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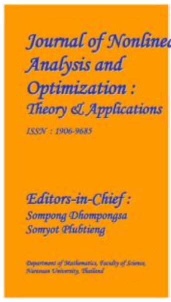

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A COMPARATIVE STUDY ON THE FINANCIAL PERFORMANCE OF TATA MOTORS AND MAHINDRA & MAHINDRA MOTORS

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ABSTRACT: The topic was chosen since there is an opportunity to learn about Indian Leading Motors, which could be beneficial. Analyzing financial data using ratios reveals information about a company's advantages and weaknesses, historical performance, and current financial situation. My article offers ratio estimates for TATA MOTORS and MM MOTORS to help determine their financial performance. To gain a better grasp of the company's position and performance, I will conduct research by studying financial statements and investigating the relationships between various sections of the accounts. This study examines TATAMOTORS & MM Motors' overall financial situation using a variety of financial approaches, including cash flow analysis, funds flow analysis, and ratio analysis. This research is supposed to yield the ability to calculate financial statements and ratios in order to determine the organization's financial performance. A solid understanding of how businesses operate and how society drives the industry forward is critical. This study examines two Indian-made automobiles, TATA Motors and MAHINDRA & MAHINDRA Motors, utilizing a variety of statistical and financial approaches, with secondary data sourced primarily from financial documents. The study analyzes financial metrics from the previous five years to assess automotive manufacturers' efficiency, profitability, and short- and long-term solvency.

Keywords: Tata Motors, Mahindra & Mahindra Motors

I. INTRODUCTION

In recent years, renowned corporations such as Tata Motors and Mahindra & Mahindra Motors have helped to boost India's flourishing car sector. As competition heats up, the importance of comparing and analyzing these companies' financial performance grows. This research paper will study and compare the financial performance of Tata Motors and Mahindra & Mahindra Motors from 2019 to 2023. The study will use financial criteria such as solvency, profitability, liquidity, and efficiency to measure the businesses' financial well-being. The information will be collected from the companies' annual reports and financial records. Gopal and Thakkar published a study in 2016. The study report will begin by offering an overview of the

Indian automobile market and the specific enterprises under consideration. The significance of monitoring financial performance in decision-making for stakeholders, investors, and management will also be discussed. This study also covers research into many aspects of the automotive industry's financial performance, financial ratios, and related literature. The methodology section includes a thorough discussion of the methodologies, protocols, and instruments used to collect, handle, and analyze data for the study. Initially, we will present and examine the study's findings, followed by a discussion of their consequences for companies, stakeholders, and investors. Finally, the essay will summarize the important points, analyze the study's limitations, and recommend new directions for future research.

II. REVIEW OF LITERATURE

(Kumar & Singh, 2020) examines the financial performance of Tata Motors and Mahindra & Mahindra Motors to provide a snapshot of the Indian automotive sector. The writers point out that Mahindra & Mahindra and Tata Motors have both played important roles in the tremendous growth of India's automotive industry in recent years.

(Pandey, 2005) explains how financial ratios are used to evaluate an organization's financial performance. According to the writers, financial ratios can help identify a company's financial health and possible growth zones. Among the ratios included in the study are those for liquidity, profitability, and solvency.

(Bhatia & Mahajan, 2017) highlights Tata Motors' financial results. The writers' primary focus is on analyzing the company's solvency, profitability, and liquidity measurements throughout the last five years of financial statements. They believe that Tata Motors' profitability and liquidity ratios have been rising over the last few years, showing improving financial performance.

(Jain & Sharma, 2019) (Kathiravan et al., 2021) emphasizes the importance of Mahindra & Mahindra Motors' financial performance. After comparing Mahindra & Mahindra's financial measures to those of its competitors, the writers concluded that the company excels in the following areas: liquidity, profitability, and solvency. They contend that the corporation's extraordinary financial success can be ascribed to its emphasis on innovation and diversity.

(Gupta & Gupta, 2018) (Kathiravan et al., 2019) compares Tata Motors to Mahindra & Mahindra Motors and highlights their distinct financial performance strengths and drawbacks. Despite Tata Motors' bigger market share, the writers point out that Mahindra & Mahindra has recently grown and made money. They also believe Tata Motors should focus on improving its financial situation, while Mahindra & Mahindra should increase its profit margins.compares Tata Motors to Mahindra & Mahindra Motors and highlights their distinct financial performance strengths and drawbacks. Despite Tata Motors' bigger market share, the writers point out that Mahindra & Mahindra has recently grown and made money. They also believe Tata Motors should focus on improving its financial situation, while Mahindra & Mahindra should increase its profit margins.

III. RESEARCH METHODOLOGY

The term "research method" refers to a methodical approach used in various sorts of investigation to address issues. The following is the process of assessing the research problem and its scientific background. Research entails the systematic exploration of relevant material pertaining to a specific organized subject, problem identification, sampling strategy and sample structure selection, data collection and analysis, and the application of problem-solving techniques or the development of theoretical frameworks. The primary goal of the research is to compare and evaluate the financial performance of Mahindra & Mahindra Motors and Tata Motors.

Research Design:

- **Period of the Study:**

The study runs from 2019 to 2023.

- **Population of the Study:**

Three industries are being evaluated. Items are organized in the following sequence:

(a) TATA Motors Ltd.,

(b) Mahindra & Mahindra Ltd.

- **Source of Data:**

The suggested study would rely exclusively on secondary data for information. Data will be compiled using relevant companies' annual reports, as well as textbooks, reference books, journals, articles, periodicals, and online resources. The investigation would provide the researcher with a wealth of new information. It is a thorough examination of the financial data of specific industries. The essential data will be gathered from PROWESS, a database operated by the Centre for Monitoring the Indian Economy (CMIE).

- **Tools and Techniques:**

The data will be analyzed using several measures relating to profitability, liquidity, leverage, and efficiency. Furthermore, the study company's performance will be examined using the following basic statistical methods:

- Inter Firm Comparison,
- Intra Firm Comparison,
- Profitability Statements,
- Analysis of Ratios, Leverage and Percentages
- Mean, Median and Standard Deviation
- Tables, Graphs & Diagram

IV. DATA REPRESENTATION AND INTERPRETATION

Statistics is an area of mathematics that arose from the application of quantitative methods. Finance analysts and investors collect data about firms, markets, expectations, and volume. This study used statistical methods to assess the financial position of two companies, namely Mahindra & Mahindra Motors and Tata Motors. To improve data comprehension, statistical parameters such as mean, standard deviation, coefficient of variation, growth, and annual growth have been calculated for each ratio and presented in a tabular style.

To Analyse the Short-Term Solvency Position:

i) Current Ratio

The current ratio is a widely used business metric that compares a company's available assets to its outstanding liabilities to determine its ability to satisfy short-term obligations. In other words, it assesses an organization's potential to generate sufficient revenue to repay all of its debts on schedule. It is a standard indicator for evaluating a company's overall financial health.

Current ratio= Current assets/ Current liabilities

Factors	2019	2021	2022	2023	2023
TATA	0.95	0.85	0.85	0.93	0.98
MAHINDA	1.20	1.18	1.19	1.40	1.34

ii) Quick Ratio

The quick ratio is a metric that measures a company's capacity to meet short-term financial obligations with its most readily available assets. The acid test ratio, also known as the fast ratio, is commonly used to assess a company's capacity to quickly settle current debts with readily convertible assets.

Quick Ratio= Liquid assets/ Quick liabilities

Factors	2019	2020	2021	2022	2023
TATA	0.66	0.58	0.58	0.70	0.74
MAHINDA	1.01	0.97	0.98	1.22	1.13

To Analyse the Long-Term Solvency Position:

i) Debt to Equity Ratio

The debt-to-equity (D/E) ratio of a firm is calculated by dividing its total liabilities by its shareholder equity. The figures listed above are found on the balance sheet of a company's financial statements. The ratio is used to determine a company's financial leverage. The debt-to-equity ratio is an important corporate finance metric. It serves as an indicator of how much a company relies on debt rather than fully owned capital to fund its operations. It reflects the ability of shareholder equity to repay all present loans in the event of a market downturn.

Debt to Equity Ratio = Total Debt / Shareholders' Equity

Factors	2019	2020	2021	2022	2023
TATA	0.82	1.51	1.58	2.08	3.13
MAHINDA	1.23	1.35	1.56	1.43	1.58

ii) Interest Coverage Ratio

The interest coverage ratio is a measure used to evaluate a company's capacity to handle debt successfully. A debt ratio can be used to examine a company's financial status. A high interest coverage ratio is a top priority for market analysts and investors. This is because if a company is unable to meet its present debt obligations and pay creditors' interest, it will be unable to thrive or even survive..

Interest Coverage Ratio= earnings before interest, taxes, depreciation and amortization/ interest expenses

Factors	2019	2020	2021	2022	2023
TATA	2.96	0.70	-0.06	4.31	2.98
MAHINDRA	2.65	2.45	1.80	1.86	3.11

To Analyse the Profitability Position

i) Margin Ratio

Margin ratios, evaluated at various levels of computation, demonstrate how efficiently a company converts its revenues into profits. Profit margins include a variety of variables such as gross profit margin, operational cost ratio, net profit margin, cash flow margin, operating profit margin, EBITDA, and EBITDAR.

Gross Profit Margin

Gross profit margin is derived by dividing gross profit by total sales revenue. This is a company's net income after deducting its production and operating expenses. A highly efficient core firm may generate enough revenue to cover all operating costs, fixed costs, dividends, and depreciation while remaining profitable, as seen by a high gross profit margin ratio.

Gross Profit Margin = gross profit/ total revenue

Factors	2019	2020	2021	2022	2023

TATA	12.02	9.15	8.02	13.98	9.97
MAHINDRA	15.04	15.55	18.86	19.80	17.31

Operating Profit Margin

Operating profit margin is the ratio of earnings to revenue, excluding income taxes and interest. Companies with strong operating profit margins are able to offer lower rates than competitors with lower margins. Furthermore, they are better equipped to fulfill fixed costs and loan interest payments, as well as withstand an economic slump. The operating profit margin is frequently used to evaluate management ability since it has the potential to significantly improve a company's financial success by efficiently managing costs.

Operating Profit Margin = Operating income/ Total revenue

Factors	2019	2020	2021	2022	2023
TATA	4.7	1.33	-0.17	4.55	1.05
MAHINDRA	11.48	11.74	14.39	15.25	13.42

Net Profit Margin

Operating profit margin is the ratio of earnings to revenue, excluding income taxes and interest. Companies with strong operating profit margins are able to offer lower rates than competitors with lower margins. Furthermore, they are better equipped to fulfill fixed costs and loan interest payments, as well as withstand an economic slump. The operating profit margin is frequently used to evaluate management ability since it has the potential to significantly improve a company's financial success by efficiently managing costs.

Net Profit Margin = Net Profit ⁄ Total revenue x 100

Factors	2019	2020	2021	2022	2023
TATA	2.31	-9.58	-4.20	-5.21	-4.03
MAHINDRA	7.43	4.44	-1.78	0.31	5.98

ii) Return Ratio

Return ratios demonstrate a company's ability to generate profit for its shareholders. Financial returns include a variety of variables such as return on invested capital, return on debt, return on equity, return on income, cash return on assets, return on retained earnings, risk-adjusted return, and return on capital employed.

Return of Assets

The return on assets (ROA) is a profitability indicator that determines how much money a company can make from its resources. In other words, return on assets measures a company's management's ability to generate profits from its balance-sheet assets or economic capital. When asset returns are higher, a company's management exhibits greater expertise in generating income through effective balance sheet management.

ROA = Net Income / Total Assets

Factors	2019	2020	2021	2022	2023
TATA	2.71	-9.38	-3.74	-3.92	-3.46
MAHINDRA	5.47	3.25	0.07	1.08	3.77

Return on Invested Capital

Return on invested capital (ROIC) is a statistic that assesses a corporation's efficiency in allocating cash to profitable ventures. The return on invested capital (ROIC) ratio is a metric that shows how efficiently a company generates money from its capital. The return on invested capital ratio is an excellent way to analyze a company's success. A company that creates value by acquiring other companies and earns returns that surpass the cost of acquiring capital is often valued at a premium.

ROIC = NOPAT/Invested Capital

Factors	2019	2020	2021	2022	2023
TATA	7.36	-9.38	-0.25	6.14	1.63
MAHINDRA	12.01	11.75	9.60	9.85	10.27

Return on Equity

Return on equity (ROE) is a financial term that assesses a company's profitability by comparing net earnings to the amount of money invested by equity investors. Investors and stock analysts pay close attention to the return on equity (ROE) ratio. A strong return on equity (ROE) ratio is frequently used to justify investing in a company's stock. Companies with a high return on equity are more likely to produce cash internally and borrow less money.

ROE = Net Income / Shareholders' Equity

Factors	2019	2020	2021	2022	2023
TATA	9.14	-47.90	-19.13	-24.34	-25.67
MAHINDRA	14.37	24.01	3.86	0.77	12.66

To Analyse the Efficiency of the Companies

i) Asset Turnover Ratio

The asset turnover ratio compares a company's asset value to its sales or profit value. It is a metric that assesses a corporation's efficiency in generating money from its assets. A corporation's asset turnover ratio measures its capacity to produce profits from its assets. The asset turnover ratio becomes more efficient as it increases. A low asset turnover ratio, on the other hand, indicates that a company is not maximizing the revenue potential of its assets.

Asset turnover ratio = net sales / average total sales

Factors	2019	2020	2021	2022	2023
TATA	88.91	98.28	81.04	0.16	0.23
MAHINDRA	67.11	64.09	45.13	44.62	0.49

ii) Inventory Turnover Ratio

Inventory turnover is a financial indicator that quantifies the frequency with which a company's inventory is sold and replenished over a specific time period. The time required to sell existing inventory is calculated by multiplying the period in days by the inventory turnover formula. A higher inventory turnover is preferable since it implies that a company can sell its products rapidly and that there is a significant demand for them in the marketplace.

Inventory Turnover Ratio = Cost of Goods Sold/ Average Inventory

Factors	2019	2020	2021	2022	2023
TATA	6.99	0.58	0.85	0.93	0.98
MAHINDRA	9.86	8.58	6.78	6.78	5.23

V. FINDINGS & SUGGESTIONS

- **Current Ratio:** Operating cycle performance, or the capacity to transform output into cash, is an area where M&M outperforms Tata Motors. Payment of receivables on schedule or an extremely high inventory turnover rate could place Tata Motors in a perilous financial position.

- **Quick Ratio:** M&M is more capable of paying off short-term debtors with short-term assets than Tata Motors.
- **Debt to equity Ratio:** Tata Motors has been more aggressive in using debt to fund its expansion than M&M, as shown by a higher debt-to-equity ratio. Profitability may suffer as a result of the increased interest expense.
- **Interest coverage Ratio:** Tata Motors' ability to pay interest could become an issue. When the interest-to-principal payment ratio equals one, Tata Motors will only pay the lender interest. M&M believes the corporation can easily afford its interest expenses.
- **Gross Profit Margin:** A low profit margin would have prohibited Tata Motors from covering existing operations, let alone future costs. Alternatively, M&M Motors outperformed Tata Motors on gross profit margin, which was already satisfactory.
- **Operating Profit Margin:** A bigger operating margin indicates that the company is profitable enough to cover all of its operational costs. M&M Motors has a competitive advantage over Tata Motors since an operating margin of more than 15% is considered satisfactory.
- **Net Profit Margin:** If Tata Motors' net profit margin had been low, the business would have had insufficient funds to cover its operational costs and other expenses, let alone invest in its future. Despite being superior, M&M Motors had a low net profit, as opposed to Tata Motors' negative net profit margin.
- **Return on Assets**: M&M's ROA shows that invested capital generated earnings, as opposed to Tata Motors' negative ROA. M&M's assets include equities and debt. Both of these funding options enable the firm to operate. M&M could put its money to better use if its return on assets (ROA) was higher. Better ROA may give investors the idea that M&M is making good use of its available funds. However, a lower ROA level is negative to Tata Motors because it is losing money as a result of increasing investments.
- **Return on Invested Capital:** The profit-to-investment ratio indicates the return on investment in rupees. Ideally, M&M, the ratio would be higher, ensuring that every rupee invested yielded a greater return. Investors in M&M use the ratio as one of numerous metrics to evaluate the company's resource management and long-term financing plans. They should never borrow money at a rate that is less than the estimated return on investment for the assets. Return on Invested Capital (ROIC), a long-term profitability statistic, demonstrates that M&M assets outperformed Tata Motors in terms of funding.
- **Return on Equity:** This ratio measures a company's profitability by comparing net income to average shareholder equity. The return on equity (ROE) ratio measures the profit that shareholders make from their investment in a company. A higher ratio% for M&M indicates that the company's management is making good use of its stock base and that investors are receiving a better return on their investment. Tata Motors is losing money due to its low return on equity. If we notice a large amount of value, it's conceivable that the company has been losing money for a long time, as equity capital declines with each loss.
- **Asset Turnover**: With a higher turnover ratio, Tata Motors was able to earn more income from a smaller pool of assets, demonstrating the company's success. However, due to its reduced turnover percentage, M&M may be underutilizing its resources.
- **Inventory Turnover Ratio:** Since goods deteriorate owing to poor sales, Tata Motors' low turnover served as a warning indicator. As a result, surplus inventory was stored at a warehouse. The high M&Ms ratio is a positive sign for sales.

SUGGESTIONS

- Some claim that in this period of fierce competition, the Indian automotive industry can only survive by expanding its product offerings, refining its market strategy, and decreasing costs through higher prices and more sales.
- In-depth research into the market shares and sales growth rates of Mahindra & Mahindra Motors and Tata Motors can help you grasp the competitive landscape. New product development, market penetration, and strategic relationship formation are all important revenue and profit growth drivers.

VI. CONCLUSION

A study of the working capital management strategies of three Indian automakers was done over a five-year period, from 2019 to 2023. During the period under consideration, the research discovered that both Mahindra & Mahindra Ltd. and Tata Motors Ltd. had positive working capital. The companies' financial accounts were compared, and their financial performance over time was assessed using ratio analysis. It turned apparent that the enterprises had obtained additional loans. The study discovered a favorable relationship between conversion period, good inventory management, and liquidity ratio, which enhanced companies' liquidity. By comparing the two companies' financial statements, we can see that Mahindra & Mahindra Motors had more cash on hand than Tata Motors, allowing them to pay their short-term debts as they came due. Creditors have less confidence in Tata Motors' long-term solvency because the firm looked to rely primarily on external funding for long-term borrowings. Profitability ratios for Mahindra & Mahindra Motors were higher than those for Tata Motors, indicating that M&M Motors made significant profits that benefited the company. Considering all of the data factors, it is evident that Mahindra & Mahindra Motors is far and by the market leader, notwithstanding Tata Motors' respectable performance. Because of the assurance of a constant and reliable return, investors would be more willing to take calculated risks with their investments.

REFERENCE

1. [Bhatia, V., & Mahajan, M. (2017). Financial analysis of Tata Motors Limited. International Journal of Research in Finance and Marketing, 7(2), 1-9.
2. Gopal, P. R. C.,& Thakkar, J. (2016). Sustainable supply chain practices: An empirical investigation on Indian automobile industry. Production Planning and Control, 27(1)
3. upta, S., & Gupta, A. (2019). A comparative study of financial performance of Tata Motors and Mahindra & Mahindra. Indian Journal of Commerce and Management Studies, 9(2), 47-53
4. Jain, V., & Sharma, R. (2020). Financial performance evaluation of Mahindra & Mahindra Limited. International Journal of Research in Commerce and Management, 10(7), 1-6.
5. Kumar, A., & Singh, J. (2020). Comparative study of financial performance of Tata Motors and Mahindra & Mahindra. International Journal of Engineering and Management Research, 9(4), 82-87.
6. Kathiravan, C., Palanisamy, V., & Mahalakshmi, P. (2020). Analysis of individual investor's perception towards performance of equity trading in India. Journal of Advanced Research in Dynamical and Control Systems, 11(7 Special Issue), 1022–1027.
7. Kathiravan, C., Rajasekar, A., Velmurgan, S., Mahalakshmi, P., & Chandramouli, E. (2022). Sentiment Analysis And Text Mining Of Online Customer Reviews For Digital Wallet Apps Of Fintech Industry. 12(03).
8. Pandey, I. M. (2005). Financial management (9th ed.). Vikas Publishing House.