International Journal of Management, Economics and Commerce
International, Peer Reviewed journal
E-ISSN: **2584-2609**

EVALUATING PROFITABILITY PERFORMANCE OF TATA POWER & ADANI POWER BY USING DUPONT MODEL

Dr. Divya Nitinkumar Shah

Assistant Professor
Shankersinh Vaghela Bapu Institue of Science & Commerce
Email- divya.shah@bapugkv.ac.in
Contact No:-9173127695

Abstract

This study attempts to measure the financial performance of Power companies in India with respect to Tata Power and Adani Power. In this paper, researcher uses DuPont analysis. DuPont analysis is based on analysis of Return on Equity (ROE) & Return on Investment (ROI). DuPont analysis (ROI and ROE) is an important tool for judging the operating financial performance. It is an indication of the earning power of the firm. The return on equity dis-aggregate performance into three components: Net Profit Margin, Total Asset Turnover, and the Equity Multiplier. The return on investment consists of Assets Turnover (Operating Income×Total Assets) and Profit Margin (EBIT×Operating Income). The researcher used't' test for analyzing and comparing previous 10 years financial data to find out level of significant change.

Keywords: *DuPont Analysis, Return on Equity, Return on Investment, Financial Performance*

CONCEPT OF DUPONT MODEL

For any business in the private sector there are numerous of models to describe how well the business is running. Among these the DuPont model was created in the early 1900s but is still a model valid to use for assessment of the profitability. Using the DuPont model for risk analysis is not very common but if you as a risk analysis specialist want to talk the language of the business, it can be valuable to you.

The model was created by F. Donaldson Brown who came up with the model when he was assigned to clean up the finances in General Motors and has ever since been an important model for financial analysis. Remarkably it has not been used in the security community for risk prioritization or impact analysis. The original DuPont method of financial ratio analysis was developed in 1918 by an engineer at DuPont who was charged with understanding the finances of a company that DuPont was acquiring. He noticed that the product of two often-computed ratios, net profit margin and total asset turnover, equals return on assets (ROA). The elegance of ROA being affected by a profitability measure and an efficiency measure led to the DuPont method becoming a widely-used tool of financial analysis Liesz, (2002). In the 1970's, emphasis in financial analysis shifted from ROA to return on equity (ROE), and the DuPont model was modified to include the ratio of total assets to equity.

Before discussing the mechanics and usefulness of Du Pont, it may be of some interest to learn about its development. The maturation of the Du Pont model parallels the progress made in the field of financial analysis itself. Three distinct versions of Du Pont have been created and used to help unravel the underlying drivers of profitability and return over time, beginning nearly 90 +years ago.

In 1918, four years after he was hired by the E. I. du Pont Corporation of Wilmington, Delaware, to work in its treasury department, electrical engineer F. Donaldson Brown was given the task of untangling the finances of a company of which Du Pont had just purchased 23 percent of its stock. (This company was General Motors!) Brown recognized a mathematical relationship that existed between two commonly computed ratios, namely net profit margin (obviously a profitability measure) and total asset turnover (an efficiency measure), and ROA.

The DuPont analysis computes variables from the income statement and balance sheet to determine a firm's return on equity (ROE) & return on Investment (ROI). The formula is as follows:

ROE = Profit Margin (Net Profit/Sales) X Asset Turnover (Sales/Total Assets) X Equity Multiplier (Total Assets/Total Equity)

ROI = Assets Turnover (Operating Income X Total Assets) X Profit Margin (EBIT X Operating Income)

LITERATURE REVIEW

Mrs. SrilakshmiRamu& Prof. S.V. Satyanarayana (2019): Financial Performance Analysis of HDFC Using Dupont Analysis: This paper attempts to analyze the financial performance of HDFC for the period 2009 to 2018 by using the DuPont system of financial analysis which is based on analysis of return on equity. The return on equity model disaggregates performance

into three components: net profit margin, total asset turnover, and the equity multiplier. For analyzing the performance, mean, compound annual growth rate and coefficient of variation and correlation of ROE with NP Margin, Assets Turnover ratio, Equity multiplier is calculated. It was found that the financial performance of HDFC is relatively steady and reflects minimal volatility in the return on equity. Net profit margin has considerably been in the increasing trend for the decade while total assets turnover as well as equity multiplier have declined for the decade 2008-09 to 2017-18 indicating that HDFC had less financial leverage in the recent years, which means the HDFC is relying less on debt to finance its assets.

Dr. Pravin Narayan Mahamuni Dr. Anil ArunPoman (2019): Evaluating Profitability Performance of Bajaj Auto Ltd & Hero Motocorp by Using Dupont Model: This study attempts to measure the financial performance of the Auto-mobile companies in India with respect to Bajaj Auto Ltd and Hero Motocorp. In this paper, researcher uses DuPont analysis, is method of assessing a company's return on equity (ROE) breaking into three parts i.e. Profit Margin (Profit/Sales), Total Assets Turnover (Sales/Assets) and Equity Multiplier (Assets/Equity). The researcher used't' test for analyzing and comparing previous 5 years financial data to find out level of significant change.In this research, researcher has attempted to measure ROE & ROI to find out the profitability and made comparison against its competitors by using DuPont model of the Bajaj Auto Ltd. and Hero Motocorp. At the end, it is concluded the Du Pont analysis made by calculating ROE & ROI for top two Indian Auto-mobile Companies (Bajaj Auto Ltd. And Hero Motocorp) and result portrays that Bajaj Auto Ltd. have better profitability performance rather than its competitor Hero Motocorp.

OBJECTIVES OF THE STUDY

➢To analyze ROE and ROI of selected Power Sector Company on the basis of DuPont analysis.

HYPOTHESIS OF THE STUDY

Ho1: Return on equity of selected power sector companies does not differ significantly during the study period.
Ho2: Return on investment of selected power sector companies does not differ significantly during the study period.

Sample

In present research, researcher has selected 2 power companies of India.

1. Tata power
2. Adani power

Sources of Data

The study is based on secondary data. The researcher has gone through various journals, magazines, newspapers, publications and websites for obtaining information.

Period of Study

Time period of the study has been conducted during 2012 to 2021.

Statistical Tools &Techniques

The statistical tools used for the analyze the cash flow statement is

✓ Mean
✓ Standard Deviation &
✓ T-Test

ANALYSIS AND INTERPRETATION

TABLE 1: ROE OF TATA POWER

Year	Total assets (a)	Common stock equity (b)	Financial Leverage (Equity multiplier) C = (a\ b)	NPM (d)	TAT (e)	ROA (d*e)	ROE = FL * ROA
2011-12	25117.71	11,957.42	2.1	13.76	0.34	4.6784	9.83
2012-13	28092.86	12,260.85	2.29	10.71	0.34	3.6414	8.34
2013-14	30539.03	13,127.36	2.33	11.05	0.28	3.094	7.2
2014-15	33561.19	15,727.99	2.13	11.64	0.26	3.0264	6.46
2015-16	34614.62	15,350.46	2.25	15.58	0.25	3.895	8.78

2016-17	40832.5	16,591.97	2.46	5.74	0.17	0.9758	2.4
2017-18	36502.07	12,988.53	2.81	-41.8	0.21	-8.778	-24.7
2018-19	38134.58	14,189.60	2.69	21.42	0.21	4.4982	12.1
2019-20	37616.48	13,761.97	2.73	1.91	0.21	0.4011	1.1
2020-21	42,868.95	18,378.56	2.33	14.9	0.14	2.086	4.87
Average	34787.10	14433.47	2.41	6.49	0.24	1.75	3.64
S.D.	5596.67	2051.96	0.25	17.79	0.066	3.96	10.50

Source: www.tatapower.com

Average of equity multiplier is 2.41.The higher ratio found in the year 2017-18 with 2.81 times and lower ratio marked in the year 2011-12 with 2.10 times .Standard deviation was 0.25.

Average of net profit margin is 6.49. The higher ratio found in the year 2018-19 with 21.42% and lower ratio marked in the year 2017-18 with -41.2%.Standard deviation was 17.79.

Average of total asset turnover is 0.24.The higher ratio found in the year 2011-12 and in 2012-13 with 0.34 times and lower ratio marked in the year 2020-21 with 0.14 times .Standard deviation was 0.066.

There is a decreasing trend in return on equity of Tata Power. The higher ratio found in the year 2011-12with 9.83% and lower ratio marked in the year 2017-18 with -24.7%.

TABLE 2: ROI OF TATA POWER

Year	Operating income (a)	Total assets (b)	Assets Turnover C = a \ b	EBIT (d)	Operating income (e)	Profit Margin F = (d/e)	ROI = (C * F) (%)
2011-12	8,495.84	25117.71	0.34	2197.74	8,495.84	0.26	8.84
2012-13	9,567.28	28092.86	0.34	2381.63	9,567.28	0.25	8.5
2013-14	8,627.04	30539.03	0.28	2359.37	8,627.04	0.27	7.56
2014-15	8,677.69	33561.19	0.26	2563.11	8,677.69	0.3	7.8
2015-16	8,696.94	34614.62	0.25	2880.41	8,696.94	0.33	8.25
2016-17	6,924.16	40832.5	0.17	1833.99	6,924.16	0.26	4.42
2017-18	7,536.59	36502.07	0.21	-1813.22	7,536.59	-0.24	-5.04
2018-19	8255.25	38134.58	0.21	3426.74	8255.25	0.42	8.82
2019-20	7,726.39	37616.48	0.21	1860.91	7,726.39	0.24	5.04
2020-21	6,180.59	42,868.95	0.14	2587.38	6,180.59	0.42	5.88
Average	8068.78	34787.10	0.24	2027.81	8068.78	0.25	6.01
S.D.	989.70	5596.67	0.066	1428.54	989.70	0.18	4.19

Source: www.tatapower.com

There is a fluctuating trend in return on investment of Tata Power. The higher ratio found in the year 2011-12 with 8.84% and lower ratio marked in the year 2017-18 with -5.04%.

GRAPH: ROE & ROI OF TATA POWER

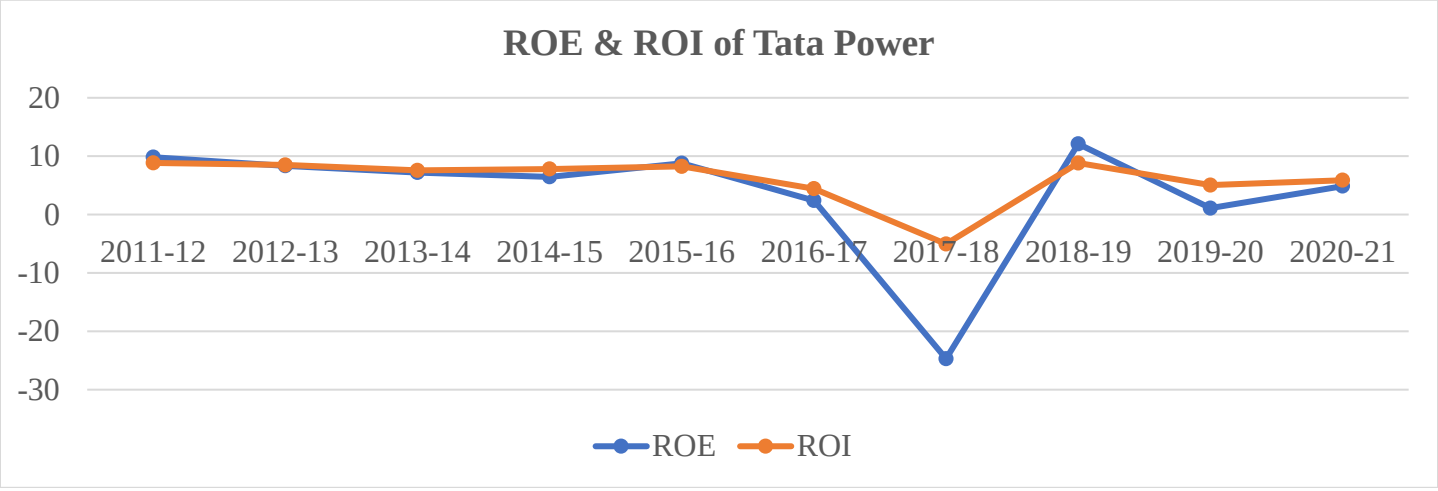


TABLE 3: ROE OF ADANI POWER

Year	Total assets (a)	Common stock equity (b)	Financial Leverage (Equity multiplier) C = (a / b)	NPM (d)	TAT (e)	ROA (d*e)	ROE = FL * ROA
2011-12	36,108.14	2,180.04	16.56	-7.44	0.11	-0.82	-13.56
2012-13	38,251.51	2,393.27	15.98	-30.82	0.17	-5.24	-83.74
2013-14	38,779.01	2,871.92	13.5	5.55	0.28	1.55	20.98
2014-15	37,726.36	2,871.92	13.14	-0.64	0.28	-0.18	-2.354
2015-16	45,542.70	3,333.94	13.66	0.74	0.28	0.21	2.83
2016-17	41,757.48	3,856.94	10.83	-55.7	0.26	-14.5	-156.8
2017-18	19,702.21	3,856.94	5.108	-0.28	0.42	-0.12	-0.601
2018-19	28,928.04	3,856.94	7.5	-9.36	0.08	-0.75	-5.616
2019-20	22,530.29	3,856.94	5.841	-133.34	0.04	-5.33	-31.16
2020-21	24,408.43	3,856.94	6.328	-111.53	0.018	-2.01	-12.7
Average	33373.417	3293.579	10.84	-34.280	0.1938	-2.719	-28.27
S.D.	8834.49	666.22	4.33	50.21	0.130	4.71	53.13

Source: www.adanipower.com

Average of equity multiplier is 10.84.The higher ratio found in the year 2011-12 with 16.56 times and lower ratio marked in the year 2017-18 with 5.11 times .Standard deviation was 4.33.

Average of net profit margin is -34.28. The higher ratio found in the year 2013-14 with 5.55% and lower ratio marked in the year 2019-20 with -133.34%. Standard deviation was 50.21.

Average of total asset turnover is 0.19.The higher ratio found in the year 2017-18with 0.42 times and lower ratio marked in the year 2020-21 with 0.018 times .Standard deviation was 0.066.

There is a fluctuating trend in return on equity of Adani Power. The higher ratio found in the year 2013-14with 20.98% and lower ratio marked in the year 2016-17 with -156.8%.

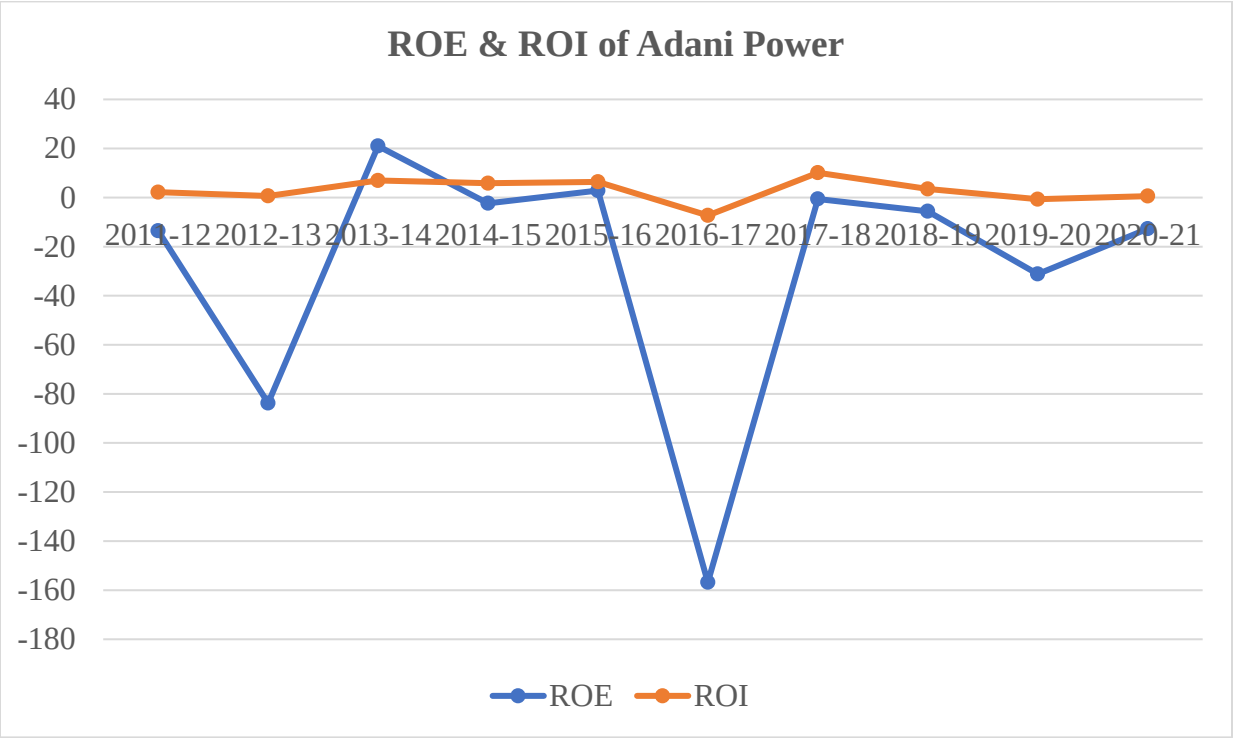
TABLE 4: ROI OF ADANI POWER

Year	Operating income (a)	Total assets (b)	Assets Turnover C = a \ b	EBIT (d)	Operating income (e)	Profit Margin F = (d/e)	ROI = (C * F) (%)
2011-12	3,948.90	36,108.14	0.11	784.06	3,948.90	0.2	2.17
2012-13	6,332.98	38,251.51	0.17	245.47	6,332.98	0.04	0.64
2013-14	10,714.43	38,779.01	0.28	2696.40	10,714.43	0.25	6.95
2014-15	10,624.61	37,726.36	0.28	2204.94	10,624.61	0.21	5.84
2015-16	12,875.27	45,542.70	0.28	2911.79	12,875.27	0.23	6.39
2016-17	10,868.11	41,757.48	0.26	-3036.01	10,868.11	-0.3	-7.3
2017-18	8,249.26	19,702.21	0.42	1984.30	8,249.26	0.24	10.1
2018-19	2,404.20	28,928.04	0.08	1013.81	2,404.20	0.42	3.5
2019-20	1,005.32	22,530.29	0.04	-165.33	1,005.32	-0.2	-0.7
2020-21	447.17	24,408.43	0.018	141.01	447.17	0.32	0.58
Average	6747.03	33373.42	0.193	878.04	6747.03	0.141	2.82
S.D.	4559.34	8834.49	0.130	1757.72	4559.34	0.23	4.91

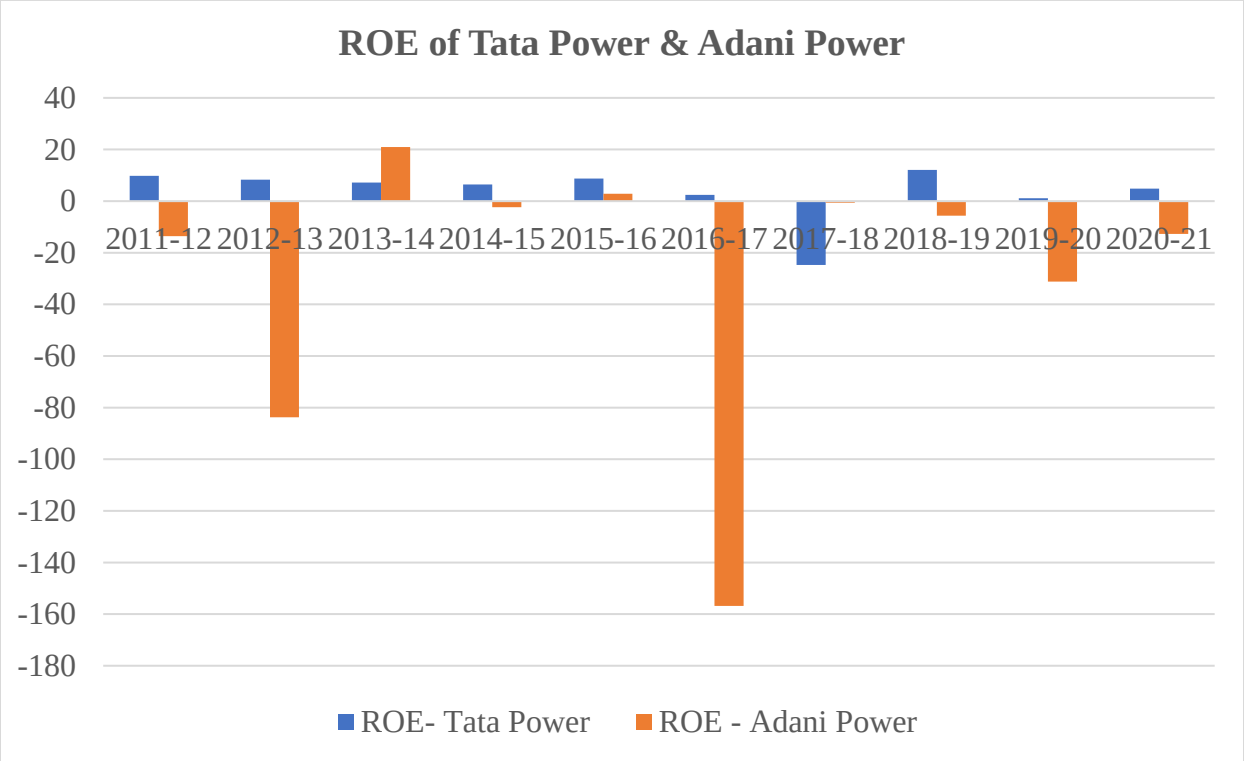
Source: www.adanipower.com

There is a fluctuating trend in return on investment of Adani Power. The higher ratio found in the year 2017-18with 10.1% and lower ratio marked in the year 2016-17 with -7.3%.

GRAPH: ROE & ROI OF ADANI POWER



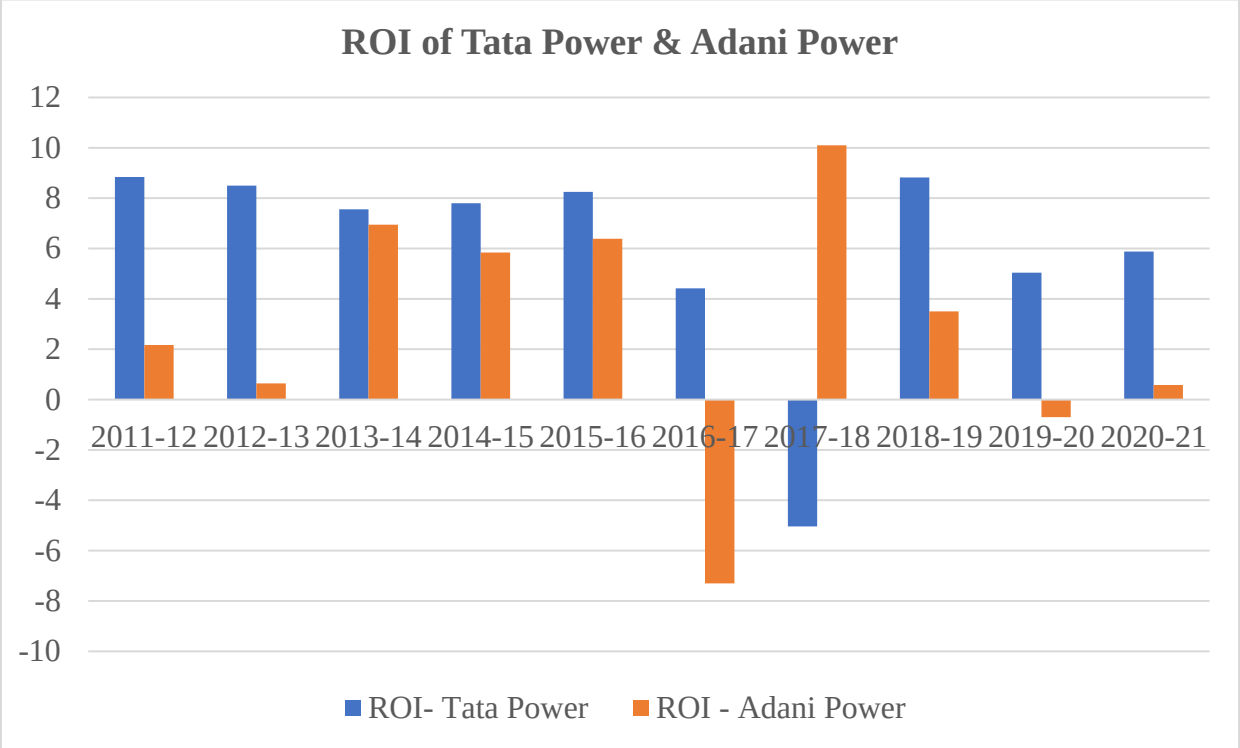
Comparison of Tata Power and Adani Power
GRAPH: ROE OF TATA POWER &ADANI POWER



From the above figure it has been observed that, the ROE of Tata Power is much higher than Adani Power except in the year 2013-14 and 2017-18.But Tata Power is more financially leveraged than Adani Power. It is better to have low multiplier ratio and Tata Power having low equity multiplier and lower multiplier ratios are always considered more conservative and more favorable

than higher ratios because companies with lower ratios are less dependent on debt financing and don't have high debt servicing cost.

GRAPH: ROI OF TATA POWER &ADANI POWER



From the above figure it has been observed that, the ROI of Tata Power is much higher than Adani Power except in the year 2017-18.

Hypothesis Testing

Ho1: Return on equity of selected power sector companies does not differ significantly during the study period.

	ROE of Tata Power	**ROE of Adani Power**
Mean	3.638	-28.2721
Variance	110.1868	2823.026
Observations	10	10
Hypothesized Mean Difference	0	
df	10	
t Stat	1.863187	
P(T<=t) one-tail	0.046016	
t Critical one-tail	1.812461	
P(T<=t) two-tail	0.092032	
t Critical two-tail	2.228139	

Source: Calculated

Conclusion: Since t cal< t critical at 5% significance level, the null hypothesis is accepted. It can be concluded that return on equity of selected power sector companies does not differ significantly during the study period.

Ho2: Return on investment of selected power sector companies does not differ significantly during the study period.

	ROI of Tata Power	**ROI of Adani Power**
Mean	6.007	2.817
Variance	17.59085	24.15336
Observations	10	10
Hypothesized Mean Difference	0	
df	18	

t Stat	1.561322	
P(T<=t) one-tail	0.067929	
t Critical one-tail	1.734064	
P(T<=t) two-tail	0.135857	
t Critical two-tail	2.100922	

Source: Calculated

Conclusion: Since t cal< t critical at 5% significance level, the null hypothesis is accepted. It can be concluded that return on investment of selected power sector companies does not differ significantly during the study period.

CONCLUSION

Tata Power is more financially leveraged than Adani Power.Tata Power has low equity multiplier and lower multiplier ratios are always considered more conservative and more favorable because companies with lower ratios are less dependent on debt financing and don't have high debt servicing cost.Tata Power has higher net profit margin than Adani Power except in the year 2017-18.Tata Power has higher asset turnover ratio than Adani Power. It means management of Adani Power not using its assets to drive the sales. ROE of Tata Power is much higher than Adani Power except in the year 2013-14 and 2017-18. ROI of Tata Power is much higher than Adani Power except in the year 2017-18. From hypothesis testing, return on equity and return on investment of selected power sector companies does not differ significantly during the study period.

REFERENCE

[1] Karthikeyan, S. C. (2012). Financial Performance of Pharmaceutical Industry in India using Dupont Analysis. European Journal of Business and Management.
[2] Poman, D. P. (2019). Evaluating Profitability Performance Of Bajaj Auto Ltd & Hero Motocorp By Using Dupont Model. International Journal of Management, IT & Engineering.
[3] Satyanarayana, M. S. (2019). Financial Performance Analysis Of Hdfc Using Dupont Analysis. Inspira-Journal of Commerce, Economics & Computer Science (JCECS).

Website

[1] www.adanipower.com
[2] www.tatapower.com