Empirical Analysis of the Profitability Status of Maruti Suzuki and Tata Motors

Barmeda Dipalee Hasmukhbhai[1], Prof. (Dr.) P.S. Hirani[2]

[1]Ph.D. Research Scholar, Department of Commerce, K.S.K.V. Kachchh University, Bhuj.
[2]Professor & Head, Department of Commerce, K.S.K.V. Kachchh University, Bhuj.

Abstract:
Automotive is one of India's largest and fastest-growing sectors. The economy benefits from this business in many ways. The contribution of the automobile sector towards the gross domestic product (GDP) of India has been enhanced from 2.77% in 1992-93 to 7.1% now. [12]
The major findings of the current inquiry show that Maruti Suzuki Limited exceeded Tata Motors Limited during the time frame. As per the current study's findings, the t-test indicates noticeable differences between the profitability ratios of the two selected sample companies.
To investigate profitability, the researchers selected Maruti Suzuki and Tata Motors Ltd. The five years covered in this study encompass 2018–19 to 2022–2023. The required information needed to assess and measure the profitability situation was received from the yearly published reports of the selected companies. The researcher utilized ratio analysis as a financial tool and the independent t test as a method of statistical analysis.

Keywords: Maruti Suzuki, Tata Motors, Ratios, T-test.

Introduction:
Nowadays, an automobile is a necessity for everyone's life; it meets all needs, from necessities to luxuries. One cannot imagine reaching the levels of progress that humanity has attained thus far without a vehicle.
One of the sectors in India with the quickest rate of growth is the automotive sector. It is essential to India's industrial development and economy. Both directly and indirectly, these corporations increase employment opportunities for people. The industrial units that make up an industry determine its level of success. Demand for cars in India was estimated at 3,641,233 units in 2022, and between 2023 and 2030, it is projected to climb at a compound annual growth rate (CAGR) of 9.7%. India is fourth out of the top ten nations in the world for manufacturing cars, according to statistics released by the European Automobile Manufacturers Association (ACEA) in April 2018. The nation's expanding population, increased disposable income, and easy access to credit and finance are the main drivers of the car sector. Furthermore, the market is anticipated to see increased demand for commercial vehicles due to the thriving passenger and logistics transportation industries. Market growth is molded by government actions and endeavors, which are anticipated to sustain growth in the upcoming years. [10] As a result, research on these entities is becoming more significant.

By supplying its manufactured products, this sector also contributes to the growth of foreign exchange. The primary goal of every business is to generate revenue. As a result, the researchers have examined and evaluated the profitability status of two Indian automakers.

Literature Review:

- **(Arjun P. & K G Vivek, 2023)**[1] have thoroughly studied the "Profitability Analysis of selected companies from the automobile sector with respect to NSE." The primary goal of this investigation was to measure the profitability condition of chosen firms and furthermore estimate how the automotive sector enlarged during the five-year period beginning in 2018 and ending in 2022. The researchers chose six vehicle manufacturers to conduct the investigation. This study relies primarily on secondary data. The NSE website and the yearly financial statements of the corresponding companies provided the necessary information. The obtained data was evaluated by using the ratio analysis approach. The researchers calculated several profitability ratios to analyze the scenario. The data can be displayed in a tabular format for easier interpretation. Tata Motors' gross profit margin was the largest in 2021, according to the data; however, it fluctuated during the investigation. Year after year, the proportion of net profit to revenue has been declining. Mahindra and Mahindra Ltd. increased both their gross profit and operating profit ratios between 2018 and 2021. The NPM of TVS Motors Ltd. dropped throughout the research study. This company's low profitability suggests that resources that were available were not adequately utilised by the company's management. The profitability of Hero Motocorp, Eicher Motors, and Ashok Leyland appeared to be insufficient, and both the GPM and the OPM had been steadily dropping.
- **(Anil kumar and Dr. Anand kumar, 2022)**[2] have studied in their research paper regarding "Analysis of financial stability of Selected Indian automobile companies with special reference to liquidity and profitability" in International Journal of food and Nutritional Science. In order to evaluate the entity's overall financial and operational health and provide potential suggestions for improvement, the main focus of this study was to evaluate the liquidity and profitability of a selected set of automakers. Tata Motors, Maruti Suzuki, and Mahindra & Mahindra Company were the three companies picked to carry out this research. This research was conducted between 2016–17 and 2020–21. For the sake of analyzing the information that was gathered, the profitability and liquidity ratios were computed. Following data analysis, it was discovered that the pandemic and drops in demand caused business to shrink in 2019–20 and 2020–21. Still, enterprises expect a major increase in diversity and economic growth as a result of nearly all organizations adopting green initiatives, such as the introduction of electric vehicles. This suggests that the sector's performance will soon surpass previous years.
- **(Dr. Vani Majumdar & Dr. Pooja Sharma, 2022)**[3] have undertaken research on "A Study on Liquidity Analysis of Select Automobile Companies in India" and published their paper in the Journal of Positive School Psychology. The very first objective of the present research project was to ascertain the level of liquidity and solvency in the automotive industry, along with the different types of financial management strategies used. The intent of the study was to learn how companies handle their financial matters. Data from the last 15 years was used to examine the financial situation. Both primary and secondary data were gathered in order to conduct the study. Ratio analysis and the one-way ANOVA method were used to analyze the data. Based on this study's conclusions, the car

industry's overall liquidity was excellent. Additionally, the researchers suggest that this industry improve cash sales while decreasing credit sales.

- **(Diptendu Simlai & Manish Guha, 2019)**[4] have conducted research on "Financial stability, profitability, and growth analysis: A study on select Indian automobile companies" and published their research paper in the Journal of Commerce and Accounting Research. Using a variety of statistics, this study examines the Profitability, Liquidity, Solvency, and Efficiency of the most prosperous automobile companies. Five automakers are at the center of this study: Hero Motors, Bajaj Auto Ltd., Mahindra & Mahindra, Maruti Suzuki, and Tata Motors. Based on total available assets, these companies were selected. The annual reports that could be published every year can provide the data required to check out the financial status. In this study, available benchmarks were used to compare companies, and the mean of the last five years for five companies was also determined. To ascertain the trend of the financial position, the data can be represented on a bar diagram after analysis and ratio computation. The results of the research point out that while the companies' interest coverage and inventory turnover ratios seemed adequate, their debt equity and current ratios fell short of expectations. The debtor turnover ratios of all the selected businesses were satisfactory, with the exception of Mahindra and Mahindra Ltd. The creditor turnover ratio was incredibly low. Additionally, it was also identified by the investigators that Hero Motocorp Ltd. produced a lot of sales and used their assets as efficiently as possible.
- **(Jaydeep Ramanuj & Salina Memon, 2023)**[5] have extensively studied "Liquidity and profitability analysis of the selected automobile companies of India" in Vidya: A Journal of Gujarat University. The primary purpose of this research was to analyze the profitability and liquidity situations and ascertain how they relate to one another. Ten years are covered by the study, from 2013–14 to 2022–23. Three different companies were selected to conduct the research. For performance evaluation, secondary information was obtained from the yearly published financial statements of the respective companies. In the present research work, researchers apply regression analysis techniques and profitability and liquidity ratios to examine the data. According to the current analysis, Mahindra & Mahindra Ltd. surpassed Tata Motors and Maruti Suzuki in terms of liquidity ratio. The information analyzed by applying the regression analysis has specified that there was no substantial correlation between the liquidity & profitability ratios.

Research Methodology:

1. Research Gap:

While reviewing the literature, it is clear that researchers have worked on several subjects; the following areas should be explored for future research:

To conduct the analysis, the researcher selects the top two leading passenger vehicle manufacturing companies listed on the Bombay Stock Exchange of India (BSE) based on their market value on April 4, 2024. The current study focuses on applying a ratio analysis approach and independent t-test to examine the chosen firm's overall profitability during a five-year period, from 2018-19 to 2022-23.

2. Research Objective:

To analyze and compare the overall profitability position of two leading passenger vehicle companies by computing several profitability ratios.

3. Research Hypothesis:

H0: There are no significant differences among the profitability ratios of the two selected sample compa-

nies.
H1: There are significant differences among the Profitability ratios of the two selected sample companies.

4. Research Design:
In the present study, the researcher utilized a technique known as descriptive research. This study investigates the profitability situation of the selected automotive sector firms in India. The financial strength of the selected vehicle companies can be assessed using the ratio analysis technique.
4.1 Sources of the Data:
Important information was gathered for the study from secondary sources, including the official website of the Bombay Stock Exchange and the public financial statements of the chosen companies.
4.2 Time period of the Study:
The current study spans five fiscal years, from 2018–19 to 2022–23 and includes accounting data from that period.
4.3 Sample of the Study:
Using the purposive sampling approach, the researcher selects the two biggest passenger car producers listed on the Bombay Stock Exchange (BSE) by market capitalization on April 4, 2024.

Table - 1
List of selected Automobile Companies

Rank	**Name of Passenger Vehicles Companies**	**Market Capitalisation (Rs. Cr.)**
1	Maruti Suzuki Ltd.	395417.83
2	Tata Motors Ltd.	336379.01

[Source: https://www.bseindia.com/][11]

4.4 Research Statistical Tools and Techniques:
Researchers analyzed data using the ratio analysis technique for research purposes. They calculate profitability ratios such as Gross profit ratio, Net profit ratio, Operating ratio, Operating profit ratio, Return on capital employed ratio, and Earning per share. They also used the independent t-test as statistical tools.

Table -2

Formula of Profitability Ratios	
1. Gross Profit Ratio	Gross Profit (Revenue from operation – COGS) / revenue from operations* 100
2. Net Profit Ratio	Net profit after tax / Total Net Sale* 100
3. Operating Ratio	COGS + Operating Expenses / Revenue from operations* 100
4. Operating Profit Ratio	Operating profit / Net Sales* 100 **or** 100 – Operating ratio
5. Return on Capital Employed Ratio	EBIT/ Total Assets – Total Current Liabilities (Capital Employed)

6. Earnings Per Share	Net Income / Total Number of Outstanding Shares

[Source: Madaan KVS (2022). NTA UGC NET|SET|JRF| Commerce Paper 2. Uttar Pradesh India: Pearson India Education Services Pvt.Ltd.] [7]

Analysis of Data and Its Interpretation:

The primary aim of carrying out business is to increase profit. Without earnings, it would be difficult to maintain the market position. So, assessing past and present profitability and forecasting future profitability is critical. The following section presents the study's results and interpretations.

1. Gross profit ratio: Gross profit / Revenue from operations* 100

Table – 3 Gross profit ratio

Gross profit ratio		
Years	**Maruti Suzuki Ltd.**	**Tata Motors Ltd.**
2018-19	29.95	26.86
2019-20	29.70	25.85
2020-21	27.75	24.66
2021-22	25.21	23.16
2022-23	26.62	25.07

Source: GPR computed from data given in Annual reports of selected companies

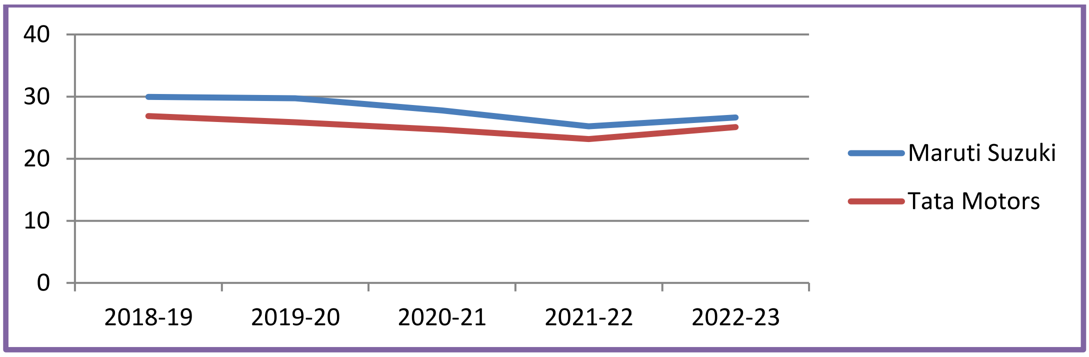

Figure 1: Chart of GPR of Maruti Suzuki and Tata Motors

Table 3 mentioned above shows the gross profit margins for Tata Motors Ltd. and Maruti Suzuki Ltd. from 2018–19 to 2022–23. The percentage of the gross profit of both businesses was continuously dropping while the experiment, as can be seen from the table provided above. It may, however, start to increase in 2022–2023. Maruti Suzuki Ltd.'s gross profit ratio drops down from 29.95% in 2019 to 25.21% in 2022. Consequently, it may rise to 26.62% in 2023. Similarly, Tata Motors Ltd.'s ratio of gross profit dropped from 26.86% to 23.16% in 2022. In 2023, it might rise to 25.07%. Out of the two companies, Maruti Suzuki had a better gross profit ratio than Tata Motors.

Research Hypothesis:

H0: There are no significant differences between the gross profit ratios of the two sample companies.

H1: There are significant differences between the gross profit ratios of the two sample companies.

Table – 4 T-test for Gross profit ratio

t-Test: Two-Sample Assuming Unequal Variances		
	Maruti Suzuki	**Tata Motors**
Mean	27.844	25.118
Variance	4.08303	1.91387
Observations	5	5
Hypothesized Mean Difference	0	
df	7	
t Stat	2.489129261	
P(T<=t) one-tail	0.020824814	
t Critical one-tail	1.894578605	
P(T<=t) two-tail	0.041649629	
t Critical two-tail	2.364624252	

Based on the above-mentioned table, Maruti Suzuki India Ltd. and Tata Motors Ltd. differ significantly from one another. The result is statistically significant in this case since the t statistic of 2.49 and the p-value of 0.04 (two tails) are below the threshold value of 0.05. Since the p-value is under 0.05, the null hypothesis is disproved. Thus, it could be argued that there are distinctions between Tata Motors & Maruti Suzuki Ltd.

2. Net profit ratio: Net profit after tax / Total Net Sale* 100

Table – 5 Net profit ratio

Net profit ratio		
Years	**Maruti Suzuki Ltd.**	**Tata Motors Ltd.**
2018-19	8.72	3.21
2019-20	7.47	-10.88
2020-21	6.01	-8.05
2021-22	4.27	-3.74
2022-23	6.85	4.58

Source: NPR computed from data given in Annual reports of selected companies

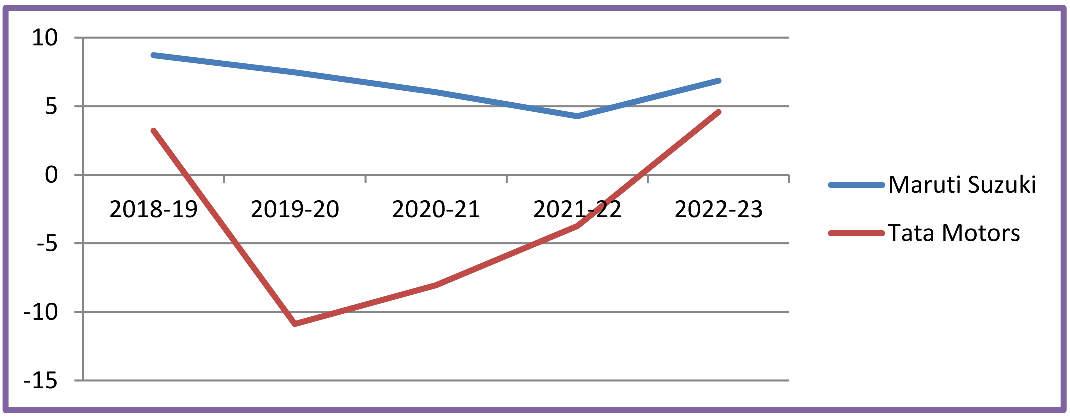

Figure 2: Chart of NPR of Maruti Suzuki and Tata Motors

The net profit percentages for Tata Motors Ltd. and Maruti Suzuki Ltd. from 2019 to 2023 are displayed in Table 5. The aforementioned table demonstrates that both companies' net profit margins were steadily declining during the study's duration. However, in 2023, it might begin to rise. The net profit ratio of Maruti Suzuki Ltd. dropped from 8.72% in 2019 to 4.27% in 2022. It may rise to 6.85% in 2022-23. The NPR of Tata Motors Company fell from 3.21% to -3.74% in 2022. The ratio has continuously been negative for Tata Motors Ltd. But in 2023, it turns positive. Maruti Suzuki Ltd. surpassed Tata Motors in respect to net earnings.

Research Hypothesis:
H0: There are no significant differences between the net profit ratios of the two sample companies.
H1: There are significant differences between the net profit ratios of the two sample companies.

Table – 6 T-test for Net profit ratio

t-Test: Two-Sample Assuming Unequal Variances

	Maruti Suzuki	Tata Motors
Mean	6.664	-2.976
Variance	2.76758	46.04053
Observations	5	5
Hypothesized Mean Difference	0	
df	4	
t Stat	3.085432435	
P(T<=t) one-tail	0.018368504	
t Critical one-tail	2.131846786	
P(T<=t) two-tail	0.036737008	
t Critical two-tail	2.776445105	

Table 6 demonstrates the notable differences between Tata Motors Ltd. and Maruti Suzuki Ltd. With respect to the t-statistic of 3.08 and the p-value of 0.036 (two tails) being below the minimum standard of 0.05, the outcome in this instance is statistically significant. The null hypothesis (Ho) is refuted since the value of the p is below 0.05. Consequently, it could be discovered that Tata Motors Ltd. and Maruti Suzuki Ltd. differ significantly.

3. Operating Ratio: Cost of Goods sold + Operating expenses / Revenue from Operation* 100

Table – 7 Operating Ratios

Operating Ratio		
Years	**Maruti Suzuki Ltd.**	**Tata Motors Ltd.**
2018-19	90.86	98.61
2019-20	95.17	111.28
2020-21	96.81	106.39

2021-22	96.86	102.18
2022-23	93.15	96.99

Source: Operating ratio computed from data given in Annual reports of selected companies

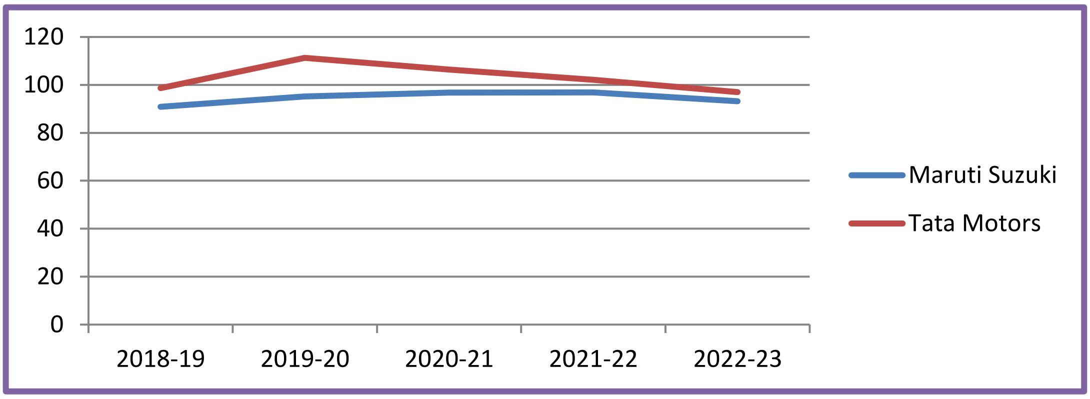

Figure 3: Chart of Operating ratio of Maruti Suzuki and Tata Motors

Table 7 displays the operating ratios of Tata Motors and Maruti Suzuki Limited for the five-year period ranging from 2019 to 2023. The operating ratio of Maruti Suzuki increased steadily from 90.86% to 96.86% in 2022 over the research period. It may fall to 93.15% in 2023. The operating margin of Tata Motors Limited continuously rises from 98.61% to 102.18%. In 2023, though, it drops to 96.99%. When it came to operating ratio, Maruti Suzuki Ltd. outperformed Tata Motors. Keeping expenses low in connection to sales is something Maruti Suzuki India Ltd. can readily manage.

Research Hypothesis:

H0: There are no significant differences between the operating ratios of the two sample companies.

H1: There are significant differences between the operating ratios of the two sample companies.

Table – 8 T-test for Operating Ratio

t-Test: Two-Sample Assuming Unequal Variances		
	Maruti Suzuki	**Tata Motors**
Mean	94.57	103.09
Variance	6.60055	34.01865
Observations	5	5
Hypothesized Mean Difference	0	
df	5	
t Stat	-2.989227122	
P(T<=t) one-tail	0.015237211	
t Critical one-tail	2.015048373	
P(T<=t) two-tail	0.030474423	
t Critical two-tail	2.570581836	

The key differences between Maruti Suzuki and Tata Motors Ltd. are highlighted in Table 8. The result in the present case was statistically significant since the t statistic of -2.99 and the p-value of 0.03 (two tails) are both below the significance threshold of 0.05. The Ho has not been accepted because the p-value is lower than 0.05. So it discovered that Tata Motors and Maruti Suzuki Limited differ significantly.

4. Operating profit ratio: operating profit / net sales * 100 **Or** 100 – Operating Ratio

Table – 9 Operating profit ratio

Operating profit ratio		
Years	**Maruti Suzuki Ltd.**	**Tata Motors Ltd.**
2018-19	9.14	1.40
2019-20	4.84	-11.28
2020-21	3.19	-6.39
2021-22	3.14	-2.18
2022-23	6.85	3.01

Source: Operating profit ratio computed from data given in Annual reports of selected companies

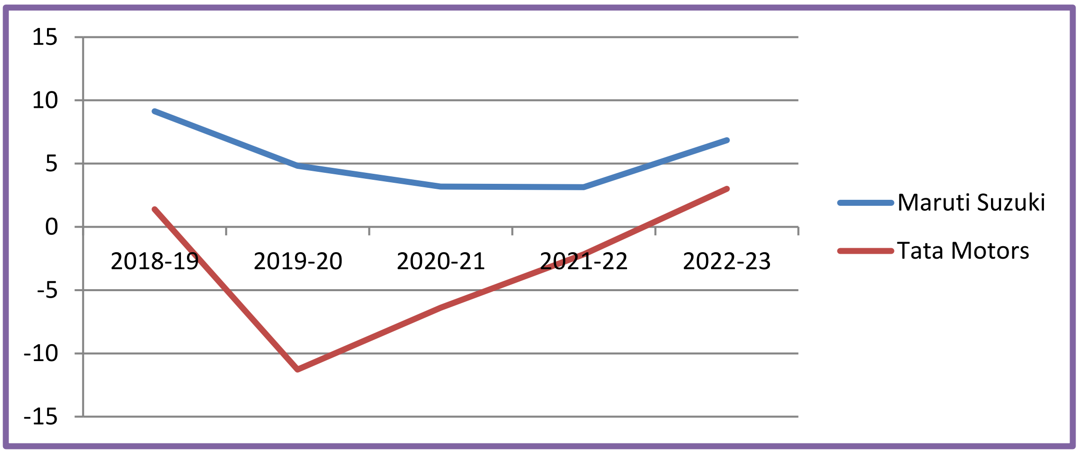

Figure 4: Chart of Operating profit ratio of Maruti Suzuki and Tata Motors

Table 9 above displays the operating profit ratios for Tata Motors and Maruti Suzuki over the last five years. Maruti Suzuki Ltd.'s operating profit percentage steadily dropped from 9.14% to 3.14% throughout 2022. It may start to rise to 6.85% in 2023. From 1.4% to -2.18%, Tata Motors Ltd.'s operational profit ratio has been continuously dropping. But in 2023, it increases to 3.01%. As compared to Tata Motors Ltd., Maruti Suzuki experienced a strong operating profit ratio.

Research Hypothesis:

H0: There are no significant differences between the operating profit ratios of the two sample companies.

H1: There are significant differences between the operating profit ratios of the two sample companies.

Table – 10 T-test for Operating Profit Ratio

t-Test: Two-Sample Assuming Unequal Variances

	Maruti Suzuki	**Tata Motors**
Mean	5.432	-3.088

Variance	6.59757	34.04107
Observations	5	5
Hypothesized Mean Difference	0	
df	5	
t Stat	2.98851207	
P(T<=t) one-tail	0.015249755	
t Critical one-tail	2.015048373	
P(T<=t) two-tail	0.03049951	
t Critical two-tail	2.570581836	

Table 10 outlines the significant differences between Tata Motors and Maruti Suzuki Ltd. The end result in this current case is deemed statistically significant because the t statistic of -2.99 and the p-value of 0.03 (two tails) are both below the criterion of 0.05. The null hypothesis was successfully refuted because the p-value was below 0.05. Therefore, it can be revealed that Tata Motors Ltd. and Maruti Suzuki Ltd. diverge greatly.

5. Return on capital employed ratio (ROCE): EBIT / Total Assets – Total Current Liabilities (Capital Employed)

Table – 11 Return on capital employed ratio

Return on capital employed ratio		
Years	**Maruti Suzuki Ltd.**	**Tata Motors Ltd.**
2018-19	0.161	0.025
2019-20	0.071	-0.135
2020-21	0.042	-0.077
2021-22	0.049	-0.028
2022-23	0.128	0.055

Source: ROCE computed from data given in Annual reports of selected companies

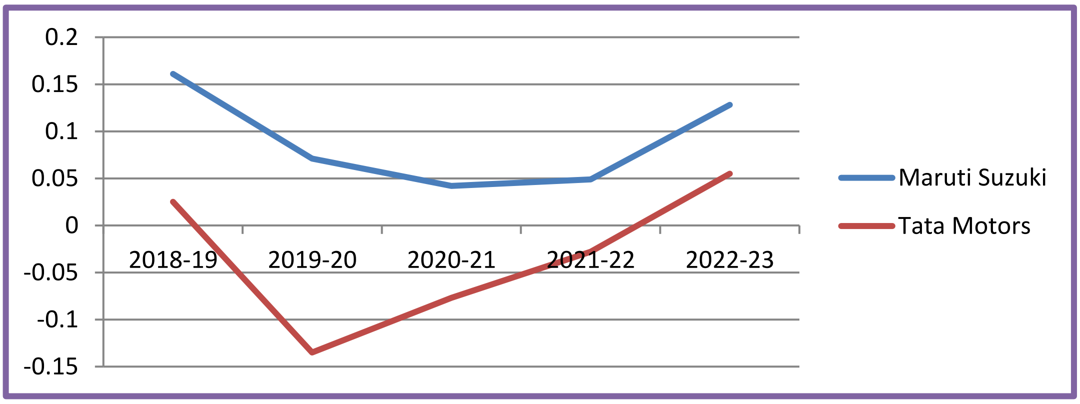

Figure 5: Chart of ROCE of Maruti Suzuki and Tata Motors

The return on capital employed (ROCE) of the two companies can be intimated in the above table no 11. Maruti Suzuki's ROCE steadily declined during the research period. Its ROCE dropped to 0.049 in 2022 from 0.161 in 2019. It improved to 0.128 in 2023. Tata Motors Ltd. exhibited a negative result over the study period. From 2019 to 2022, its ROCE was 0.025, -0.135, -0.077, and -0.028. The study's conclusions indicate that while Maruti Suzuki Ltd.'s performance over the investigation period was appropriate, Tata Motors Ltd.'s was unsatisfactory.

Research Hypothesis:
H0: There are no significant differences between the return on capital employed ratios of the two sample companies.
H1: There are significant differences between the return on capital employed ratios of the two sample companies.

Table – 12 T-test for Return on capital employed ratio

t-Test: Two-Sample Assuming Unequal Variances		
	Maruti Suzuki	**Tata Motors**
Mean	0.0902	-0.032
Variance	0.0027077	0.005867
Observations	5	5
Hypothesized Mean Difference	0	
df	7	
t Stat	2.950847331	
P(T<=t) one-tail	0.010690561	
t Critical one-tail	1.894578605	
P(T<=t) two-tail	0.021381122	
t Critical two-tail	2.364624252	

The above-mentioned table no. 12 indicates that Maruti Suzuki and Tata Motors Ltd. differ significantly from each other. Here, the t statistic of 2.95 and the p-value of 0.021 (two tails) are below the minimum value of 0.05. The Ho is not accepted because the p-value is smaller than 0.05. Therefore, it could possibly be determined that Maruti Suzuki Limited and Tata Motors Limited are extremely distinct.

6. Earnings per Share (EPS): Net Income / Total Number of Outstanding Shares

Table – 13 Earnings per Share

Earnings per Share (EPS)		
Years	**Maruti Suzuki India Ltd.**	**Tata Motors Ltd.**
2018-19	248.30	5.94
2019-20	187.06	(21.06)
2020-21	140.02	(6.59)
2021-22	124.68	(3.63)
2022-23	266.46	7.11

Source: EPS computed from data given in Annual reports of selected companies

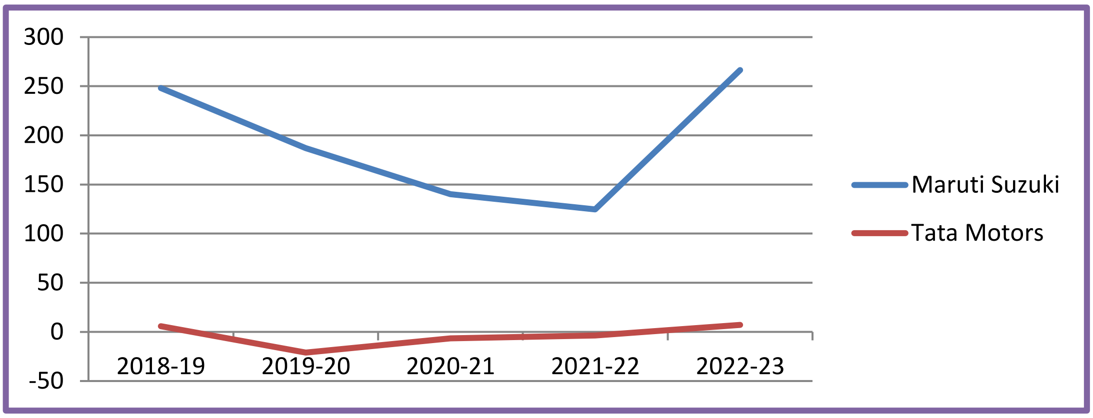

Figure 6: Chart of EPS of Maruti Suzuki and Tata Motors

In the table - 13, EPS of both companies have been shown. Throughout the study period, Maruti Suzuki India Ltd.'s EPS constantly deteriorated. In 2019, its EPS was 248.30; however, in 2022, it fell to 124.68. In 2023, it improved to 266.46. During the study's time frame, Tata Motors Ltd. displayed a negative figure. Its EPS was 5.94, -21.06, 6.59, and -3.63 from 2019 to 2022. According to the study's findings, Tata Motors Ltd.'s EPS across the study period was insufficient, whereas Maruti Suzuki Ltd.'s EPS was adequate.

Research Hypothesis:
H0: There are no significant differences between the EPS of the two sample companies.
H1: There are significant differences between the EPS of the two sample companies.

Table – 14 T-test for Earnings per Share

t-Test: Two-Sample Assuming Unequal Variances		
	Maruti Suzuki	**Tata Motors**
Mean	193.304	-3.646
Variance	3990.94648	129.87443
Observations	5	5
Hypothesized Mean Difference	0	
df	4	
t Stat	6.860394925	
P(T<=t) one-tail	0.001181903	
t Critical one-tail	2.131846786	
P(T<=t) two-tail	0.002363807	
t Critical two-tail	2.776445105	

The substantial and notable difference between Maruti Suzuki & Tata Motors Ltd. was seen in Table 14. Because the t statistic of 6.86 and the p-value of 0.0024 (two tails) are both below the critical value of 0.05, the final result in this particular case is regarded as being statistically significant. Because the p-value was less than 0.05, the null hypothesis had been rejected. Consequently, it was concluded that there were noticeable differences between Tata Motors Ltd. and Maruti Suzuki Ltd.

Research Shortcomings:

- Only the two largest Indian automakers, Tata Motors and Maruti Suzuki Ltd., which are listed on the Bombay Stock Exchange (BSE), are incorporated in the study.
- The current study covers the five financial years ranging from 2018–19 to 2022–23.
- The present research work solely relies on secondary data, which have its own constraints.
- To conduct the entire investigation, all the collected information was analyzed by using ratio analysis techniques and t-tests, which have their own limitations.

Findings and Conclusion:

Assessing the companies' profitability situation is very important. However, such analysis is not emphasized in a developing nation like India. In many emerging economies, it is not thoroughly studied. Determining the profitability position of automobile companies was the main goal of the present study. The Gross Domestic Product (GDP) of any economy is greatly influenced by the automobile industry. An evaluation of this particular sector can provide insights into how it performs for both types of users. i.e. internal and external. This analysis found that Tata Motors' and Maruti Suzuki's Operating profit, Net profit, Gross profit, and EPS all gradually increased in 2023 after declining steadily for the previous four financial years. The study's findings demonstrated that, throughout the study period, Maruti Suzuki India Ltd. surpassed Tata Motors Ltd. The t-test results demonstrated that the profitability ratios of Tata Motors and Maruti Suzuki India deviated significantly.

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