# Analysis Of New Financial Management Ratios

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| Abstract |
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| The purpose of this study was to look at the financial health of the manufacturers of Indian public transport vehicles. Financial risk assessments were conducted over a long period of time. Study time from 2015-16 to 2019-20. In this paper, Altman's Z Score is used to evaluate the financial performance of car components such as sales cars, passenger cars and different vehicles. Thus, in this paper, Altman's Z Score is targeted at passenger car manufacturers. The Altman Z score is a credit rating ability calculated based on data from the company's annual report and is based on five financial levels. By 2020, India was the fifth largest car market in the world, with 3.49 million carriers and commercial vehicles sold. |
| Keywords: |
| Automobile companies in India, Altman's Z- Score model, Liquidity risk, Monetary methods, Bankruptcy. |

## Introduction

The global financial crisis, as well as the rising number of business defaults, emphasize the need of good fund management. Sources: "India's automobile industry is the world's fourth largest, with the country ranking as the world's fourth largest producer of cars and fourth largest producer of commercial vehicles by 2020. Between FY16 and FY20, domestic automotive manufacturing grew at a CAGR of 2.36 percent, reaching 26.36 million vehicles. Domestic automotive sales grew at a 1.29 percent compound annual growth rate (CAGR) between FY16 and FY20, with 21.55 million vehicles sold in FY20. In FY21, a total of 22,652,108 passenger automobiles were produced. In October 2021, total passenger vehicle production, including two-wheelers and three-wheelers, had

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reached 2,214,745 units". Naturally, the Z-score method was devised and launched by Edward Altman, a professor at New York University, in the late 1960s as a remedy to the time-consuming and rather complex procedure investors had to go through to evaluate how close a firm was to bankruptcy. In practice, the Z-score methodology devised by Altman ended up giving investors an idea of a company's overall financial health. Many stakeholders in today's organizations are interested in developing a reliable strategy for predicting insolvency and financial difficulties. Methods for predicting bankruptcy events have received mixed assessments to date. An attempt has been made to examine the financial performance of passenger car vehicles as well as anticipate the likelihood of bankruptcy. Altman's Z-Score model is a popular tool for predicting bankruptcy, but this study is the first to look at how passenger car companies' performance affects their likelihood of going bust. "The Altman's Z score is designed to forecast the likelihood of manufacturing businesses going bankrupt. There is evidence that it predicts the bankruptcy of the underlying sample with a 76.9% accuracy rate (Begley et al. 1996). Chen and Shemerda (1981) discovered that financial ratios can predict bankruptcy with an accuracy of up to 90%.".

**Hypothesis**

H1: There are four-wheeler automobile passenger car companies that are having to predict financial distress.

THEORETICAL FRAMEWORK

Altman's Z Score: Under this research Z Score balance- sheet metric is determined for measuring a manufacturing company's financial soundness that is quantitative in nature. "The Z score is made up of five different variables: X1, X2, X3, X4, and X5. A score of more than 3.0 is considered a "safe" enterprise, or those with a low risk of insolvency", "$Z = 1.2 * X1 + 1.4 * X2 + 3.3 * X3 + 0.6 * X4 + 1.0 * X5$".

MODEL ALTMANS Z 'Score

X1 = Working Capital / Total Assets

X2 = Retained Earnings / Total Assets

X3 = EBIT / Total Assets

X4 = Market Value of Equity / Total Liabilities

X5 = Net Sales / Total Assets Original

SCORE

$Z > 2.67$ = Athi Sundar $1.81 > Z > 2.67$ = Sundar $Z < 1.87$ = Financial Distress

**Methodology**

To explain its conclusions, this study employs cross-time series and cross-sectional or panel data (pooled data) that help to determine the results and fulfil the objectives of the study. Purposive sampling was used to determine the sample size in this study, and the criteria used to pick the sample automobile companies were descriptive in nature. The research was carried out over a five-year period, from 2015 to 2019.

(In Million Dollars.)

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | 13 | 3 | | | | | | | |
| | | 14 | 5 | | | | | | | |
| | | 15 | 4 | | | | | | | |
| | | 16 | 4 | | | | | | | |
| | | 13 | 7 | | | | | | | |
| | | 14 | 5 | | | | | | | |

Source: Compiled from Annual report

Data was gathered entirely from secondary CMIE (Prowess) database secondary source and financial statements. The sample design consists of the five passenger car companies selected from the automobile industry. The companies are selected on the basis of market potential and fundamentals. The sample companies for the studies are Tata Motors Ltd, Maruti Suzuki Limited, Hyundai Motor Company,

Mahindra & Mahindra Limited, Ford Motor Company, and General Motors Company.

The quantitative descriptive analysis method was used to analyse and predict financial distress using the methods of Altman Z Score Modification. This method also analyses the problems with raising questions about the independent variables that may be one variable or more than one variable. The stages performed by the method of Altman Z- Score as follows:

VI.1. Calculate Several key ratios are used in the formulation of an Altman Z-Score Value. "The Z-Score model is the 1960's brainchild of Professor Edward Altman".

"X1 = Working Capital / Total Assets X2 = Retained Earnings / Total Assets X3 = EBIT / Total Assets X4 = Market Value of Equity / Total Liabilities X5 = Net Sales / Total Assets Original".

VI.2. Using the formula to do computations with Altman modifications: The formula for calculating the Z score for public manufacturing enterprises in the original model is as follows. The Altman Z-Score is a measure of a company's health and is calculated as $Z = 1.2*X1 + 1.4*X2 + 3.3*X3 + 0.6*X4 + 1.0*X5$ (Credit Strength).

Whereas,

$Z > 2.67$ = Health

$1.81 > Z > 2.67$ = Manageable (Grey)

$Z < 1.87$ = Financial Distress Risk

**Result and Discussion**

Using the formula to do computations with Altman modifications: The formula for

calculating the Z score for public manufacturing enterprises in the original model is as follows. The Altman Z-Score is a measure of a company's health and is calculated as $Z = 1.2*X1 + 1.4*X2 + 3.3*X3 + 0.6*X4 + 1.0*X5$ (Credit Strength).

From table 1, the X1 ratio shows that the Maruti Suzuki Limited average is negative. From the above calculation, it concludes that X1, the working capital of Maruti Suzuki, is financed through debt that is determined by public debtors and credit policy ratios. ever, a company is able to maintain and retain earnings. At X2 Maruti Suzuki, the company is able to finance its total assets up to 62% on average, which shows the efficiency of the company in accumulating its profits and total assets where an increasing and decreasing trend is identified. However, a company is able to retain more or less earnings. X3 shows the company's not having the lowest ratio in terms of using assets and generating profit in years 2019-20. There is a decrease of 0.13 compared to the previous year. That happened due to the financial crisis that happened that year, and the company also increased its sales for the duration of its existence. X4 and X5 show an average result. For X4 Market, the value

of equity is increasing, which indicates the company's financial soundness. For X5, the net sales ratio is consistent, which shows the company has the ability to leverage resources. If it is decreasing, it means there are changes in net sales that will affect a company's gross profit and gross profit margin.

TABLE-2

THE RESULIS OF Z" SCORE ANALYSIS (MAHINDRA & MAHINDRA LTD FOR THE PERIOD 2015-19)

(In Million Dollars.)

| Year/Ratio | X1 wota\ | re/ta\ | X3 EBIT/I A\ | XJ mve/tl\ | XS ns/ta\ | wc | RE | EBIT | MVE | NS | TA | TL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2015-16 | 0.02 | 0.16 | 0.05 | 0.3 | 0.4 | 32.43 | 239 | 69 | 415 | 61673 | 1521 | 1521 |
| 2016-17 | 0.02 | 0.16 | 0.04 | 0.3 | 0.4 | 24.07 | 269 | 64 | 432 | 659.43 | 1635 | 1635 |
| 2011-18 | 0.03 | 0.38 | 0.06 | 0.7 | 0.4 | 45.85 | 319 | 98 | 413 | 73056 | 1769 | 616 |
| 2018-19 | 0.02 | 0.18 | 0.08 | 0.6 | 0.4 | 48.38 | 387 | 159 | 465 | 759 | 2106 | 728 |
| 2019-20 | 0.02 | 0.38 | 0.05 | 0.2 | 0.3 | 53.94 | 419 | 128 | 577 | 773.86 | 2358 | 2358 |
| Average | 0,02 | 0.17 | 0,06 | 0.42 | 0.38 | | | | | | | |
| Z score | 2015-16 0,96 \ | 2016-17 0.94 \ | 2017-18 1.25 \ | 2018-19 1.27 \ | 2 019-20 0.93 \ | | | | | | | |

TABLE-3

THE RESULTS OF Z$^{ii}$ SCORE ANALYSIS (HYUND A1 MOTOR FOR THE PERIOD 2015-19)

(In Million Dollars.)

| Year/Ratio | X1 wc/rl | X2 RE/TA | Y X3 EBIT/tt | X4 mvml\ | X? mni | WC | RE | EBIT | MVE | NS | TA | TL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2015-16 | 1.4 | 0.2 | 0.05 | 0.6 | 4.8 | 23736 | 3687 | 810 | 6666 | 82947 | 17454 | 10787 |
| 2016-17 | 1.5 | 0.2 | 0.05 | 0.7 | 4.8 | 25292 | 4053 | 861 | 7125 | 82130 | 17429 | 10304 |
| 2017-18 | 0.2 | 0.4 | 0.02 | 0.7 | 0.5 | 27579 | 60262 | 3973 | 66908 | 86257 | 159489 | 92581 |
| 2018-19 | 0.1 | 0.4 | 0.01 | 0.7 | 0.5 | 22227 | 62700 | 2385 | 69684 | 31294 | 170358 | 100674 |
| 2019-20 | 0.1 | 0.4 | 0.02 | 0.6 | 0.5 | 20037 | 60060 | 3664 | 61658 | 93056 | 171171 | 109512 |
| Average | 0.66 | 0.32 | 0.03 | 0.66 | m | | | | | | | |
| Z score | 2015-16 U \ | 2016 7.4 \ | 2017-18 1.8 \ | 2018-19 17 \ | 2019 1.6 \ | | | | | | | |

From table 2, it is evident that the X1 ratio for Mahindra & Mahindra Ltd. has positive working capital, which indicates the company has enough capital to meet its shortterm liabilities. At X2 Mahindra & Mahindra Ltd, the company is able to finance its total assets up to 91% on average, which shows the efficiency of the company in accumulating its profits and total assets where an increasing and increasing trend is identified. However, a company is able to retain more earnings.

X3 shows the company's constantly fluctuating in terms of using assets and generating profit in years 2019-20. Hence, it indicates whether the company is in debt and, if so, managed properly, then the company is on track for long-term growth in 2019-2020. X4 and X5 show an average result. For X4 Market, the value of equity is fluctuating, which indicates the company's financials are not stable. For X5, the net sales ratio is consistent in years 2019-20 and later it has decreased to 0.3, which shows the company has the ability to leverage resources but with proper strategy.

From table 3, it is evident that the X1 ratio for Hyundai Motor Company has positive working capital, which indicates the company has enough capital to meet its shortterm liabilities. At X2 Hyundai Motor Company, indicated retained earnings of a company increase by up to 0.32 by using common types of debt and equity financing, and the company later pays the debt holder along with principal and interest over time. X3 shows the company's constantly fluctuating in terms of using assets and generating profit in years 2019-20. And also, the above table shows an average ratio of 0.03, indicating a Hyundai Motor Company with lower revenue and higher operating costs. If it continues to decline in the long term, the Hyundai Motor Company should reconsider its business model. For X4 Market, the value of equity is low, fluctuating at 0.66 in 2019-20, which indicates the company's financials are stable. For X5, the net sales ratio is consistent in years 2019-20 and later it has decreased to 0.22, which shows the company has the ability to leverage resources but with proper strategy.

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## Conclusion

Based on the above findings of the data analysis and testing, as well as the discussion, the following conclusions may be reached.: The Altman Modification Z technique was used to score the results of the five-passenger car automobile company's makers from 2015 to 2019. In compared to the scores of the other corporations, it is evident that General Motors Company, Mahindra & Mahindra Ltd, and Ford Motor have very poor scores. If the score is less than 1.8, according to Z score research, bankruptcy is likely. All of the other companies included for the study, according to the Z score model, are in a decent situation. Other companies, except for Maruti Suzuki passenger vehicle companies, were not financially sound during the study period, according to the study.

## Suggestion

From the above discussion and conclusion, except for Maruti Suzuki, during the study period, all the companies' Z scores were not maintained properly and there was no consistency. Hence, company managers in terms of managing the company's finances must have active participation and efficiency for the soundness of the company, and the company doesn't have to be in financial distress. However, a company manager can make a decision based on the investment made by the company and its financial performance. In a nutshell, "it is preferred for future researchers to go into other industries such as real estate, banking, and other manufacturing companies as well." In addition, they can also use other methods like Springeti or the Olhson and Grover methods".

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