fys and the compounded profit growth results in 9% for last 5 fys. But the company shows a poor revenue growth of 12.28% for the past 3 fys. It significantly decreased its debt by 23.90 crore. The company has 15.19% - return on asset which shows a good sign for the future performance. The company is planning to maintain the net income margin between 14- 15% and will be investing accordingly into the business because the company wants to see the growth in the very near future.
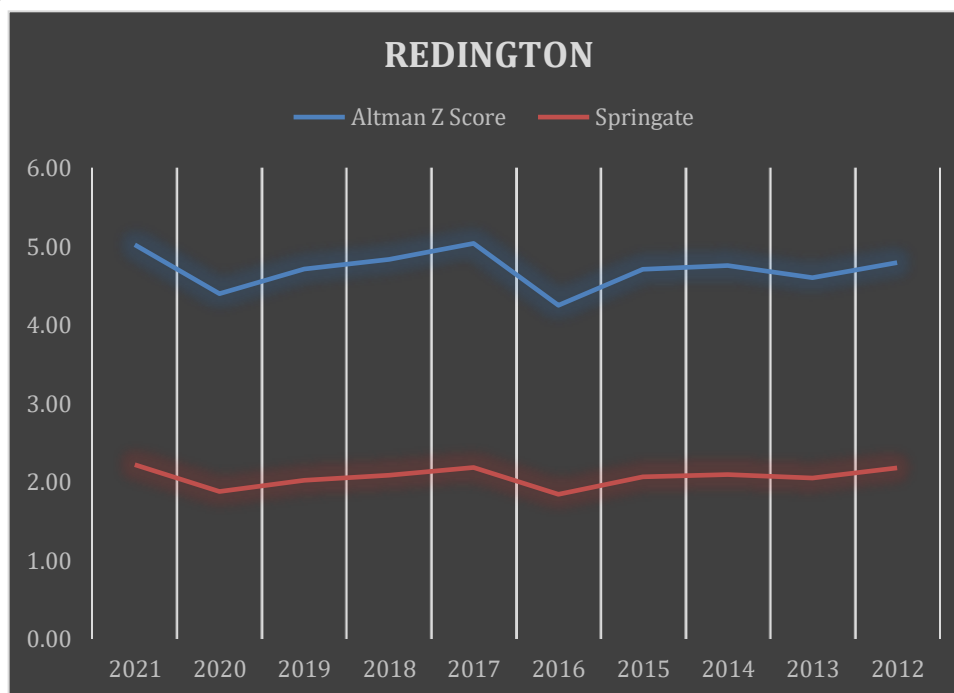
VII. *Redington India Ltd*

		Redington-Altman Z Score									
	Coefficient	**Post - Covid**					**Pre - Covid**				
		2021	2020	2019	2018	2017	2016	2015	2014	2013	2012
A	**1.2**	0.32	0.27	0.29	0.31	0.29	0.26	0.28	0.28	0.27	0.30
B	**1.40**	0.33	0.29	0.31	0.32	0.30	0.27	0.27	0.27	0.24	0.23
C	**3.30**	0.08	0.05	0.06	0.06	0.06	0.06	0.07	0.07	0.07	0.08
D	**0.6**	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.02	0.02
E	0.999	3.91	3.51	3.75	3.83	4.05	3.37	3.76	3.82	3.70	3.85
Z Score		5.03	4.40	4.71	4.84	5.04	4.25	4.71	4.76	4.60	4.80
Zone		**Safe**	**Safe**	**Safe**	**Safe**	**Safe**	**Safe**	**Safe**	**Safe**	**Safe**	**Safe**

Table

	Coefficient	Post - Covid					Pre - Covid				
		2021	2020	2019	2018	2017	2016	2015	2014	2013	2012
A	**1.03**	0.32	0.27	0.29	0.31	0.29	0.26	0.28	0.28	0.27	0.30
B	**3.07**	0.08	0.05	0.06	0.06	0.06	0.06	0.07	0.07	0.07	0.08
C	**0.66**	0.13	0.07	0.08	0.09	0.10	0.08	0.10	0.10	0.11	0.13
D	**0.4**	3.91	3.51	3.75	3.83	4.05	3.37	3.76	3.82	3.70	3.85
Score		2.22	1.88	2.02	2.09	2.19	1.84	2.07	2.09	2.05	2.18
Zone		Stable	Stable	Stable	Stable	Stable	Stable	Stable	Stable	Stable	Stable

Table heading: **Redington-Springate**

Table 14

Interpretation

Here the above **table 13** shows that the altman z score for redington india ltd for all the fys from fy 2011-12 to 2020-21 are above 3. It helps us to come to the conclusion that the company is stable in its financial position. This may be due to the continuous upward trend of the company's profitability.

The scores for all the fys from fy 2011-12 to 2020-21 are above 0.862 which means they are in stable position and not in financial stress in the **table 14**. The turnover of the company is with less fluctuation and is moving upward showing a good sign.

Redington india ltd has compounded revenue growth of about 13% for the last 10 fys and the compounded profit growth results in 13% for last 10 fys. But the company has delivered a poor sales growth of 9.95% over the last five fys. The company has reduced its debt by rs.1,171.31 crore. The company has 4.81% - returnon asset which shows a bad sign for the future performance. The company wasdealing with the ill effects of the lockdown via cost control and working capital last year. The company expects redington to be benefited from the 'shift to digital' phenomenon over the medium term.
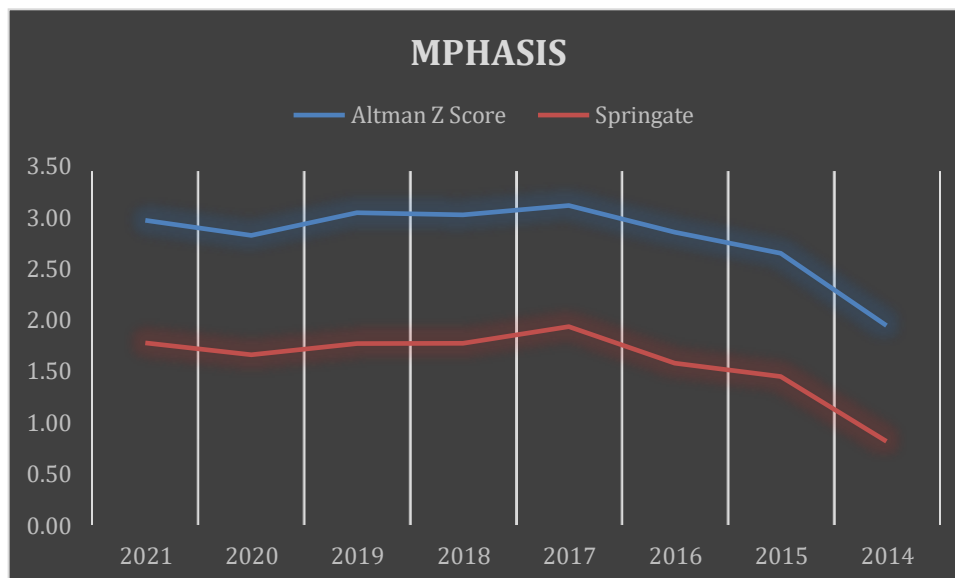
VIII. *Mphasis Limited*

	Coefficient	Post - Covid				Pre - Covid			
		2021	2020	2019	2018	2017	2016	2015	2014
A	**1.2**	0.32	0.26	0.29	0.36	0.46	0.40	0.33	0.27
B	**1.40**	0.67	0.64	0.69	0.76	0.81	0.76	0.71	0.70
C	**3.30**	0.17	0.17	0.19	0.16	0.15	0.13	0.13	0.06
D	**0.6**	0.07	0.06	0.09	0.13	0.18	0.13	0.11	0.11
E	**0.999**	1.03	1.01	1.06	0.91	0.82	0.82	0.78	0.37
Z Score		2.97	2.83	3.05	3.03	3.12	2.86	2.65	1.95
Zone		**Grey**	**Grey**	**Safe**	**Safe**	**Safe**	**Grey**	**Grey**	**Grey**

*(Table title: **Mphasis-Altman Z Score**)*

Table 15

	Coefficient	Post - Covid				Pre - Covid			
		2021	2020	2019	2018	2017	2016	2015	2014
A	**1.03**	0.32	0.26	0.29	0.36	0.46	0.40	0.33	0.27
B	**3.07**	0.17	0.17	0.19	0.16	0.15	0.13	0.13	0.06
C	**0.66**	0.76	0.70	0.71	0.80	1.01	0.69	0.62	0.30
D	**0.4**	1.03	1.01	1.06	0.91	0.82	0.82	0.78	0.37
Score		1.78	1.66	1.77	1.77	1.93	1.58	1.45	0.82
Zone		**Stable**	**Stable**	**Stable**	**Stable**	**Stable**	**Stable**	**Stable**	**Low**

*(Table title: **Mphasis-Springate**)*

Table 16

Chart title: MPHASIS — Altman Z Score, Springate

Interpretation

Altman z score is used for estimating whether the company is moving towards the state of insolvency. From the **table 15, s**ince the score for the fy 2016- 2017, fy2017- 2018 and fy 2018- 2019 have been above 3 we can easily conclude that the company is in safe zone (i.e.) in a stable position and not heading for insolvency. This has been mainly due to the increasing turnover of the company. However, the scores for the fy 2013- 2014, fy 2014- 2015, fy 2015- 2016, fy 2019- 2020 and fy 2020- 2021

Are above 1.8 and below 3 which indicates that the company is in grey zone (i.e.) has likely chance to get insolvent.

From the above **table 16** it can be found that in 2014 the firm has been in the state of insolvency, but later the trend of the following years has been movingupward with the scores of above 0.862. Hence this brings us to the conclusion that the company is stable. Although there was a downward trend in the year of covid the company took immediate measures to revive it.

Mphasis ltd is an it solutions provider specialising in cloud and cognitive services. The company has compounded revenue growth of about 10% for the last 5 fys and the compounded profit growth results in 14% for last 5 fys. The company has sound operating margin of 28.03%. And it has contingent liabilities of rs. 1,964.31 crore. The company has 19.88% - return on asset which shows a good sign for the future performance. The company has delivered the revenue growth of 27.93 % which is fair in relation to its growth and performance.

IX.*Mindtree Ltd*

	Coefficient	Post - Covid					Pre - Covid				
		2021	2020	2019	2018	2017	2016	2015	2014	2013	2012
A	**1.2**	0.47	0.37	0.46	0.41	0.38	0.32	0.47	0.49	0.46	0.44
B	**1.40**	0.65	0.58	0.75	0.69	0.71	0.69	0.73	0.76	0.75	0.69
C	**3.30**	0.24	0.16	0.24	0.20	0.16	0.22	0.26	0.28	0.25	0.20
D	**0.6**	0.08	0.08	0.19	0.16	0.21	0.19	0.13	0.09	0.11	0.11
E	0.999	1.25	1.51	1.68	1.46	1.54	1.43	1.34	1.44	1.40	1.44
Z Score		3.55	3.35	4.17	3.67	3.65	3.62	3.86	4.06	3.90	3.63
Zone		**Safe**	**Safe**	**Safe**	**Safe**	**Safe**	**Safe**	**Safe**	**Safe**	**Safe**	**Safe**

Mindtree-Altman Z Score (caption above)

Table 17

	Coefficient	Post - Covid					Pre - Covid				
		2021	2020	2019	2018	2017	2016	2015	2014	2013	2012
A	**1.03**	0.47	0.37	0.46	0.41	0.38	0.32	0.47	0.49	0.46	0.44
B	**3.07**	0.24	0.16	0.24	0.20	0.16	0.22	0.26	0.28	0.25	0.20
C	**0.66**	0.94	0.63	1.15	0.75	0.71	0.93	1.14	1.32	1.15	0.71
D	**0.4**	1.25	1.51	1.68	1.46	1.54	1.43	1.34	1.44	1.40	1.44
Score		2.33	1.89	2.63	2.11	1.98	2.20	2.57	2.80	2.56	2.09
Zone		Stable	Stable	Stable	Stable	Stable	Stable	Stable	Stable	Stable	Stable

Mindtree-Springate (caption above)

Table 18

MINDTREE — Altman Z Score, Springate
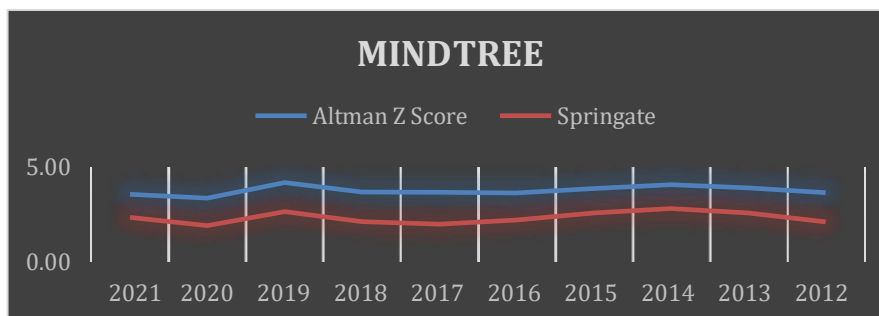
Interpretation

The company has sufficient liquid funds and upward trend in both profitabilityand the operating efficiency. The **table 17** shows the altman z scores for all the fys

From fy 2011-12 to 2020-21 are above 3. This is an indication that the company issecure and steady.

From the **table 18,** it shows that the company has adequate liquid funds and upward trend in operating efficiency. The springate scores for all the fys from fy 2011-12 to 2020-21 are above 0.862. This shows that the company is in stable financialposition.

The company has compounded revenue growth of about 18% for the last 10 fys and the compounded profit growth results in 27% for last 10 fys. The company has a good operating leverage of 9.63 times. The company has 19.65% - return on asset which shows a good sign for the future performance.
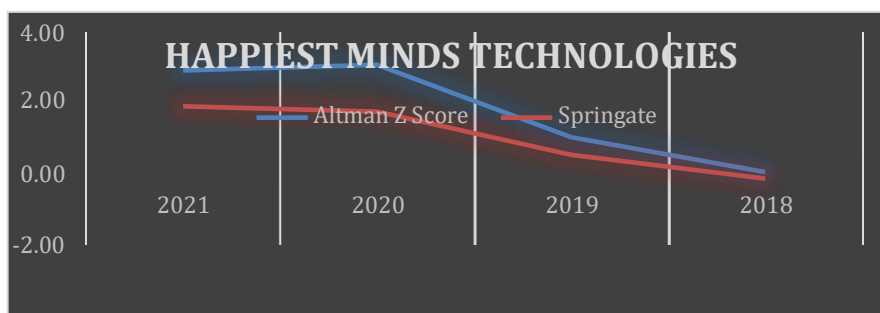
X.*Happiest Minds Technologies Ltd*

	Coefficient	Post - Covid				Pre - Covid					
		2021	2020	2019	2018	2017	2016	2015	2014	2013	2012
A	**1.2**	0.51	0.46	-0.24	-0.39	-	-	-	-	-	-
B	**1.40**	0.56	0.43	-0.23	-0.35	-	-	-	-	-	-
C	**3.30**	0.20	0.17	0.06	-0.06	-	-	-	-	-	-
D	**0.6**	0.08	0.04	0.01	0.01	-	-	-	-	-	-
E	**0.999**	0.84	1.37	1.43	1.20	-	-	-	-	-	-
Z Score		2.94	3.09	1.03	0.05	-	-	-	-	-	-
Zone		Grey	Safe	Distress	Distress	-	-	-	-	-	-

Title row: Happiest Minds Technologies-Altman Z Score

Table 19

	Coefficient	Post - Covid				Pre - Covid					
		2021	2020	2019	2018	2017	2016	2015	2014	2013	2012
A	**1.03**	0.51	0.46	-0.24	-0.39	-	-	-	-	-	-
B	**3.07**	0.20	0.17	0.06	-0.06	-	-	-	-	-	-
C	**0.66**	0.67	0.35	0.03	-0.05	-	-	-	-	-	-
D	**0.4**	0.84	1.37	1.43	1.20	-	-	-	-	-	-
Score		1.92	1.77	0.54	-0.14	-	-	-	-	-	-
Zone		Stable	Stable	Low	Low	-	-	-	-	-	-

Title row: Happiest Minds Technologies-Springate

Table 20

Interpretation

Happiest minds technologies ltd has high liquid funds, high cash flow, good operating efficiency and low volatility. The **table 19** showsthe scores for the fy 2017- 2018 and fy 2018-2019 are below 1.8 which means that the company is not stable and

Is in distress zone and the scores for fy 2019- 2020 is above 3 which means the company is in safe zone (i.e.) free from insolvency and for the fy 2020-2021 the score is above 1.8 and below 3 which indicates the company is in grey zone (i.e.) has likely the chance to get insolvent.

Since the company had springate scores of less than 0.862 in the fy 2017- 2018 and fy 2018-2019, they were in insolvency state. But then the liquid funds, cash flow and operating efficiency have shown a significant upward trend. Hence the scores for the years 2020 and 2021 are above 0.862 which indicates their financial position is sound from the **table 20.**

Happiest minds technologies ltd is an it company, which is ranked 4 in itservices that works on disruptive technologies such as artificial intelligence, internet of things, robotics/drones, security, virtual/augmented reality, blockchain, cloud, digital process automation, etc. The company has compounded revenue growth of about 17% for the last 5 fys and the compounded profit growth results in 115% for last 5 fys. It has sound operating leverage of 14.48 times. The company has 23.05% - return on asset which shows a good sign for the future performance. The company aims to regain the pre-covid growth in the fy 2021-22.

Industrial Analysis

I.Altman Z Score

Company / Year	Post - Covid				Pre - Covid					
	2021	**2020**	**2019**	**2018**	**2017**	**2016**	**2015**	**2014**	**2013**	**2012**
TCS	3.91	4.05	4.29	4.06	4.18	4.16	3.87	3.98	3.84	3.67
Infosys	3.14	3.20	3.38	3.42	3.37	3.44	3.32	3.49	3.65	3.77
Wipro	2.66	2.65	2.64	2.52	2.55	2.61	2.82	2.91	2.68	2.64
HCL Tech	2.81	2.49	3.09	3.24	3.21	2.40	2.88	2.83	2.53	2.10
Tech Mahindra	2.77	2.63	2.83	2.81	2.95	3.16	3.01	3.21	2.05	2.07
L&T Infotech	3.51	3.36	4.05	3.87	3.94	4.26	4.02	-	-	-
Redington	5.03	4.40	4.71	4.84	5.04	4.25	4.71	4.76	4.60	4.80
Mphasis	2.97	2.83	3.05	3.03	3.12	2.86	2.65	1.95	-	-
Mind Tree	3.55	3.35	4.17	3.67	3.65	3.62	3.86	4.06	3.90	3.63
Happiest Minds	2.94	3.09	1.03	0.05	-	-	-	-	-	-
Average	**3.33**	**3.20**	**3.33**	**3.15**	**3.56**	**3.42**	**3.46**	**3.40**	**3.32**	**3.24**
Zone	**Safe**	**Safe**	**Safe**	**Safe**	**Safe**	**Safe**	**Safe**	**Safe**	**Safe**	**Safe**

Table 21
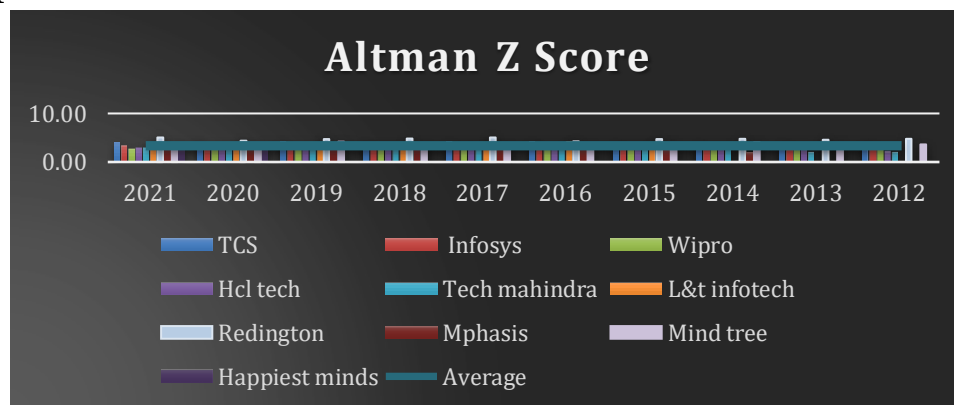
II. *Springate Score*

Company/Year	Post - Covid					Pre - Covid				
	2021	**2020**	**2019**	**2018**	**2017**	**2016**	**2015**	**2014**	**2013**	**2012**
TCS	2.92	3.16	3.49	3.32	3.71	3.49	2.84	3.14	2.94	2.70
Infosys	2.21	2.19	2.31	2.55	2.50	2.56	2.35	2.52	2.85	3.03
Wipro	1.58	1.52	1.51	1.42	1.43	1.53	1.71	1.80	1.53	1.50
HCL Tech	1.82	1.43	2.06	2.15	2.08	1.73	2.20	2.15	1.88	1.47
Tech Mahindra	1.61	1.45	1.63	1.65	1.69	1.87	1.77	2.12	0.94	1.01
L&T Infotech	2.38	2.22	2.86	2.60	2.58	2.77	2.64	-	-	-
Redington	2.22	1.88	2.02	2.09	2.19	1.84	2.07	2.09	2.05	2.18
Mphasis	1.78	1.66	1.77	1.77	1.93	1.58	1.45	0.82	-	-
Mind Tree	2.33	1.89	2.63	2.11	1.98	2.20	2.57	2.80	2.56	2.09
Happiest Minds	1.92	1.77	0.54	-0.14	-	-	-	-	-	-
Average	**2.08**	**1.92**	**2.08**	**1.95**	**2.23**	**2.17**	**2.18**	**2.18**	**2.11**	**2.00**
Zone	**Stable**	**Stable**	**Stable**	**Stable**	**Stable**	**Stable**	**Stable**	**Stable**	**Stable**	**Stable**

Table 22
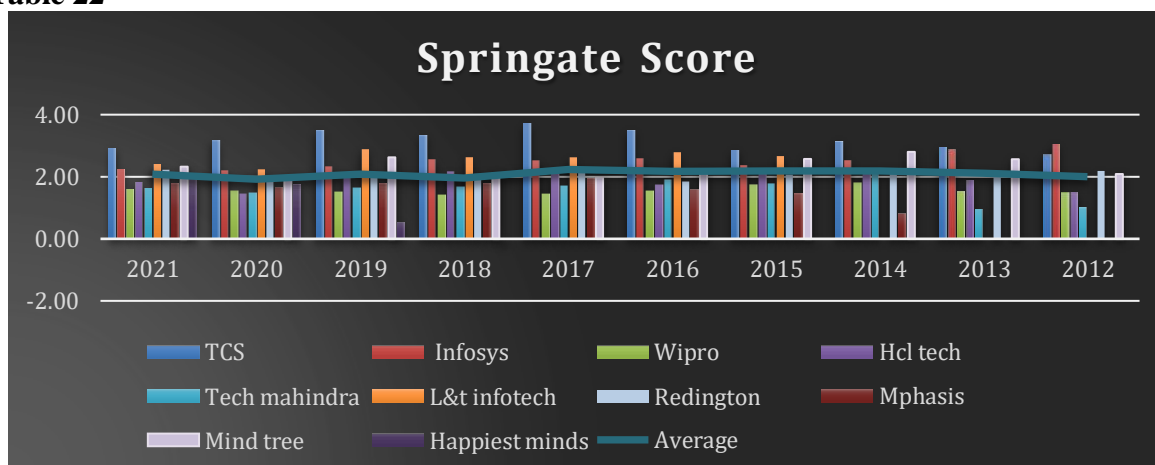
Interpretation

The **table 21** shows the altman z score analysis of information technology (IT) sector of tata consultancy service (TCS), infosys, wipro limited, hcl tech, tech mahindra ltd, L&T Infotech ltd, Redington India Ltd, Mphasis Ltd, Mind Tree Ltd, Happiest Minds Technologies Ltd. The z score for the last 10 fys from 2011-12 to 2020-21 of the IT sector is almost in safe zone.

The **table 22** shows the springate score analysis of information technology (IT) sector of tata consultancy service (TCS), infosys, wipro limited, HCL tech, tech mahindra ltd, L&T Infotech Ltd, Redington India Ltd, Mphasis Ltd, Mind Tree Ltd, Happiest Minds Technologies Ltd. The z score for the last 10 fys from 2011-12 to 2020-21 of the IT sector is almost in stable state.

The ratio of working capital to total assets, the ratio of retained earnings to total assets, the ratio of earnings before interests and taxes to total assets, the ratio of market value of equities to total liabilities and the ratio of sales to total assets plays a significant role in estimating the performance and chances of getting bankrupt. The ratio of working capital to total assets of the ten companies are moderately high

Which implies that the companies have no or rare cases of liquidity issues for the past fys. During the covid-19 pandemic, the demand for it applications for all the sectors was not down and that doesn't have much impact on the profit of the sector. This ended up with a stable and moderate growth in the retained earnings to total assets ratio of the IT sector in fys 2019-2021 compared to prior years. Next, the ratio of earnings before interests and taxes to total assets shows the profitability and the operating efficiency for a particular period of time. The profitability and the operating efficiency of the IT sector has been increasing gradually yoy and sometimes beendecreasing which is mainly due to increase in the operating expenses of each of the company in the sector. The ratio of market value of equities to total liabilities of the few companies (tcs, infosys, hcl tech, happiest minds) are rising whereas other few companies (wipro, tech mahindra, mphasis, mindtree, l&t infotech, redington) are stable and rarely declining in few years. The reason is due to fall in the market value of the shares of the companies. The last ratio, sales to total assets is almost more or less in equal points for the all the fys 2011-12 to 2020-21. For the fy 2019-20, the revenue of the fourth quarter decreased due to covid 19 pandemic. But the companies continue to monitor their recoveries and developments and expects to contribute 10% to the gdp.

Pre-Covid Effect

From the analysis of financial stability of IT sector through altman z score and springate model, the companies – TCS, Infosys, L&T Infotech, Redington and Mind Tree are performing good in the pre-covid period, which has altman z score value of 3 and above (safe zone) and springate value of 0.862 and above (stable state); unlikely to get bankrupt. Companies like Wipro, HCL tech, Tech Mahindra, Mphasis are in grey zone under the analysis of altman z score and stable and low state in springate model. Thus, these companies are performing with lower chances of getting into bankrupt. The performance of the company – happiest minds was worser in the pre-covid period as the company has altman z score of value below 1.8 and springate value of below 0.862 i.e., with higher probability of getting into bankrupt. But the average sectoral financial stability was in safe zone i.e., stable state in the pre-covid period. This shows up that the IT sector was performing well and good; unlikely to get into bankrupt in fys 2012-2018. The companies were following a particular system in their day-to-day operations which helped them to have a uniform system over the past years. Huge expenditure was incurred back then for building, furniture, facilities, etc. Compared to the post covid period the employee's productivity was less during the pre-covid period.

Post Covid Effect

During the post-covid from fy 2019-2021, companies like tcs, infosys, l&t infotech, redington and mind tree are continuing their performance at a stable state; with no possibilities of getting into bankrupt. Wipro, hcl tech, tech mahindra, mphasis and happiest minds are in grey zone and rarely in red zone under altman z score analysis and in stable state under springate model. Though the performance of some companies is not good, it doesn't affect the sector as a whole. The sectoral financial stability was in safe zone which is unlikely to get into bankrupt.working from home became the new norm of working. And this has been proving to be cost efficient. Experts say that this has resulted in profit and productivities. This change has been a positive result for women. The industry's particular demands are difficult to be changed soon. There has been a definite increase in the output and a rapid speed of the work can be seen. Although there was a downward trend in the beginning of the covid

Period, the sector took the possible measures and is reviving at a swift speed. This situation has helped the company to recognize that it is enough for 25% employees to be present for work rather than everyone.

Conclusion

The indian IT sector has showed a rapid growth in the economy for the last decade. The result of the analysis showed that even though the z scores of the companies showed a downward trend for the past 3 years it took all the possible steps to revive or restore its growth. The z scores for most of the periods have been above
1.8 for the 10 consecutive years. This indicates that the IT sector is in secure and in safezone even after facing huge challenges on its way. The revenue of IT sector grew 2.7% to $99 billion in the fy 2020-21. Even as lockdown has been deliberated upon, the sector has managed to make a great recovery. Experts say that the study shows this new work norms has increased the employment opportunities for women and they expect a revenue growth of up to 11% in fy 2020-21.

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