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An Assessment of Financial Health and Stability of Tata Motors using Altman Z - Score Model

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Abstract: The company's financial health is essential to its success. When the company is financially sound it maximises the wealth of equity shareholders. This study extensively examines the financial health of Tata Motors, its impact on the stakeholders, banks and other financial institutions through an analytical approach. Leveraging research tools such as Ratio Analysis & Altman Z-Score Model which effectively utilize the financial statements of the company to derive insights pertaining to the company's performance, profitability thereof, liquidity and solvency has been used to evaluate the financial health of Tata Motors. A firm's financial health is indicative of numerous factors which influence the investment decisions relating to the company and overall perception of the firm & its performance as a whole. A strong financial performance & excellent financial health of a firm attracts more investments from banks and investors which influences the growth & development potential of the company thereby keeping all the stockholders of the company satisfied. The financial performance of a company thus, facilitates estimated predications regarding the company's operations, profitability and stock outlook. Ratio analysis is an elemental quantitative technique of financial analysis as it facilitates a holistic understanding about a company's operational efficiency, liquidity and profitability through the effective evaluation of the company's financial statements. Altman's Z-Score Model numerically predicts the probability of a company going bankrupt by factoring in the profitability, liquidity and solvency ratios of a company. The research analysis tools mentioned above thus, foster an effective understanding on the financial position of Tata Motors and the various factors influencing the financial health of the firm based on the financial data of the past 5 years as per the annual reports published by the company. Based on the Z-score value for various years efforts are made to predict the financial strength and probable possibility of bankruptcy of firms.

Keywords: Altman Z score, Ratios, shareholders wealth.

INTRODUCTION

Ratios or the financial ratios are mathematically derived numbers, they show the relationship between two elements in the financial statements. These ratios help the management in decision making and better understand the financial health and performance of the firm. There are various ratios focusing on aspects like liquidity, leverage, profitability, etc. Altman's Z-Score model helps the user predict the company's chance of going bankrupt in the coming years, it is a mathematical measurement model which was developed by Prof. *Edward Altman* in 1968.

In general, bankruptcy is a condition that indicates a company will encounter bankruptcy (Prasandri, 2018). According to Pranita and Kristanti (2020), financial distress is the condition of the company in the stage of financial difficulties, which is marked by a decrease in profits and even negative profits, and bankruptcy is the stage of the situation where the company is legally filed as a bankrupt company.

Tata Motors is an Indian multinational car maker, based in Mumbai. It initially started in the year 1945 and was called TELCO (Tata Engineering and Locomotive Company). Its primary purpose was to manufacture cars. From a revenue stand point, it is the largest in India. It has a good reputation in the Indian market. It is known for its sustainable and eco-friendly vehicles. It is part of Tata Group, carries its trust and reputation with it.

This ratio helps in measuring the firm's ability to meet its short-term obligations. Here, only the short-term assets and liabilities are considered. There are two important ratios under liquidity ratios.

1. Current ratio: This ratio measures the short-term solvency. The current assets can be converted into cash to meet the current liabilities, hence more the current ratio, the better the liquidity of the firm.

Formula: Current Assets/ Current Liabilities

2. Acid-test or Quick ratio: We call it the acid test or the quick ratio because, here we only consider the highly liquid assets. The inventories are deducted from the current assets to get the value of quick assets.

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Formula: Quick Assets/ Current Liabilities

Leverage ratios help in measuring the firm's risk from long term and short-term debt. It is mainly used by credit rating agencies to rate the credibility of a company. It is mainly concerned with the risk associated with the borrowed capital. There are two types of ratios.

1. Debt-equity ratio: This ratio simply shows the relation between the debt and equity of the company. Lower the debt-equity ratio, the better it is for the firm.

Formula: Total Debts/ Shareholder's fund

2. Interest Coverage ratios: This ratio is used to measure the efficiency of the firm, to cover its interests or pay off its interests. More the Interest Coverage ratio, the better.

Formula: EBIT/ Interest Charges

Inventory turnover ratio helps measure the efficiency of the firm in converting the inventory into sales, generating revenue. Higher the ratio, more efficient the firm is. Companies adopt various inventory management techniques to meet the firm's requirements and the customer's demand.

Inventory Turnover Ratio= Net sales/Average Inventories.

Account Receivable Turnover Ratio helps measure the changes in the trade receivables or the debtors of the firm. It is also known as Debtor's Turnover ratio. Higher is Debtor's Turnover ratio, more efficient the company is at changing the trade receivables to cash.

Account Receivable Turnover Ratio =Net sales/Average Receivables.

Profitability Ratios helps us measure how efficiently a company uses its resources to generate profits or earnings. Under these ratios, there are two categories:

1. Margin Ratios
2. Return Ratios

For this study, we will only focus on the Margin ratios because it is less affected by the industry specific factors, making it more compatible for comparing across various industries. These ratios measure the percentage of the profit at the various levels of a firm's operations. Higher the percentage, higher the profitability.

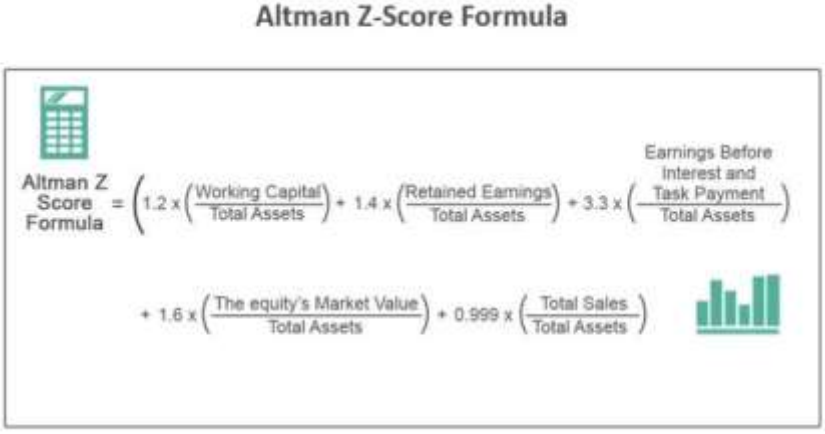
Gross Profit Margin ratio is used to measure the profits left after the cost of goods sold or manufactured. It shows the efficiency of the manufacturing process.

Gross Profit Margin =Gross Profit/Total revenue x 100

Net Profit Margin Ratio is used to measure the profits left after all the expenses. This ratio is majorly used by the investors who are looking forward to holding a long position.

Net Profit Margin= Net income/Total revenue x 100

Altman Z-Score is another model being used in the study; it is widely used to analyse a firm's financial health. It measures the probability of bankruptcy, there are three zones by which we can determine the firm's position.



Source: Atman, *et al*., (2017)

Safe zone: Low probability of bankruptcy (more than 2.9)

Gray zone: Moderate probability of bankruptcy (more than 1.81 and less than 2.99)

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Distress zone: High probability of bankruptcy (less than 1.81)

REVIEW OF LITERATURE

(Altman, et al., 2017) in his paper Financial Distress Prediction in an International Context assed the usefulness of Altman Z-Score model, it's classification of performance and it's ability to predict bankruptcy and other types of financial distress. This was the first study to provide an international analysis of over 31 European and 3 non-European countries' performance in this model.

(Salina, et al., 2023) in her study has used Altman Z-Score to analyse the performance 12 Kazakh banks for the period 2008-2014. There was an accuracy of 44.05% and 76.19% of the the observations were identified as a distressed group.

(Miharsi, et al., 2023) this study has taken literature from Scopus and SINTA, with an aim to find out, if financial models like F-Score, Altman Z-Score and Beneish M-Score can detect any malpractices in the financial reporting. The study had compared each model's effectiveness in detecting these fraudulent reports.

(Sriwiyanti, et al., 2024) Used Altman Z-Score to predict *Garuda Indonesia*' rate of bankruptcy for the years 2012-2021. Quantitative method of data collection was used and the findings revealed that the company was in the gray area in the observed years.

(Mr. B. Uday Kumar & Dr. R S Ch Murthy Chodisetty, 2024) has used Altman Z-Score to analyse the Indian Banking sector, the findings revealed that the majority of the banks have a good financial health. There were two banks whose financial health was below the average suggesting bankruptcy, later when compared with the other banks, it was found that these two banks have sufficient capital adequacy ratio.

A Study of Ratio Analysis as a Technique of Financial Performance Evaluation, a study conducted by Parvesh Kumar Goyal states ratio analysis as the evaluation of financial data to help in decision making and identify the strengths and weaknesses of the company. It also helps in comparing the company's ratios with the industry's average and benchmarking the performance to identify the gaps for improvement.

Applying Altman's Z Score Model for Financial Health Checkup, research conducted by Dr. Suresh A S delves into the purpose of Altman's Z Score. It is a financial tool widely used to predict the sickness of the company based on financial ratios. Findings suggest, Z-score below 1.80 is a sign for a financial instability. Events like default on payments, bad cash flow management, bad financial management and payments delayed are the signs of a sickness or a distress in the finance of a company.

OBJECTIVES OF THE STUDY

- To analyse the financial health using ratio analysis.
- To analyse the financial health and stability using Altman z score.

METHODOLOGY

Quantitative research design was used to help guide use choose the right data for the analysis. Data was extracted from the Annual reports of Tata Motors i.e Balance sheet and Income statement for 2019 – 2023. Two financial models, ratio analysis and Altman Z-Score model was used to assess the company's financial health and risk of Bankruptcy. Required Ratios were calculated in Ms Excel and Z-Score was constructed as per the Model. Microsoft Excel has been used to visually represent the data in the graphs and tables. and results were interpreted.

DATA ANALYSIS

Table 1: The ratio analysis of TATA Motors from 2019-2023

Ratios	2019	2020	2021	2022	2023
Current Ratio	0.45	0.58	0.6	0.53	0.58
Acid Test Ratio	11499.83	15619.47	15854.42	13568.61	13229.1
Debt-equity Ratios	0.465	0.707	0.857	0.804	0.628
Interest Coverage Ratios	0.02	0.04	0.03	0.03	0.01
Inventory Turnover Ratio	21.57	12.61	10.23	11.35	14.75
Gross Profit Margin	0.364	0.398	0.360	0.324	0.353
Net profit Margin	0.029	-0.168	-0.077	-0.037	0.042
Accounts Receivables Turnover Ratio	19.21	22.11	19.89	22.38	46.91

Source: Researcher analysis.

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Current Ratio

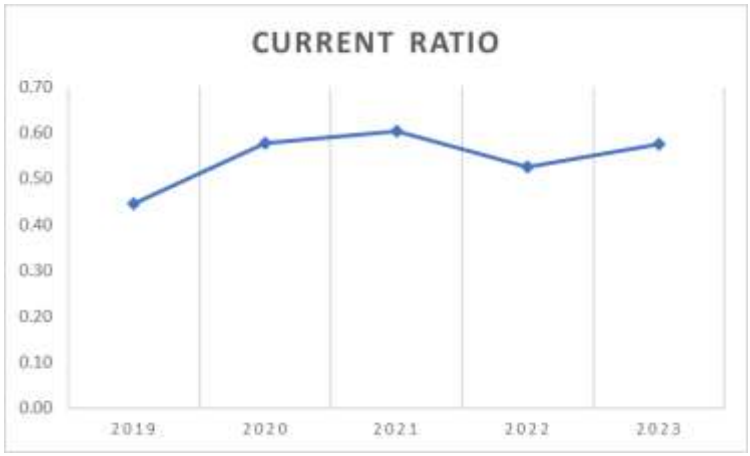

Figure 1: Current ratio of TATA Motors.
Source: Researcher analysis..

In the above table the current ratio has fluctuated over the years. It reached a high of 0.63 in 2021 but has since decreased. Current ratio below 1 indicates that tata motors might not have enough current assets to cover all its short-term liabilities.

Debt Equity Ratio:

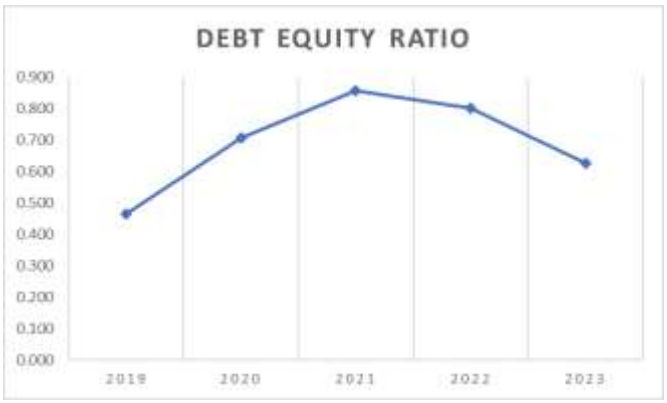

Figure 2: Debt- Equity Ratio of TATA Motors
Source: Researcher analysis.

In the above graph, the ratio is at its 5 year high in the year 2021, suggesting more borrowed capital. We can see a steady decline post 2021, which indicates good finance and cashflow management by Tata Motors.

Net Profit Margin:

Figure 3: Net Profit Margin of TATA Motors
Source: Researcher analysis.

In the above graph, the net profit margin has been negative for 3years (2020, 2021, 2022). Majorly affected due to the pandemic. This shows that the company has been unprofitable in those 3 years,

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but the profit has gradually increased indicating a good performance.

Accounts receivables turnover ratio:

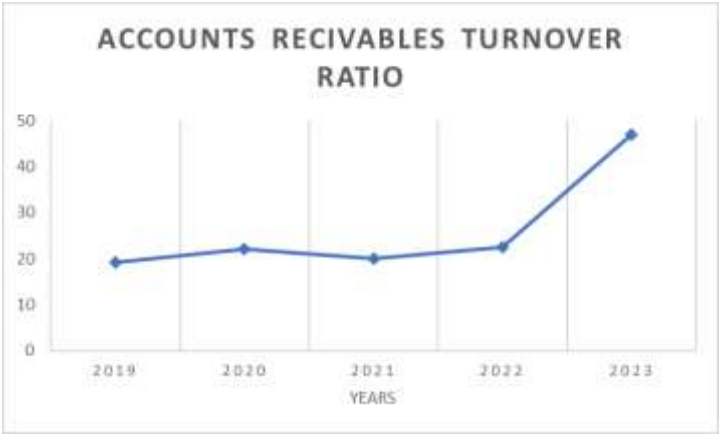

Figure 4: Accounts receivables turnover ratio of TATA Motors
Source: Researcher analysis.

As we can see in the above graph, the accounts receivables turnover ratio has increased significantly in 2023. This means that the company is collecting its debts more efficiently compared to the previous years.

Altman Z Score:

Table 2: Table showing the Altman Z score model

	March-23	March-22	March-21	March-20	March-19
Working Capital	-14,303.58	-11,373.20	-10,396.96	-12,242.06	-9,711.51
Total Assets	61,770.77	63,899.87	65,059.66	62,589.87	60,909.63
Retained Earnings	27580	25430	19500	39710	43670
EBIT	1,254.80	-1,640.05	-2,274.72	-7,127.34	2,398.93
Market Value of Equity	28478.238	14669.2998	25691.684	91164	91164
Total Liabilities	61,770.77	63,899.87	65,059.66	62,589.87	60,909.63
Sales	65,298.84	46,880.97	29,769.07	43,485.76	68,764.88
A (WC/TA)		-0.177984	-0.1598065	-0.1955917	-0.1594413
B(Retained earnings/ TA)	0.4464894	0.3979663	0.2997248	0.6344477	0.716963
C (EBIT/ TA)	0.0203138	-0.025665	-0.0349636	-0.1138736	0.0393850
D (MVE/ TL)	0.461031	0.2295669	0.3948942	1.4565296	1.4967091
E (Sales / TA)	1.05711553	0.7336629	0.4575657	0.6947731	1.128965
Altman Z-score	**1.74798**	**1.13027**	**0.80696**	**1.84642**	**2.96938**

Source: Researcher analysis.

RESULTS AND DISCUSSION

Considering that the company is a part of TATA Group, the chances of its bankruptcy is low, as the company is backed with one of the most reputed and largest brands of India. If the values are considered excluding its backup, it is a real concern, the company's z score dropped drastically from 2019 to 2021, reaching a low and showing slight growth and a bounce back in its finances. The company was in the grey zone, i.e. in the stage of financial distress, rather than improving the conditions, it worsened and came to the red zone- high probability of bankruptcy. TATA Motors should strongly work on its finances and bring the z score in the safe zone, i.e. above 3.

CONCLUSION

In this study, the impact of COVID-19 pandemic can be clearly seen, as not only Tata Motors, but the whole industry has suffered losses. We can clearly see a downtrend in the year 2020. The firm is having a hard time maintaining its liquidity, which makes it difficult to meet the short-term obligations. A spike in Net Profit Margin and Accounts receivables promise a positive trend in the future. The firm's probability of bankruptcy

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increased in the year 2021, and ever since then, the financial health of the company has seen a drastic change.

The company has a lot of potential, it is a giant player in the market. It has recovered quite well from the pandemic and shows a promising future.

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