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An Analytical Study of Financial Health of Selected Indian Automobile Companies with reference to Altman Z-Score

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Abstract: Automobile sector is one of largest market in India as well as in the world. In this paper researcher check financial health of randomly selected five automobile companies. This paper based on purely secondary source of data and took five financial years for study vis 2015-'16 to 2019-'20. Researcher has been used statistical tools like Altman z score and ANOVA for the study. It has been found that financial health of automobile sector is not sound in last year of study compare to initial year of study. In last year of the study most of companies z score comes from safe zone to grey zone or distress zone except Eicher Motor and Sundram Fasteners.

Key Words: Altman Z score, ANOVA, Financial Health, NSE Nifty 500.

INTRODUCTION:

India was the fifth largest auto market in 2020, with ~34.9 lacs combined units sold in the passenger and commercial vehicle categories. In 2019, it was the seventh largest commercial vehicle manufacturer. The two-wheeler segment dominates the market in terms of volume due to a growing income of middle class and young population. Furthermore, various initiatives by the Indian government and major automotive players in the Indian market are expected to make India a leader in the global two-wheel and four-wheel vehicle market in the future.

Overall production of passenger vehicles, two-wheelers, three-wheelers and quadricycles reached around 18.75 lacs units in April 2021. Two-wheelers and passenger cars dominate the domestic Indian car market. Passenger car sales are dominated by small and midsize cars and two-wheelers and passenger cars accounted for 80.8% and 12.9% of the market share, respectively.

Overall, automobile export reached 47.7 lacs vehicles in FY20, growing at a CAGR of 6.94% over FY2016 and 2020. Two-wheelers accounted for 73.9% of exported vehicles, followed by passenger vehicles with 14.2%, three-wheelers with 10.5% and commercial vehicles with 1.3% According to NITI Aayog and Rocky Mountain Institute (RMI), India's electric vehicle finance industry is expected to reach Rs. 3.7 lakh crore in 2030. Contemporary in this paper researcher will check financial health of selected automobiles companies of India with help of Altman Z score model.

LITERATURE REVIEW:

Baba, T. (2019) has made research paper on 'Financial Distress Analysis of Selected Indian Automobile Companies by Using Altman Z Score Model', the main objective of his article was to examine the financial difficulties of automotive companies through the Altman Z-score technique. The study samples were from six automobile companies i.e., Tata Motors Limited, Mahindra and Mahindra Limited, Hero Moto Corp Limited Maruti Suzuki India Limited and TVS Motor Company. The data was collected from company' annual reports for the last five-year period, 2015 to 2019. The paper was examining the risk of financial distress for automotive companies. And also examine companies' financial strength against any threat of bankruptcy. Researcher concluded that of the six companies, Baja auto limited and Hero Motor Corp limited are financially sound and stable. Tata Motors is in the danger zone, which is not a positive sign for the company and its shareholders.

Agarwal, S. (2018) has made study on 'Altman Z Score with reference to Public Sector Banks in India'. The study aims to verify the validity of the Z" Score model and to identify a trend in the Z" Score of the Top 5 Public Sector Banks in India vis. State bank of India, Bank of Baroda, Punjab National Bank, Central Bank of India and IDBI bank according to their Marker Capitalization. For this, the Altman Z-score was calculated for a five-year period from 2012-17 using a five-ratio analysis. Researcher has been found that Z-Score model is to be a reliable predictor of the current position of the top 5 public sector banks in India.

OBJECTIVE OF THE STUDY:

1. To analyze various Z Score ratios of selected Automobile companies.
2. To check overall financial health of selected automobile companies using Altman Z-Score model

HYPOTHESIS:

H_0 : There is no significant difference in Z score among selected automobile companies during study period.
H_1 : There is significant difference in Z score among selected companies during study period.

POPULATION AND SAMPLING OF STUDY:

The population of study is all 31 automobile companies which is listed in NSE Nifty 500. The samples of this study selected from the Nifty 500 index of the National Stock Exchange. The study will be purely secondary in nature. so all relevant data will be collected from the official NSE website and relevant sample website. The selection of the sample will be carried out using the **Random Sampling method**, which is a Probabilistic Sampling Technique. Sample were selected 20% of population, so samples for the study is six (31 @ 20%) automobile companies.

1. Apollo Tyres Ltd.
2. Ceat Ltd.
3. Eicher Motors Ltd.
4. Mahindra and Mahindra Ltd.
5. Minda Corporation Ltd.
6. Sundram Fasteners Ltd.

PERIOD OF STUDY:

In order to make the study meaningful and applicable, the present study is made for period of 2015-’16 to 2019-’20 five financial year of selected Automobile companies.

DATA COLLECTION:

The study is a based on secondary data which is collected from official website of NSE Stock Exchange of India and selected sample’s annual reports.

TOOLS AND TECHNIQUES:

For the study, Mathematics and Statistics tool and techniques like: data classification, tabulation, Analysis of Variance (ANOVA) and Z- Score model were used for the study.

Altman Z score Analysis:

Name	Model	Applicable Firm
Z Score 1968 original model	1.2X1 + 1.4X2 + 3.3X3 + 0.6X4 + 0.999X5	Public manufacturing companies

Where as:

X1= Working Capital/Total Assets

X2= Retained Earning/Total Assets

X3= Earnings Before Interest and Taxes/Total Assets

X4= Capital Fund/Total Liability

X5= Sales/Total Assets

Zone	Safe Zone	Grey zone	Distress Zone
Z score 1968	Z score > 2.99	1.81 < Z score < 2.99	Z score < 1.81

DATA ANALYSIS:

1. Working Capital/Total Assets:

Table No. 1 Working Capital/Total Assets (X1)

Company/Year	2015-'16	2016-'17	2017-'18	2018-'19	2019-'20
Apollo Tyres Ltd.	0.02	0.03	0.14	0.06	-0.07
Ceat Ltd	0.06	0.11	0.00	-0.02	-0.05
Eicher Motors Ltd.	0.01	-0.02	0.04	0.25	0.42
Mahindra & Mahindra Ltd.	0.03	0.07	0.08	0.07	0.08
Minda Corporation Ltd.	0.11	-0.01	0.00	0.20	0.16
Sundram Fasteners Ltd.	0.01	0.03	0.09	0.09	0.08

2. Retained Earning/Total Assets:

Table No. 2 Retained Earning/Total Assets (X2)

Company/Year	2015-'16	2016-'17	2017-'18	2018-'19	2019-'20
Apollo Tyres Ltd.	0.39	0.33	0.27	0.28	0.23
Ceat Ltd	0.28	0.32	0.35	0.31	0.29
Eicher Motors Ltd.	0.56	0.63	0.62	0.69	0.72
Mahindra & Mahindra Ltd.	0.49	0.54	0.61	0.55	0.58
Minda Corporation Ltd.	0.32	0.30	0.28	0.28	0.15
Sundram Fasteners Ltd.	0.09	0.09	0.05	0.06	0.05

3. Earnings Before Interest and Taxes/Total Assets:

Table No. 3 Earnings Before Interest and Taxes/Total Assets

Company/Year	2015-'16	2016-'17	2017-'18	2018-'19	2019-'20
Apollo Tyres Ltd.	0.20	0.12	0.08	0.07	0.05
Ceat Ltd	0.18	0.12	0.10	0.08	0.07
Eicher Motors Ltd.	0.52	0.41	0.34	0.33	0.23
Mahindra & Mahindra Ltd.	0.12	0.12	0.15	0.12	0.06
Minda Corporation Ltd.	0.12	0.10	0.10	0.13	-0.09

Sundram Fasteners Ltd.	0.11	0.19	0.20	0.19	0.13

4. Capital Fund/Total Liability:

Table No. 4 Capital Fund/Total Liability

Company/Year	2015-'16	2016-'17	2017-'18	2018-'19	2019-'20
Apollo Tyres Ltd.	1.27	0.93	1.10	1.02	0.60
Ceat Ltd	0.98	0.97	1.46	0.86	0.56
Eicher Motors Ltd.	14.26	10.79	10.18	7.32	4.93
Mahindra & Mahindra Ltd.	2.13	2.06	3.59	1.90	1.38
Minda Corporation Ltd.	3.22	3.07	3.39	1.73	1.22
Sundram Fasteners Ltd.	1.55	2.25	3.56	3.55	3.06

5. Sales/Total Assets:

Table No. 5 Sales/Total Assets

Company/Year	2015-'16	2016-'17	2017-'18	2018-'19	2019-'20
Apollo Tyres Ltd.	1.40	0.99	0.79	0.88	0.66
Ceat Ltd	1.56	1.40	1.32	1.13	0.95
Eicher Motors Ltd.	2.04	1.43	1.18	1.03	0.85
Mahindra & Mahindra Ltd.	1.18	1.19	1.19	1.02	0.90
Minda Corporation Ltd.	1.32	1.15	1.04	1.20	1.14
Sundram Fasteners Ltd.	1.28	1.30	1.24	1.17	0.97

6. Altman Z-Score:

Table No. 6 Altman Z-Score

Company/Year	2015-'16	2016-'17	2017-'18	2018-'19	2019-'20
Apollo Tyres Ltd.	3.38	2.45	2.25	2.18	**1.42**
Ceat Ltd	3.21	2.96	3.03	2.32	1.85
Eicher Motors Ltd.	13.10	10.11	9.33	7.78	6.09
Mahindra & Mahindra Ltd.	3.58	3.68	4.79	3.42	2.85
Minda Corporation Ltd.	4.25	3.74	3.80	3.29	1.99
Sundram Fasteners Ltd.	2.71	3.43	4.20	4.13	3.39

Above table no. 6 showing results of Z-Score of all selected samples. Apollo Tyres Ltd has z score safe zone in 2015-'16, after that 2016-'17 to 2018-'19 its z score comes under grey zone and last year study period 2019-'20 Apollo's z score falls into distress zone that is not good sign for Apollo tyres. Form 2015-'16 to 2019-'20 Apollo Tyres z score continuously declining. Its z score decline from 3.38 in 2015-'16 to 1.42 in 2019-'20 and company comes under distress zone from safe zone. Apollo tyres has weak z score among selected companies.

Ceat Ltd. has z score 3.21 in 2015-'16, it is safe zone but following year Ceat z score fall under grey zone. In 2017-'18 again it has been improved z score and came in safe zone but after that its z score declined, reached almost near distress zone at 1.85 in 2019-'20. Ceat Ltd.'s z score was declining year by year, declined from 3.21 to 1.85 during study period.

Eicher Motors Ltd has highest z score among selected companies and its z score vary between 13.10 to 6.09 during study period. Eicher z score has in good position but it is in decline trend. Minda Corporation Ltd z score has safe zone in 2015-'16 to 2018-'19 but in 2019-'20 its z score fall into grey zone. Falls from 4.25 to 1.99 in last year of study period. Sundram Fasteners Ltd has stable z score during whole study period. Its z score has in safe zone during the study period except 2015-'16(it has near safe zone in this year vis 2.71). table no. 6 showing that all selected automobile companies z score falls between 4.79 to 1.42 except Eicher Motors Ltd which z score falls between 13.10 to 6.09 but in declining trend.

Table No. 7 ANOVA

Source of Variation	***SS***	***df***	***MS***	***F***	***P-value***	***F crit***
Between Groups	164.59139	5	32.918278	21.078	4.5372E-08	2.620
Within Groups	37.48044	24	1.561685			
Total	202.07183	29				

"F" test indicates that the Calculated value of F = 21.078 and critical value of F = 2.62 at 5 % level of significance The Calculated value of F is greater or more than table value of F (Fc > Ft) So, researcher reject null hypothesis and alternative hypothesis has been accepted it means there is significant difference in Z score among selected companies during study period.

LIMITATIONS:

- In this research study secondary data will be used, it will collect from the annual reports, websites and various published reports and such entire finding will depend on the accuracy of such data.
- The period of the study is limited to five years only.

- The accuracy of the Altman Z Score model gets highly affected if the financial statements are manipulated. Limitation of the z score model will directly impact in this study.

CONCLUSION:

In this paper an attempt was made to check overall financial health of selected automobile companies using Altman Z-Score model the following conclusion are come out.

In 2020, India was the fifth largest auto market in world. Auto sector marker also good performing in as well as in Indian market, also NITI aayog made growth prediction of auto sector in near future. According to Altman z score model researcher found that most of the year z score of selected companies falls under safe zone, but all selected companies have z score in 2015-'16 safe zone and strong after that all selected companies' z score continuously declining to last study period. Most of companies' z score were safe zone in 2015-'16 which is decline to grey or distress zone in 2019-'20 except Eicher motors and Sundram Fasteners.

According to Altman z score researcher can said that financial health of automobile sector is not sound so government and auto sector should made comprehensive step to boost auto sector and save from get bankrupt some automobile companies.

Results of single factor showing that there is statistical difference in Z score among selected companies during study period.

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