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Impact of Financial Leverage on Financial Performance of Tyres And Allied Companies Using Dupont Analysis

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Abstract
The study explores the impact of financial leverage on the financial performance of Tyre and Allied Companies in India, which is a critical segment of the manufacturing sector. The research pivot on the relationship between financial leverage (measured by the Debt-to-Equity Ratio (D/E) and Interest Coverage Ratio (ICR)), and financial performance, (assessed through Return on Assets (ROA) and Return on Equity (ROE)). The study uses data from eight listed companies over five years (2019-20 to 2023-24), and employs descriptive statistics, correlation analysis, and multiple regression models for data analysis. The findings of the study reveal that Debt-to-Equity Ratio (D/E) has a weak and insignificant impact on both ROA and ROE, suggesting that debt levels do not significantly influence profitability in this sector. However, the Interest Coverage Ratio (ICR) shows a strong positive correlation with both ROA and ROE, connoting that companies with higher earnings comparative to interest expenses perform better financially. Additionally, the DuPont analysis spotlights that profitability (Net Profit Margin - NPM) is the primary driver of ROE, with asset turnover and financial leverage playing subsidiary roles. The study concludes that Tyre and Allied Companies should prioritize enhancing profitability and managing interest expenses rather than increasing financial leverage to enhance financial performance. The findings of the study provide valuable insights for managers and policymakers in the industry, emphasising the importance of operational efficiency and financial stability over debt financing.

Keywords: *Financial Leverage, Financial Performance, Tyre Industry, DuPont Analysis, Interest Coverage Ratio.*

1. Introduction
A key segment of India's manufacturing sector, the tyre and allied industry contributes significantly to its economic growth. Globally, India has emerged as a hub for tyre production and exports due to its rapid growth. The factors like growth of Automobile industry, rise in disposable income, and urbanization have helped fuel tyre demand. A wide range of products are manufactured by India's tyre industry, including tyres for passenger vehicles, commercial vehicles, two-wheelers, and off-road vehicles. The leading players of the sector have adopted advanced technologies and innovations to enhance performance, durability, and environmental sustainability. Moreover, the Tyre manufacturers are aligning with global standards by introducing radial tires, tubeless tires, and eco-friendly materials. "Make in India" initiatives and incentives for electric vehicles (EVs) have further accelerated the sector's growth. The allied industries, namely, Tubes, flaps, retreading materials, and related accessories complement the tyre market by enhancing functionality and extending lifespan. India enjoys strategic geographic location, coupled with its cost-competitive manufacturing base, making it an attractive source of tyres for export. The major players like MRF, Apollo Tyres, and CEAT in the industry have expanded their global footprint, strengthening India's international presence. Despite of various challenges like competition from foreign brands and raw-material price volatility, the Indian tyre and allied industry continue to innovate and adapt to evolving market. A growing investment in

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infrastructure, research and development, and green manufacturing practices contribute to propel the industry to move forward. The tyre and allied industry support several other industries, like automotive, aviation, and agriculture. This industry, characterized by its capital-intensive nature, needs substantial investment in manufacturing facilities, research and development, and raw materials. Further, the cyclical demand, influenced by economic growth, fuel prices, and technological advancements, makes its financial structure complex. Hence, being a capital-intensive industry, financial leverage arouses to be a critical factor in determining the financial strategies for the companies operating in this sector. Companies often depend on debt financing to fund their significant capital expenditure and to sustain their operations during periods of fluctuating demand. Financial leverage being a two-edge sword allows firms to expand their production capacity, achieve economies of scale and invest in advanced technologies and at the same time, excess reliance on debt financing can lead to financial distress, especially during economic downturns.

2. Review of Literature

2.1 Financial Leverage: Concepts and Theoretical Foundations

The MM theorem (1958) is the basic theoretical foundation upon which the idea of financial leverage rests. The theory states that firm value is unaffected by its capital structure if there is perfect market with no taxes, information asymmetry and bankruptcy cost. But, in reality, the market is imperfect with the existence of taxes, agency problems and bankruptcy costs. Hence, there is limited applicability of the theory. The second preposition of MM theorem (1963) included corporate taxes, stating that the debt capital through its tax shield can enhance the firm value. In 1973, Kraus & Litzenberger proposed the theory of Trade-off, stating that benefit from tax shield on debt is traded-off by the increase in bankruptcy cost resulting from high debt capital. The theory of Pecking order by Myers & Majluf, 1984, also favours the trade-off theory and identifies that the firms always prioritize internal financing. Debt capital is opted only in case of insufficient internal funds.

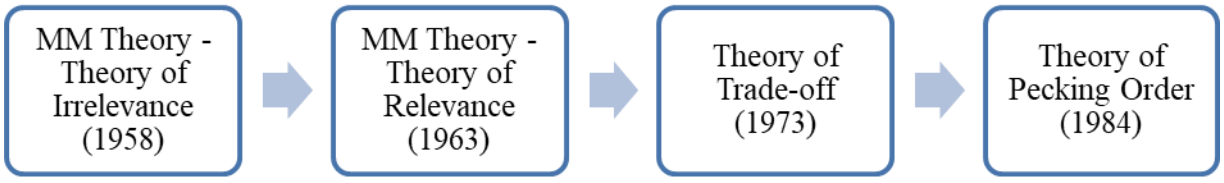

Figure 1 Concepts and Theoretical Foundations

Modiglani-Miller Approach (MM) Proposition I *(1958):* The Proposition I deal with the situation where in there are no taxes. This proposition says that the capital structure is irrelevant to the value of a firm. The value of two identical firms would remain the same, and value would not be affected by choice of finance adopted to finance the assets. The value of a firm is dependent on the expected future earnings. The MM approach posits that in a perfect capital market, the value of a firm is determined solely by its investment decisions and not by the way it chooses to finance those investments. **Modiglani-Miller Approach (MM) Proposition II (1963):** The Proposition II deal with the situation where in tax information is given. This proposition says that the financial leverage boosts the value of a firm and reduces WACC. The Modigliani-Miller (MM) approach with taxes incorporates corporate taxes into their original theory, recognizing that taxes can impact the value of a firm and its optimal capital structure.

Theory of Trade-off (1973): The revised MM approach aligns with the trade-off theory of capital structure, which suggests that firms weigh the benefits of debt (tax shield) against the costs (financial distress, agency costs) when determining their optimal level of leverage. Firms will aim to strike a balance between debt and equity financing to maximize firm value.

Theory of Pecking Order (1984): The trade-off

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theory also incorporates elements of the pecking order theory, which suggests that firms have a preference for internal financing (retained earnings) over external financing (debt and equity). When internal funds are insufficient to finance investment opportunities, firms prefer debt financing over equity issuance due to the asymmetry of information and signaling concerns. Table 1 shows Findings by Different Authors.

2.2 Financial Leverage and Financial Performance

Table 1 Findings by Different Authors

S.No	Authors and Year	Findings
1	Rehman (2013)	DER negative with EPS, NPM and ROE and positive with ROA and sales growth of Pakistan listed sugar companies
2	Ali (2014)	Financial leverage (DE) and financial performance (ROA, ROCE, ROE, NPM) had a positive relationship in Pakistan listed Chemical Companies.
3	Jose (2017)	Negative correlation between Leverage and FP of Indian cement companies.
4	Sahni and Kulkarni (2018)	Strong relationship among OPM, CR and DER exists. NPM, QR and FL had a weak relationship in "DLF Ltd, Construction & Contracting- Real Estate Company" in India
5	Abubakar (2020)	STDR and LTDR have no effect on ROE but TDER affects ROE negatively of Nigerian oil and gas companies.
6	Rajamani (2021)	There presents a little impact between ROA, ROE, Gross Profit Margin and short-term, long-term Debt of Indian SMEs Listed in BSE-SME Platform
7	Henny Setyo Lestari (2021)	Significant positive impact of DER on ROA and ROE but, significant negative impact on ROA, but significant positive impact on ROE. The interest coverage and cash coverage ratios does not affect ROA and ROE.
8	Aaisha Khalaf Salim Alabri, Lubab Said Sulaiman Almanthri, EssiaRies Ahmed (2021)	The board size and the company size, has a positive impact on performance. Whereas the third variable, Leverage, showed a significant negative link between leverage and performance of the firms (ROA and ROE).
9	Randika (2022)	No relationship within financial leverage, profitability and liquidity. But debt ratio and asset management performance have a positive bond of investment trust companies listed in Sri Lanka.
10	Musavvira, Mansoor (2022)	TCS displayed a positive trend in gross profitability. In contrast, Infosys, Wipro, & HCL experienced negative growth rates during the examined period.
11	Akhtar, M., Yusheng, K., Haris, M. et al. (2022)	An increase in the financial leverage of Pakistani listed companies increases their performance up to a certain level, and after that, a further increase in financial leverage decreases their performance. The results further suggest that STDL is a main contributing source of debt that causes a higher risk of refinancing for companies and thus negatively affects performance.
12	Het Soni, Miti Soni, and Prof. Sonakshi Sharma (2023)	The Infosys company heavily rely upon internal funds. The study also found that the net profit ratio is showing a decreasing trend which can be improved with the use of debt capital in its capital structure.

Source: Authors Own Compilation

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2.3 Research Gap

Many studies have been made using Ratios, ROA, EPS, DPS, DYR, ROE to study the impact of financial leverage on financial performance of companies from Automobile, power, pharmaceutical, Oil and gas industries. But Tyre and allied industry is not yet studied. Further, there are very limited studies made using Dupont Analysis. Hence, to close these gaps, the study explores the Tyre and Allied companies with Dupont Analysis. Accordingly,

3. Objectives

3.1 The Objectives and Hypotheses Formulated Are as Follows

- To find out the impact of financial leverage on financial performance of Tyre and Allied companies.
- To identify the contribution of value drivers to the ROE of select Indian Tyre and Allied Companies.

3.2 Hypothesis

- **H01:** There is no impact of financial leverage on the financial performance of select Indian Tyre and Allied Companies.
- **H02:** There is no significant contribution of Net Profit Margin, Total Asset Turnover Ratio and Equity Multiplier to the ROE of select Indian Tyre and Allied Companies.

4. Limitations

The study considers the following limitations:

- The study is based purely on the secondary data.
- The study is limited to only Tyres and Allied companies and covers only past five years data.

5. Research Methodology

5.1 Data Source

The study initially included all 10 Tyre and Allied Companies listed on Bombay Stock Exchange. Later 2 companies were excluded which had zero debt capital. The data from 2019-20 to 2023-24 were studied. The study period includes the most recent five years. The required data was gathered from the website of the companies, BSE and Moneycontrol. The statistical package used was Data Analysis package of MS-Excel and Gretl. Table 2 shows Description of the Variables used for the Analysis.

5.2 Variables

Table 2 Description of the Variables Used for the Analysis

SL.NO	VARIABLE	NATURE OF VARIABLE	DESCRIPTION
1	Debt-Equity Ratio	Independent Variable	Long-Term Debt/Shareholders' Equity
2	Interest Coverage Ratio	Independent Variable	Earnings Before Interest and Tax / Interest
3	Return on Equity (ROE)	Dependent Variable	Profit After Tax/Shareholders' Equity
4	Return on Assets (ROA)	Dependent Variable	Net Income/Total Assets
5	Net Profit Margin (NPM)	Independent Variable (For DUPONT Analysis)	Net Income/Net Sales
6	Assets Turnover Ratio (ATR)	Independent Variable (For DUPONT Analysis)	Net Sales/Total Assets
7	Equity Multiplier (EM)	Independent Variable (For DUPONT Analysis)	Total Assets/Total Equity

Source: Author's own compilation

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5.3.1 Financial Performance Is Measured by

Dependent Variables:

- Return on Equity
- Return on Assets

Independent Variable:

- Debt/Equity Ratio
- Interest Coverage Ratio

5.3.2 Value Drivers to The ROE Is Measured By:

Dependent variable:

- Return on Equity (ROE) = NPM*TATR*EM

Independent variable:

- Net Profit Margin (NPM),
- Total Asset Turnover Ratio (TATR) and
- Equity Multiplier (EM)

5.3 Framed Model

The developed Multiple Regression model to find the impact is as follows:

$$Y = \alpha + \beta 1X1 + \beta 2X2 + e$$

Where, Y = Dependent variable; X1, X2 = Independent variables; α= Constant term; β1, β2 = Coefficients to the regression model and e = Error term. Thus, the Multiple Regression Models framed for the study are:

$$ROA = \alpha + \beta_1 DER_1 + \beta_2 ICR_2 + e$$
$$ROE = \alpha + \beta_1 DER_1 + \beta_2 ICR_2 + e$$

6. Results

6.1 To Study the Impact of Financial Leverage on Financial Performance of the Select Indian Tyres and Allied Companies

The impact of financial leverage on financial performance is studied with the help of Descriptive statistics, correlation and Multiple Regression.

Table 3 Descriptive Statistics

	ROA	*ROE*	*D/E*	*ICR*
Mean	4.45325	9.4485	1.5	18.2355
Standard Error	0.5824993	0.929436937	0.326638277	7.995893673
Standard Deviation	3.684049046	5.878275323	2.065841854	50.57047187
Variance	13.57221737	34.55412077	4.267702564	2557.372625
Skewness	1.321146471	0.84144866	2.134917881	3.657760021
Observation	40	40	40	40

Source: Computed Data

From table 3, it is clear that the Tyre and allied industry uses 1.5 times of debt in its capital structure. Mean of all the variables are higher than their standard deviation, so they are closely related. The variance of all the variables is higher than their mean value, so there is no consistency in the variables. ICR has the highest variability (Variance = 2557.37), meaning it fluctuates significantly among the observations. D/E has a relatively lower standard deviation but still shows notable dispersion. All variables are positively skewed, meaning they have a right-tailed distribution. Table 4 shows Financial Leverage and Financial Performance (Correlation).

Table 4 Financial Leverage and Financial Performance (Correlation)

	ROA	ROE	D/E	ICR
ROA	1			
ROE	0.839524376	1		
D/E	-0.246029992	-0.115739256	1	
ICR	0.748244365	0.532508483	-0.186826656	1

Source: Computed Data

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On the analysis of the above Correlation table, the following relationships among the variables may be derived.

6.1.1 ROA vs. D/E (-0.2460)

There is a Negative Correlation between ROA and D/E suggesting that companies with higher Debt-to-Equity (D/E) ratios tend to have slightly lower ROA. Higher leverage may increase financial risk, which could reduce profitability.

6.1.2 ROA vs. ICR (0.7482)

There is a Strong Positive Correlation between the variables indicating that companies with higher ROA tend to have better Interest Coverage Ratios (ICR). Higher profitability (ROA) allows companies to cover their interest expenses more comfortably.

6.1.3 ROE vs. D/E (-0.1157)

There is a Weak Negative Correlation suggesting that companies with higher D/E ratios tend to have slightly lower ROE. The relationship is weak, indicating that leverage does not strongly impact ROE in this dataset.

6.1.4 ROE vs. ICR (0.5325)

There is a Moderate Positive Correlation indicating that companies with higher ROE tend to have better ICR. Higher returns to shareholders (ROE) are associated with stronger solvency (ICR).

6.1.5 D/E vs. ICR (-0.1868)

There is a Weak Negative Correlation suggesting that companies with higher D/E ratios tend to have slightly lower ICR. Higher leverage may strain a company's ability to cover interest expenses. Table 5 shows Financial Leverage and Financial Performance (Regression) Dependent variable: ROA.

Table 5 Financial Leverage and Financial Performance (Regression) Dependent variable: ROA

	Coefficient	Std. Error	t-ratio	p-value	
const	3.78103	0.525534	7.195	<0.0001	
DE	−0.196308	0.195337	−1.005	0.3214	Insignificant
ICR	0.0530112	0.00797967	6.643	<0.0001	Significant
R-squared					0.571564
Adjusted R-squared					0.548406
F-Statistic					24.68035

Source: Computed Data

The co-efficient of determination (R^2) with a value of 0.57 shows that about 57% of the total systematic variations in the dependent variable (ROA) is due to the explanatory variables taken together. The adjusted R-square shows that after adjusting for the degree of freedom, the model could still explain about 55% (0.55) of the total systematic variations in ROA is explained by the independent variables in the model. D/E has no significant relation with ROA. For every one-unit increase in the Debt-to-Equity Ratio (DE), ROA decreases by 0.196308, holding all other variables constant. However, the p-value (0.3214) is greater than 0.05, indicating that this relationship is not statistically significant. Table 6 shows Financial Leverage and Financial Performance (Regression).

Table 6 Financial Leverage and Financial Performance (Regression) Dependent variable: ROE

	Coefficient	Std. Error	t-ratio	p-value	
const	8.39830	1.08415	7.746	<0.0001	
DE	−0.0479184	0.402969	−0.1189	0.9060	Insignificant
ICR	0.0615327	0.0164616	3.738	0.0006	Significant
R-squared					0.283839
Adjusted R-squared					0.245128
F-Statistic					7.332180

Source: Computed Data

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The co-efficient of determination (R^2) with a value of 0.28 shows that about 28% of the total systematic variations in the dependent variable (ROE) is due to the explanatory variables taken together. The adjusted R-square shows that after adjusting for the degree of freedom, the model could still explain about 26% (0.26) of the total systematic variations in ROE is explained by the independent variables in the model. D/E has no significant relation with ROE. Since ICR is statistically significant, companies looking to improve ROE should prioritize maintaining or improving their interest coverage ratio. This could involve reducing debt, increasing earnings, or refinancing at lower interest rates. While DE has a negative coefficient, its lack of statistical significance suggests that it may not be a strong predictor of ROE in this context. However, it's worth investigating further, as high leverage could still pose risks in certain scenarios.

6.2 To Identify the Contribution of Value Drivers to The ROE of Select Indian Tyre and Allied Companies

DuPont Model helps to control the value drivers" operation to improve Return on Equity. Accordingly, to the correlation classification given by Garrett, H.E., the relationship between Return on Equity and its value drivers were identified. With the help of relationship values and significance level, the major contributing value driver of Return on Equity was identified for each company. The objective is analysed and presented under the following headings:

6.2.1 Company-Wise Dupont Analysis

The DuPont Analysis breaks down Return on Equity (ROE) into three components: Net Profit Margin (NPM), Total Asset Turnover Ratio (TATR), and Equity Multiplier (EM).

DuPont Formula:

ROE = Net Profit Margin (NPM) × Total Asset Turnover Ratio (TATR) × Equity Multiplier (EM)

Where:

- **Net Profit Margin (NPM):** Measures profitability (how much profit a company generates from its revenue).
- **Total Asset Turnover Ratio (TATR):** Measures efficiency (how well a company uses its assets to generate revenue).
- **Equity Multiplier (EM):** Measures financial leverage (how much debt a company uses to finance its assets). Table 7 shows Dupont Analysis.

Table 7 Dupont Analysis

Sl.No	Company Name	Avg. NPM	Avg. TATR	Avg. EM	Avg. ROE
1	TVS Srichakra Ltd.	3.14	1.26	2.22	**8.78**
2	Krypton Industries Ltd.	2.46	0.516	1.795	**2.283**
3	MRF Ltd.	6.344	0.776	1.638	**8.068**
4	CEAT	3.088	1.04	2.648	**8.507**
5	Tolins Tyres Ltd.	2.882	1.056	6.195	**18.85**
6	JK Tyres and Tubes	2.846	0.882	2.987	**7.498**
7	Balkrishna Industries Ltd	16.826	0.784	1.479	**19.516**
8	Apollo Tyres Ltd.	3.846	0.654	2.044	**5.142**

Source: Computed Data

From the above table, it is revealed that Balkrishna Industries Ltd. has a highest value of ROE, while Krypton Industries Ltd. has a lowest value of ROE which is mainly due to lowest Asset Turnover ratio. Balkrishna Industries Ltd. leads in ROE due to strong profitability. Tolins Tyres Ltd. has a high ROE, but its extreme leverage could be a risk factor. TVS Srichakra and CEAT show a balance between

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profitability, asset utilization, and leverage. Krypton Industries Ltd. has the weakest performance due to low asset turnover and profitability.

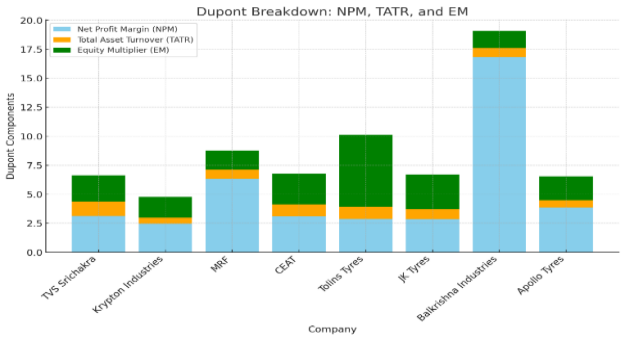

Figure 2 Dupont company and component wise Breakdown
Source: Computed Figure

6.2.2 Relationship between ROE and its value drivers

The parametric technique used to compute the strength of the link between variables is Karl Pearson's product-moment correlation (r) or bivariate data. The direction and magnitude of the relationship are revealed by correlation coefficients, varying over the range of +1 through 0 to -1. The relationship also serves as a basis for prediction and estimation weather a positive influence ('+' facilitation) and a negative influence ('_' debilitation) exist. A cause-and-effect link within ROE, NPM, TATR and EM is established using DuPont analysis. The correlation coefficient classifications given by Garrett. H.E (P 210) are as follows (Devi, 2015):

- to ± 0.20 Negligible
- ±0.20 to ± 0.40 Low (slight)
- ± 0.40 to ± 0.70 substantial/ marked (Subst.)
- ± 0.70 to ± 1.00 high to very high

The variables considered to find out which value driver significantly contributes to ROE are as follows:

- **Dependent Variables-** Return on Equity (ROE)
- **Independent Variables-** Net Profit Margin (NPM), Total Asset Turnover Ratio (TATR) and Equity Multiplier (EM)

The relationship between Return on Equity and its value drivers were analysed for the selected Tyre and Allied companies through correlation analysis. Table 8 shows ROE and its Value drivers - Correlation Analysis.

Table 8 ROE and its Value drivers - Correlation Analysis

S.No	Company Name	ROE	NPM	TATR	EM
1	TVS Srichakra Ltd.	Pearson Correlation	0.96108531 (+ve & High)	0.37586088 (+ve & Low)	-0.72208675 (High)
2	Krypton Industries Ltd.	Pearson Correlation	-0.58566556 (-ve & Subst.)	0.87363399 (+ve & High)	-0.73475017 (-ve & High)
3	MRF Ltd.	Pearson Correlation	0.83554282 (+ve & High)	0.21650633 (+ve & Low)	-0.62741596 (-ve & Subst.)
4	CEAT	Pearson Correlation	0.97749272 (+ve & High)	0.84045632 (+ve & High)	-0.951302 (-ve & High)
5	Tolins Tyres Ltd.	Pearson Correlation	0.83012653 (+ve & High)	-0.6984141 (-ve & Subst.)	-0.90468037 (-ve & High)
6	JK Tyres and Tubes	Pearson Correlation	0.99708116 (+ve & High)	0.74790403 (+ve & High)	-0.73520784 (-ve & High)
7	Balkrishna Industries Ltd	Pearson Correlation	0.86731109 (+ve & High)	0.63080415 (+ve & Subst.)	-0.57426878 (-ve & Subst.)
8	Apollo Tyres Ltd.	Pearson Correlation	0.99128477 (+ve & High)	0.88499387 (+ve & High)	-0.83584595 (-ve & High)

Source: Computed Data

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Table 8 displays the relationship between Return on Equity and its value drivers of the selected Companies. There is no connection if the Pearson correlation value is 0; if the correlation value is 1 or positive, then an increase in one variable result in the increase of another variable. And there presents an inverse relationship if the value is -1 or negative. This table provides Pearson correlation coefficients between ROE and its components (NPM, TATR, and EM) for different companies. JK Tyres (0.997), Apollo Tyres (0.991), and CEAT (0.977) have the highest positive correlation between ROE and NPM, meaning that profitability is the primary driver of ROE for these companies. TVS Srichakra (0.961) and Balkrishna Industries (0.867) also show strong correlations. Krypton Industries (-0.586) is the only company with a negative correlation between ROE and NPM, suggesting other factors (like leverage or asset turnover) may play a bigger role. In case of Total Asset Turnover (TATR) and ROE Relationship, CEAT (-0.951) and Tolins Tyres (-0.904) have strong negative correlations, meaning an increase in asset turnover actually reduces ROE, likely due to low-margin operations. Most companies exhibit a negative correlation, suggesting that higher asset turnover does not necessarily improve ROE. In case of Equity Multiplier (EM) and ROE Relationship, Apollo Tyres (-0.836), Tolins Tyres (-0.905), and CEAT (-0.951) show strong negative correlations, indicating that excessive leverage reduces ROE, possibly due to higher financial costs. Balkrishna Industries (-0.574) has the weakest negative correlation, meaning leverage plays a minor role in affecting its ROE. Hence, it is found that the Return on Equity of all the selected Tyre and Allied companies was contributed either by NPM, TATR, or EM. So the alternative hypothesis that “There is a significant contribution of Net Profit Margin, Total Asset Turnover Ratio and Equity Multiplier to the ROE of select Indian Tyre and Allied Companies” is accepted.

Discussion

The capital structure is a critical aspect of corporate finance that affects a company's cost of capital, risk profile, profitability, and ability to grow. The findings of the study can be summarised as follows:

- **Financial leverage (Debt-to-Equity Ratio) does not significantly impact financial performance:** The study found a weak and insignificant relationship between D/E and both ROA and ROE, indicating that the level of debt does not play a major role in determining financial success for Tyre and Allied Companies. This suggests that companies in this sector do not rely heavily on debt to enhance profitability and instead focus on internal funding and operational efficiencies.
- **Interest Coverage Ratio (ICR) significantly influences financial performance:** ICR has a strong positive relationship with ROA and ROE, meaning that companies with higher earnings before interest and taxes (EBIT) relative to their interest expenses tend to perform better financially. This highlights the importance of maintaining strong cash flows and earnings stability rather than accumulating high debt.
- **Profitability (Net Profit Margin - NPM) is the key driver of Return on Equity (ROE):** Companies with higher profitability ratios tend to have higher ROE, indicating that profit margins are more influential than financial leverage in determining overall returns. JK Tyres, Apollo Tyres, and CEAT showed the strongest positive correlation between ROE and NPM, reinforcing this finding.
- **High financial leverage (Equity Multiplier - EM) negatively impacts ROE in most cases:** While leverage can amplify returns, excessive reliance on debt increases financial risk and reduces profitability due to high interest costs. Tolins Tyres and CEAT had strong negative correlations between ROE and EM, indicating that excessive borrowing harms financial performance.
- **Asset utilization efficiency (Total Asset Turnover - TATR) has mixed effects:** Some companies benefit from efficient asset turnover, while others struggle to translate it into profitability. Tolins Tyres and CEAT showed a negative correlation between ROE and TATR, indicating inefficiencies in asset management.

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Conclusion

Financial Leverage, a double-edge sword, plays a very important role for companies using both equity and debt capital in its capital structure. The findings of the study provide valuable insights for managers and policymakers in the industry, emphasising the importance of operational efficiency and financial stability over debt financing before making investment decisions. The study concludes that Tyre and Allied Companies should focus on improving profitability and managing interest expenses rather than relying on financial leverage. Maintaining a strong Interest Coverage Ratio and optimizing operational efficiency are more crucial for financial success than increasing debt. Companies with a balanced mix of profitability, asset utilization, and controlled leverage perform best in the industry. The study focuses only on Tyre and Allied companies, the future researcher can extend the study to other sector or industry. The study can also be made by taking into consideration longer period data to understand more clearly about financial leverage trends and business cycles. There is also the scope to use advanced analytical tools like AI and Machine Learning tools to improve the accuracy of the analysis. Comparative studies between levered and unlevered firms can be made. Further, cross-country comparative analysis can be made.

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