

Leveraging Artificial Intelligence for Financial Performance Evaluation: A Comparative Study of Tata Motors and Mahindra & Mahindra

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Abstract

Monetary execution may be a pivotal figure that impacts a company's profitability, long-term practicality, and liquidity, and is additionally a key component of money related hazard administration. Monetary execution can be assessed utilizing relative adjust sheets, benefit and misfortune articulations, proportion investigation, slant examination and

so on. Budgetary results can be utilized to decide a company's victory. The essential concerns of an association are productivity and hazard.

All monetary choices that raise risk decrease the firm's esteem; on the other hand, budgetary choices that boost productivity increment the company's worth. Money related execution investigation is basic for a company's victory. The Monetary Articulation Examination distinguishes designs and linkages between monetary articulation items. Inside administration and outside monetary articulation shoppers (such as monetary investigators, banks, and financial specialists) must assess a company's execution, liquidity, and dissolvability. This think about utilized a

few budgetary and measurable strategies to look at the monetary perspectives of two Indian-made automobiles (TATA Engines and MAHINDRA & MAHINDRA Engines). The inquire about centers basically on auxiliary information from budgetary reports. This consider extend incorporates an examination of the short-term and long-term dissolvability of both vehicle firms, taken after by a survey of the companies' benefit and productivity to compare their money related proportions amid the final five a long time. Companies utilize manufactured insights in a assortment of ways to progress their money related execution, such as deciding short-term dissolvability, long-

Term dissolvability, working capability, offering, promoting administration.

Keywords: Short-term Solvency (CR, LR), Long-term Solvency (DER, ICR LR), Artificial Intelligence

I. INTRODUCTION

A. Tata Motors

Tata Engines, a mechanized steamroller producer, has long been a driving player within the worldwide mechanized division. Tata Engines has risen to prominence, much appreciated for a solid past, a remarkable share price direction, and a shining future outlook. In this web journal, we'll walk you through Tata Motors' past, present, and future, accentuating the benefits of contributing to this eminent firm along the way.

B. Present Performance of Tata Motors

Tata Engines has confronted a variety of challenges and opportunities. The company's National commercial vehicle division had illustrated adaptability, driven by requests from the development and coordination divisions.

Tata Motors had been propelling modern models at a fast pace within the traveller vehicle category, accepting great criticism from clients and industry experts. JLR has moreover performed well in major worldwide markets, profiting from a solid product portfolio and the worldwide demand for its luxury automobiles. It is crucial to perceive that the car division is energetic, with execution shifting from year to year.

C. Share Price of Tata Motors

Now, let's talk numbers. Tata Motors' share price has been a topic of interest for investors worldwide. The company's stock performance has seen its fair share of ups and downs, but it's essential to consider the broader economic context when assessing its share price.

As of September 28, 2023, the share price of Tata Motors was ₹614.90 on the National Stock Exchange (NSE) of India. The share price decreased by 0.85% or ₹5.25 from the previous day's of ₹620.15. The share price reached a high of ₹622.90 and a low of ₹612.25 during the trading hours. The total volume of shares traded was 6,361,864 and the total value of shares traded was ₹1,760 crore.

Tata Motors' stock price rose due to strong domestic performance and the popularity of JLR cars. However, stock prices can be affected by volatile effects and can affect many factors, including global economic conditions, industry trends, company-specific development, political, ecological, technical and demographic effects.

D. Upcoming Viewpoint

The future of Tata Motors seems promising, driven by a strategic focus on sustainability, invention, and enlargement, Electrical Vehicles etc. These are some key features of the company's upcoming viewpoint:

Electrical Vehicles

(EVs): Tata Motors has earned a lot of money on electric vehicle technology. The company has already introduced some of its most popular models and plans to expand its EV line in response to the growing global demand for eco-friendly mobility.

International Enlargement: Tata Motors continues to seek prospects for international expansion, leveraging its JLR brand to access new markets and strengthen its global footprint.

Product Invention: The company is committed to product innovation, with an emphasis on security, planning, and innovation.

This includes the advancement of progressed driver assistance systems and connected vehicle innovations.

Sustainability: Tata Motors is actively reducing its carbon footprint and promoting sustainability throughout its operations. This is consistent with the overall industry trend towards eco-consciousness.

Partnerships:

Tata Motors can develop strategic alliances and collaborations to strengthen business skills and accelerate growth. Such cooperation includes technology exchanges and joint ventures.

MAHINDRA & MAHINDRA LTD.

Mahindra & Mahindra Ltd. began as a steel trading company in 1945 and has since extended into a worldwide powerhouse with operations in over 100 nations. Nowadays, it is glad to be the world's biggest tractor firm by volume, accentuating its critical commitment to the development of India's agrarian industry. The company's broad impact ranges a wide extend of businesses, including car, horticulture, and technology.

Mahindra may be a solid companion for Indians, having been there at numerous of their life turning points. Mahindra's items, which extend from tough utility vehicles to cutting-edge tractors, have made a difference to millions of Indians in both urban and country zones, improve their lives and vocations. It is India's biggest SUV maker by revenue market share. In this comprehensive web journal, we are going see at Mahindra & Mahindra Ltd.'s history, advancement, imperative breakthroughs, and continued commitment to India's development and improvement

E. Artificial intelligence (AI) can be used in a diversity of behaviours in a company, together with:

Working proficiency: AI can automate repetitive tasks such as responding to customer service calls, processing insurance claims, and determining creditworthiness. This can save both time and resources.

Buyer involvement: AI can use predictive data to personalise customer messaging. For example, Nayka can propose things to Buyers based on their previous purchases.

Data-driven decision making

AI can procedure and analyse huge amounts of data to support companies make more informed decisions.

Cybersecurity

AI can display data input patterns to identify and avert cyberattacks.

Aptitude management

AI can centralize employee data to help companies manage human resource processes. This can help companies better understand their human resource needs.

Selling

AI can help advertising departments segment audiences and create targeted campaigns.

Employment

AI can help streamline the hiring process by analysing resumes, predicting job performance, and performing facial analyses during video interviews.

II. REVIEW OF LITERATURE

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Muathe, Stephen.

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Zhang, Xiao-Bing & Duc, Tran Phuong, Mutuc, Eugene Burgos & Tsai, Fu-Sheng.(2021). Mental Capital and Financial Execution: A Comparison to the Vietnamese Financial and Pharmaceutical Businesses. *Wildernesses of Psychology*. This consider examines the impacts of mental capital on budgetary execution in terms of return on assets (ROA) and return on equity (ROE), using Value-Added Mental Capital (VAIC) and its components: human capital effectiveness (HCE) and systemic

capital productivity (SCE) (ROE). Moreover, this paper analyzes the effect of budgetary and pharmaceutical firms.

Bansal, Dr. Rohit. (2015). (TCS), and Tech Mahindra were collected from databases such as Cash Control and Yahoo Back, among others. It is concluded that Infosys is the foremost alluring trade for speculators based on parameters such as return on shareholder value, current proportion, indebted person turnover proportion, benefits per share, and, most vitally, obligation value proportion. A comparative consider of money related execution investigation of chosen Indian IT companies from 2010 to 2014. The IUP Diary of Bookkeeping Investigate and Reviewing Hone. The reason of this study paper is to assess the money related and bookkeeping execution of the beat Indian IT businesses. Monetary and pay articulations for Infosys, Tata Consultancy Administrations

III. RESEARCH METHODOLOGY

The way or the procedure of researchers use to gather, evaluate, analysis, interpret and understand information to answer a research question.

A. OBJECTIVE OF THE STUDY

- 1- To analyse the short-term dissolvability position of both companies within the past 5 a long time.
- 2- To analyse the long-term dissolvability position of both companies over the past 5 a long time.

B. RESEARCH HYPOTHESIS

- 1-To find out that there is no significant difference in the financial performance of both the companies.

IV. SCOPE OF THE STUDY

The objective of this consideration is to look at the financial execution of two Indian automakers. The Indian vehicle division contributes essentially to the country's

GDP development (Net Residential Item). Developing innovation, COVID-19, and security benchmarks have all played a part in its advancement. It is additionally perceived that the progression of electric vehicles is clearing the way for their manufacturing. As a result, it shows that contributing to these ventures is beneficial.

SOURCE OF DATA (financial statement analysis)

Explanatory Investigation is the inquiry about the approach utilized in this ponder. This term paper speaks to 5 a long information, i.e., 2020, 2021, 2022, 2023, and 2024, obtained from the yearly report and examination of other backed financial statements of the company Tata Engines and Mahindra & Mahindra Engines.

V. LIMITATION OF THE STUDY

There are three critical restrictions in this examination that may be settled in the assist considerations. Firstly, the inquiry is based fundamentally on the company's yearly reports. Furthermore, the auxiliary data which has been assembled through the company's annual report can be some place, and finally, this inquiry is limited to a five-year term.

A. DATA REPRESENTATION AND INTERPRETATION

Statistics are essentially the realm of mathematics developed from the use of quantitative methods. Financial analysts and investors collect data on companies, markets, expectations, and volumes. This study used a statistical approach to determine the financial position of both organizations (Tata Motors and Mahindra & Mahindra Motors). The mean, the standard deviation, the variation coefficient, growth and annual growth for each ratio were calculated in a tabular format and specified to support the understanding of the data.

B. MEAN

The arithmetic mean is found by multiplying the sum of a numeric group by the number of numbers in the sequence. The average can be used to measure investment and long-term success of society. The arithmetic mean is the sum of all values divided into many numbers by the number in a collection.

$$\text{Mean} = \frac{x_1 + x_2 + \dots + x_n}{n}$$

C. Standard Deviation

The Standard deviation is one of the foremost commonly utilized measures for deciding the hazard of an speculation. The standard deviation is utilized to calculate advertise instability, which is the contrast between resource costs and their normal cost. Rates alter broadly; subsequently, the standard deviation is tall, showing that the venture is unsafe. A low standard deviation appears that costs are steady, which infers that ventures are low-risk.

$$\text{Standard deviation} = \sqrt{\sum (X - \bar{X})^2 / n - 1}$$

D. Coefficient Of Variation

The coefficient of variety (CV) may be a factual degree of the scattering of information focuses around the cruel in a data set. Indeed, when the implies of two information sets differ greatly, the coefficient of fluctuation may be a supportive metric for deciding the degree of variety between them. It refers to the proportion of the mean's standard deviation. The coefficient of change could be a monetary concept that permits financial specialists to decide how much vulnerability or chance is accepted in connection to the anticipated return on speculation. The higher the risk-return trade-off, the lower the standard deviation-to-mean return proportion.

$$\text{Coefficient of variation} = \text{standard deviation} / \text{mean}$$

To analyze the short-term solvency position

The ease with which cash can be gotten to pay bills and other short-term commitments is known as liquidity. Stocks and bonds are illustrations of fluid resources, with cash being the foremost liquid.

A liquidity proportion may be a sort of money related measurement that measures a company's capacity to meet short-term credit commitments. The pointer is utilized to decide whether a company's existing resources, or fluid resources, can pay its current liabilities.

A. Current Ratio

The current proportion may be a prevalent commerce marker that measures a company's short-term liquidity in connection to accessible resources and extraordinary liabilities. To put it another way, it evaluates a company's capacity to procure adequate stores to meet all of its obligations as they drop due. It could be a worldwide pointer for evaluating a company's generally money related health. The current proportion is inferred utilizing two essential markers from a company's adjust sheet, which are detailed quarterly and every year: current resources and liabilities. On a company's adjust sheet, current resources contain cash, accounts receivable, stock, and other resources that are anticipated to be exchanged or changed over into cash inside a year. Current liabilities incorporate accounts payable, pay rates, charges owed, short-term obligation, and the current portion of long-term obligation. The more noteworthy the proportion, the more fluid the company; the foremost common suitable current proportion is 2, which shows a sound money related state for the larger part of enterprises. Low current ratios (less than one) recommend that a company will battle to meet its current commitments. In any case, to secure distant better; a much better; a higher; a stronger; an improved" > a distant better understanding of a company's liquidity, an investigator ought to see at its working cash flow. A high working cash stream can back a low current proportion. If the current proportion is as well tall (more than 2), the association may not be making the most excellent utilize of its current resources or short-term borrowing offices. This might possibly recommend a trouble with working capital administration.

$$\text{Current ratio} = \text{Current assets} / \text{Current liabilities}$$

Table 1

Years	Tata Motors	Mahindra & Mahindra Motors
2020	0.85	1.19
2021	0.93	1.4
2022	0.97	1.34
2023	0.44	1.29
2024	0.97	1.3

Source: Annual Reports of Tata Motors and Mahindra & Mahindra Motors

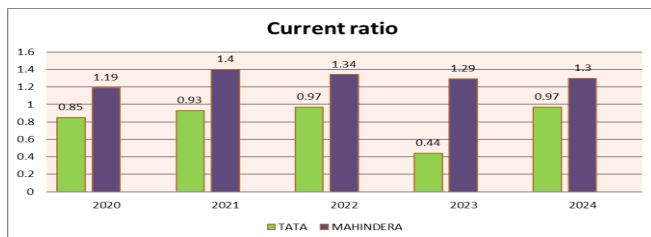
Table 2

Statistical Tools	Tata Motors	Mahindra & Mahindra
Mean	0.83	1.3
Standard Deviation	0.22	0.07
Coefficient of Variation(%)	26.98	5.9

Source;

<https://www.topstockresearch.com/rt/Financial/TATAMOTORS/CurrentRatio#:~:text=Current%20Ratio%20with%20value%20of,0.835%20in%20last%20five%20years.>

Fig.1



B. Quick Ratio

The speedy proportion evaluates a company's capacity to fulfill short-term commitments utilizing its most fluid resources and gives data approximately its short-term liquidity position. It is additionally known as the corrosive test proportion since it appears a company's capacity to rapidly pay down current liabilities with near-cash assets. A great liquidity proportion is seen as a degree of an organization's competence since it advances sound firm execution, which can contribute to long-term development. Moneylenders, providers, and speculators utilize the speedy ratio to examine on the off

Chance that a

company's fluid resources are adequate to fulfill its short-term liabilities. The perfect speedy proportion is

1:1, demonstrating that

the enterprise has sufficient resources on hand that can be sold quickly to meet current liabilities. In the event that the quick ratio is less than one, the enterprise will be incapable of paying off any of its current liabilities within the close future. In case the proportion surpasses one, the company has sufficient fluid resources to pay off its display indebted individuals instantly.

Quick Ratio = Liquid assets / Quick liabilities

QR = Cash and cash equivalents + marketable securities + accounts receivable/ Current liabilities

QR = Current assts – inventory – prepaid expenses / Current liabilities

Table 3

Years	TATA MOTORS	MAHINDRA & MAHINDRA
2020	0.58	0.98
2021	0.7	1.22
2022	0.74	1.13
2023	0.32	1.06
2024	0.69	1.05

Source: Annual reports of Tata motors and Mahindra & Mahindra Motors

Table 4

Statistical Tools	Tata Motors	Mahindra & Mahindra
Mean	0.6	1.08
Standard Deviation	0.17	0.09
Coefficient of Variation (%)	28.14	8.35

Source:

<https://www.topstockresearch.com/rt/Financial/TATAMOTORS/QuickRatio>

<https://www.topstockresearch.com/rt/Financial/M&M/QuickRatio#:~:text=Quick%20Ratio%20of%20M%26M%20trending,1.09%20in%20last%20five%20years..>

Fig 2.

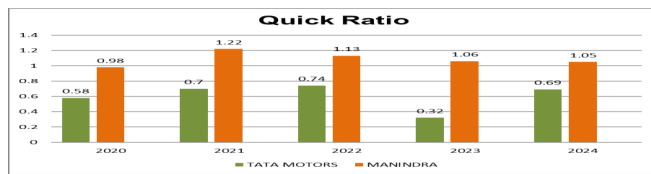
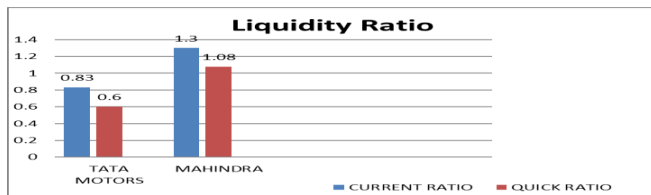


Fig 3.



Current Ratio: M&M's operating cycle performance, or its ability to convert output into cash, is higher than Tata Motors. Tata Motors could face cash flow problems if its receivables aren't paid on time, or if its inventory turnover is too high.

Quick Ratio: M&M's capacity to meet short-term liabilities with short-term assets is greater than Tata Motors.

To analyze the long-term solvency position of a company, one of a few execution measurements that check how much cash is inferred from obligation (credits) and survey a company's capacity to meet its money related commitments. The use proportion category is vital since businesses utilize a combination of stock and obligation to bolster their operations, and knowing how much obligation a firm has can help decide on the off chance that it'll be able to reimburse its credits when they are due.

C. Debt To Equity Ratio

Segment a company's include up to liabilities by its shareholder equity to calculate the debt-to-equity (D/E) ratio. These data appear on a company's alter sheet in its budgetary statements. The extent to which a company chooses its cash. Solidify finance, the D/E extent is an imperative metric. It appears how escalation a company depends on its commitment to back its operations rather than wholly-owned savings. In the event of an exhibit downturn, it shows the availability of shareholder equity to repay all outstanding debts. The debt-to-equity proportion ought to be between 1 and 1.5. A tall debt-to-equity ratio demonstrates that a company depends on debt to bolster its development. Companies that contribute intensely to their buildings and operations have a more noteworthy debt-to-equity ratio. A debt-to-equity ratio regularly shows that the organization does not utilize debt to support operations. If a company's obligation intrigued rates surpass its return on speculation, it features a negative obligation to value proportion. A company with a negative net worth will have a negative debt-to-equity ratio.

Debt to Equity Ratio = Total Debt / Shareholders' Equity

Table 5

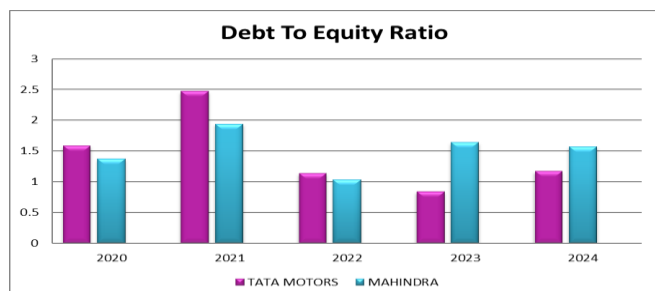
Years	Tata Motors	Mahindra& Mahindra
2020	1.58	1.37
2021	2.47	1.94
2022	3.13	1.03
2023	0.84	1.64
2024	1.17	1.57

Source: Annual reports of Tata Motors and Mahindra & Mahindra Motors

TABLE 6

Statistical Tools	Tata Motors	Mahindra & Mahindra
Mean	1.83	1.51
Standard Deviation	0.94	0.33
Coefficient of Variation (%)	51.37	22.34

Fig 4.



D. Interest To Coverage Ratio

The intrigued scope proportion could be a metric that measures a company's capacity to oversee obligation. It is one of several debt proportions that can be utilized to assess a company's budgetary wellbeing.

A tall intrigued scope proportion is esteemed by showcase in vestigators and speculators since a organization cannot develop or indeed live unless it can pay the intrigued on its display commitments to banks. A moo intrigued scope proportion increments the probability that a organization may be incapable to benefit its obligation, putting the company at threat of insolvency. To put it another way, a moo intrigued scope proportion demonstrates that there's a little sum of profit accessible to cover the debt's intrigued costs.

A tall proportion appears that the company has sufficient profit to reimburse the obligation, but it may moreover recommend that the debt is being abused. For case, in the event that a company does not borrow sufficient, it'll be incapable to contribute in unused it ems and innovation vital to stay competitive over time.

Interest coverage ratio = earnings before interest, taxes, depreciation and amortization / interest expenses

Table 7

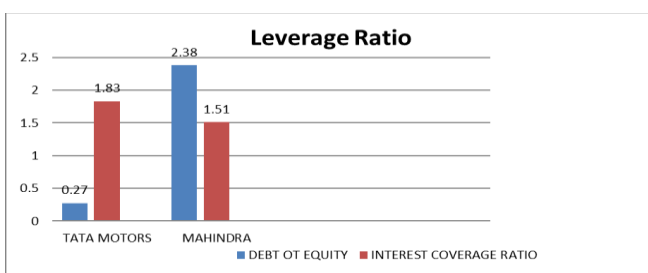
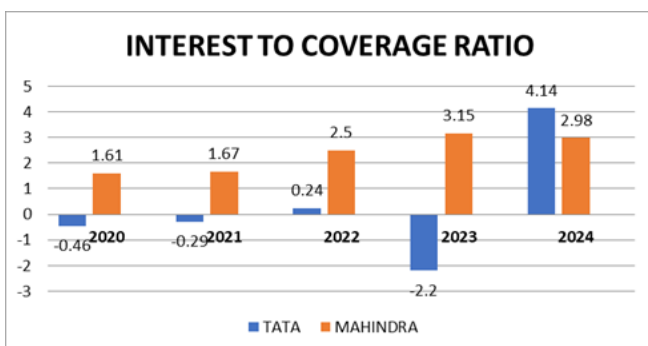
Years	Tata Motors	Mahindra& Mahindra
2020	-0.46	1.61
2021	-0.29	1.67
2022	-0.24	2.5
2023	-2.2	3.15
2024	4.14	2.98

Source: Annual reports of Tata Motors and Mahindra & Mahindra Motors

Table 8

Statistical Tools	Tata Motors	Mahindra & Mahindra
Mean	0.27	2.38
Standard Deviation	2.31	0.71
Coefficient of Variation (%)	818%	37.20%

Figure 5:



Obligation to value Proportion:

Tata Motors' tall debt/equity proportion compared to M&M demonstrates that the company has been forceful in utilizing debt to finance its development. Due to the additional intrigued taken a toll, this might result in unsteady earnings.

Interest Scope Proportion: Tata Motors' capacity to meet intrigued charges may be a stress. When the intrigued scope proportion is one, Tata Engines will, as it were, pay the intrigued and not the central to the loan specialist. M&M, on the other hand, appeared that the enterprise might effortlessly handle intrigued costs.

E. Hypothesis Testing

The Speculation states that there is no critical contrast within the budgetary execution of Tata Motors and Mahindra & Mahindra Motors.

We utilize data-test on Exceed expectations to confirm the over theory, and the results appear underneath.

Table 9

<i>t-Test: Two-Sample Assuming Unequal Variances</i>		
	Tata Motors	Mahindra and Mahindra Motors
Mean	0.83	1.3
Mean	2.33454545	8.220909091
Variance	32.7828473	39.75026909
Observations	11	11
Hypothesized Mean Difference	0	
DF	20	
t Stat	-2.2923201	
P(T<=t) one-tail	0.01643306	
t Critical one-tail	1.72471822	
P(T<=t) two-tail	0.03286611	
t Critical two-tail	2.08596344	

At 5% significance level

The computed T esteem from the over table is -0.2923 and 0.0328 is the P esteem. Ready to deduct from these two parameters that the result isn't critical at pThe null hypothesis H0, in other words, is accepted. As a result, we can infer that there is no significant difference in the financial output of Tata Motors and Mahindra & Mahindra Motors.

V. RESULTS AND DISCUSSION

A. Major Findings

For the time period beneath thought, there's no significant contrast within the financial results of Tata Motors and Mahindra & Mahindra Motors, as the p esteem is 0.7040, which is more prominent than the significance level of 5%.

B. Discussions And Suggestions

A financial specialist can construct a position in Tata Motors at a time when the company's valuation is lower. Mahindra and Mahindra has routinely beaten its partners, despite the fact that at a slower rate of development.

C. Artificial Intelligence

Business holders use artificial intelligence for cybersecurity and fraud management.

Artificial intelligence website traffic is troubled for one in four businesses.

Almost all (97%) trade holders accept that ChatGPT will offer assistance to their business. One in three businesses plan to utilize ChatGPT to compose site content, whereas 44% arrange to utilize ChatGPT to type in content in other languages.

Approximately half (46%) of business owners use AI to craft internal communications.

Over 40% are concerned about an over-dependence on technology due to AI use.

Roughly two-thirds (64%) of commerce proprietors believe AI will improve client connections.

VI. CONCLUSION

Based on a comparison of Tata Motors' and Mahindra & Mahindra Motors' financial execution, it can be concluded that M&M Motors' liquidity situation was solid, while Tata Motors' was insufficient, indicating the firms' capacity to fulfill short-term commitments on time. Tata Motors' long-term dissolvability is lower, implying that the organization depends more on outside cash for long-term borrowings, resulting in a lower level of security for lessees. Mahindra & Mahindra Engines have more prominent benefit rates than Tata Engines. Mahindra & Mahindra Engines created an enormous benefit, which is accommodating to the company. After taking into consideration all of the components included in this information, it has been determined that Tata Motors' yield is nice, even though Mahindra & Mahindra Engines continues to rule the advertise. As a result, stockholders will take risks with their investments. They will get a solid return on their speculations, which is able to be secured and steady.

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