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Unravelling The Key Drivers of Return on Equity: A Comparative Analysis of Infosys and TCS

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ABSTRACT
The quest for higher returns on equity (ROE) has been an enduring concern for investors and stakeholders in the ever-evolving landscape of the global IT industry. Among the major players in this domain, Infosys and Tata Consultancy Services (TCS) stand out as two prominent IT giants that have consistently attracted significant attention from analysts and investors alike. This study presents a comprehensive comparative analysis of Infosys and TCS, with the primary objective of understanding and unravelling the key drivers behind their respective returns on equity. Using quantitative methodologies, this research delves into the financial and operational aspects of both companies. The information spanning throughout the years are examined to capture patterns and trends in the ROE of Infosys and TCS, aiming to recognize all the factors that contribute to the disparities in their respective ROE performance. This analysis explores profitability metrics, capital structure, asset utilization, and growth prospects, to decipher the underlying reasons for the differences in ROE between the two companies. The independent samples t-test will be employed for testing of the null hypothesis and to compare the means of the ROE for TCS and Infosys. A significance level of $\alpha = 0.05$ will be used to determine statistical significance. The data for the study will be obtained from the annually published reports of Tata Consultancy Services and Infosys.

Keywords: Return on Equity, Comparative Analysis, Financial Performance, IT Industry, Profitability Metrics, Capital Structure, Asset Utilization.

Introduction

In the continuously growing and dynamic world of modern business, these two IT giants stand tall as beacons of success in the information technology services sector - Infosys and Tata Consultancy Services (TCS). These global IT giants have consistently showcased remarkable financial performance, capturing the appreciation of investors, stakeholders, and industry experts alike. TCS started its working in 1968 and is headquartered in Mumbai, India. TCS has a specialty in a different fields of IT services, including software development, cloud services, system integration, cybersecurity, data analytics, consulting, and business process outsourcing (BPO). TCS has doing its operation in over 46 countries and they have more than 6 Lacs employees all over the world, offers various services to its clients in different types of industries, including banking and financial services, healthcare, retail, aerospace etc. The major focus of TCS is on Business process outsourcing and software development. Currently, TCS has a share capital of rupees 365.91 crore and ranked 6th among top Information Technology companies all around the Globe.

Like TCS there have been another company named Infosys which is also globally renowned and give tough competition to TCS. Infosys was founded in 1981, in Pune, India, and the company's headquarters is located in Bengaluru, Karnataka, India. Initially, Infosys started as a small software development company, and with continuous efforts they rapidly grew to become the leading players in the global IT industry. The enterprise is known for its emphasis on innovation, technology-driven solutions, and a strong focus on customer satisfaction. They have a share capital of rupees 2074 crore and employ more than 3 lacs people around the globe. Infosys is majorly a software development company and less focused on BPO's that's why their assets acquisition is lower than the TCS. By analysing these two companies' side by side, we hope to give some important & valuable insights about returns to their existing and future shareholders.

Objectives of the study: This study has the objective to find out the financial ratios of both companies, including Assets turnover ratio, Net profit margin ratio and Equity multiplier ratio for a specified period of time and further to compare the Return on Equity (ROE) trends of Infosys and Tata Consultancy Services (TCS), and finally to assess financial health by examining their profitability, asset management, and capital structure. At the end, to test the null hypothesis by applying independent t-test.

Contribution of this study: This study on unravelling the key drivers of return on equity: a comparative analysis of Infosys and TCS is justified due to the significance of these two IT giants in the global market. These two big enterprises are key players in the technology services industry, their financial performance and profitability have far-reaching implications for stakeholders, investors, and the sector at large. By employing the DuPont System, this research aims to provide a comprehensive and systematic evaluation of their ROE components, enabling a deeper knowledge of the factors influencing their divergence or success. The findings will illuminate operational efficiencies and strategic choices of Infosys and TCS but also serve as a valuable benchmark for other businesses seeking to optimize their ROE in an evolving and competitive marketplace.

Review Of Literature

In a study by Janarthanan (2023), they investigate the progression of TCS, Infosys, and Wipro for the period 2017-2022 considering the fact that they demonstrate substantial market capitalization. In order to assess business undertaking as a whole, ratio analysis is used together with statistical tools like one-way ANOVA and Compound annual growth rate (CAGR). It was discovered that IT companies were not adversely affected by COVID, and it appears that all these enterprises have been flourishing over the past few years. Overall, Wipro's performance concerning generating operating profit, net profit, and pay-out ratio over the long run is brilliant. In proprietary ratio, Infosys is the pioneer. Although TCS and Infosys have a high market capitalisation.

Rose, Kumar, & Gowri (2023), their study aims to predict the financial stability of selected IT sector companies by using financial statements obtained from the company's websites for the past 10 years and examine the financial stability of the sector during pre-Covid and post-covid period using the Altman's z score method and Springate model.

Divyaa & Panneerselvam's (2023)**,** study deals with the financial performance analysis of TCS Company with reference to IT sector in India. The research mainly concentrates on analysing the profitability, Turnover & solvency position of TCS Company. The ten-years annual report of the companies was taken

from websites (2011 to 2020). The secondary data was acquired via, balance sheets, financial statements, journals, and articles. The study employs ratio analysis as its analytical tools and Future trend analysis which help to understand the company's financial status.
In a study by Mehta (2021), they examined and analyse the financial & economic performance of selected Indian I.T companies (Wipro, Infosys, HCL, and TCS) for a time period of 13 years (from 2007-08 to 2020-21) and formed a direct correlation between liquidity and leverage, efficiency, and profitability. In this research paper, Financial Analysis is done using important accounting ratios and statistical tools like Analysis of variances (ANOVA) and compounding annually growth rate (CAGR) which show differences in the profitability of selected IT companies.
In a study conducted by Dzenopoljac, Janosevic, and Bontis in 2016, the focus was on uncovering whether the intellectual capital (IC) within the Serbian information communication technology (ICT) sector holds the capability to generate value. Over a period spanning from 2009 to 2013, the study meticulously examined 13,989 ICT companies operating in Serbia. To gauge the extent of IC's impact on value creation, the researchers employed the value-added intellectual coefficient (VAIC). Various indicators of financial performance, such as return on equity, return on assets, return on invested capital, profitability, and asset turnover, were scrutinized. The findings revealed that, after adjusting for firm size and leverage, only capital-employed efficiency emerged as a significant factor influencing financial performance.

Limitations of the study

This study has some limitations that data availability is limited this thing restrict the analysis to publicly accessible information, potentially excluding proprietary or confidential data. The study's timeframe may not capture short-term fluctuations that could impact the long-term analysis and it may not consider potential non-financial factors, like competitive dynamics or changes in customer preferences, that could impact ROE. The study's reliance on historical data may not fully account for future uncertainties or strategic changes by Infosys and TCS.

Hypothesis of the study

- *Null hypothesis* ***(H_0)*** = There is no significant difference between the Return on Equity (ROE) of TCS and Infosys.
- *Alternate Hypothesis* ***(H_a)*** = There is a significant difference between the Return on Equity (ROE) of TCS and Infosys.

Data and Methodology

The chosen research design for this study is comparative in nature, aiming to analyze and contrast the financial performance as well as the trends in Return on Equity between Infosys and TCS. It will involve the collection of financial data from secondary sources, such as annual reports, financial statements, databases, and other relevant sources, for both Infosys and TCS over a specified period. The DuPont System will be utilized as the primary analytical framework to dissect the Return on Equity (ROE) of both companies. This System breaks down ROE into its three components - Profit Margin, Asset Turnover, and Financial Leverage - which will be analysed individually. Financial ratios and performance metrics for both companies will be calculated and compared for multiple years to identify trends and patterns. The study will culminate in a comprehensive analysis that offers valuable insights into the contrasting ROE trajectories and the key drivers behind the financial performance of Infosys and TCS. The independent samples t-test will be employed for testing of hypothesis and to compare the means of the ROE for TCS and Infosys. A significance level of $\alpha = 0.05$ will be used to determine statistical significance. The data for the study will be obtained from the annually published reports of Tata Consultancy Services and Infosys.

Theoretical Framework: A key metric that has played a crucial role in their evaluation and comparison is Return on Equity (ROE), a fundamental measure of a company's efficiency and profitability. The DuPont System, developed by the chemical company DuPont in the early 20th century, is a powerful financial tool that allows analysts, researchers and investors to delve deeper into a company's financial performance. By breaking down the ROE into its component parts, the DuPont System helps uncover the key drivers that contribute to a company's ability to generate returns for its shareholders.

In this research study, we embark on a comprehensive comparative analysis of two technology giants - Infosys and TCS - using the DuPont System as the analytical framework. By applying this method, we aim to unravel the underlying factors that have led to their divergent or convergent ROE trajectories over the past few years. Understanding these factors will shed light on the distinct strategies and operational efficiencies employed by each company, providing valuable insights into their competitive advantages and challenges. This analysis will encompass multiple dimensions, including financial statements, profitability ratios, asset turnover, and financial leverage. By synthesizing quantitative data, we strive to paint a comprehensive picture of the overall health and performance of each company.

Through this in-depth examination, this research seeks to contribute to the existing body of knowledge surrounding financial performance analysis and offer investors, stakeholders, and industry observers a deeper understanding of what propels these industry titans forward in an increasingly competitive landscape. As we progress with this comparative journey, we anticipate discovering valuable insights that may not only provide a better understanding of Infosys and TCS but also equip businesses and investors with a more robust framework for evaluating and optimizing ROE in their ventures.

Analysis of Infosys and Tata Consultancy Service's financial performance using DuPont system

The DuPont system of financial analysis, also known as the DuPont analysis or DuPont model, is a method used to assess a company's financial performance through an analysis of its return on equity (ROE), it offers a structure to dissect the elements contributing to ROE, facilitating a more profound comprehension of the company's fiscal well-being and effectiveness.

The DuPont analysis breaks down ROE into three key components, Profitability, Asset utilization, and financial leverage. Let's look at each component in detail:

Results:

Net Profit Margin (NPM): The net profit margin stands as a crucial financial measure, gauging a company's efficiency and profitability. It reflects the portion of revenue transformed into profit subsequent to subtracting all expenses, encompassing taxes, interest, and operational costs. This metric serves as a pivotal indicator of a company's proficiency in deriving profit from its fundamental business activities. A heightened net profit margin signifies enhanced profitability and adept cost control. The formula for computing the net profit margin is as follows:

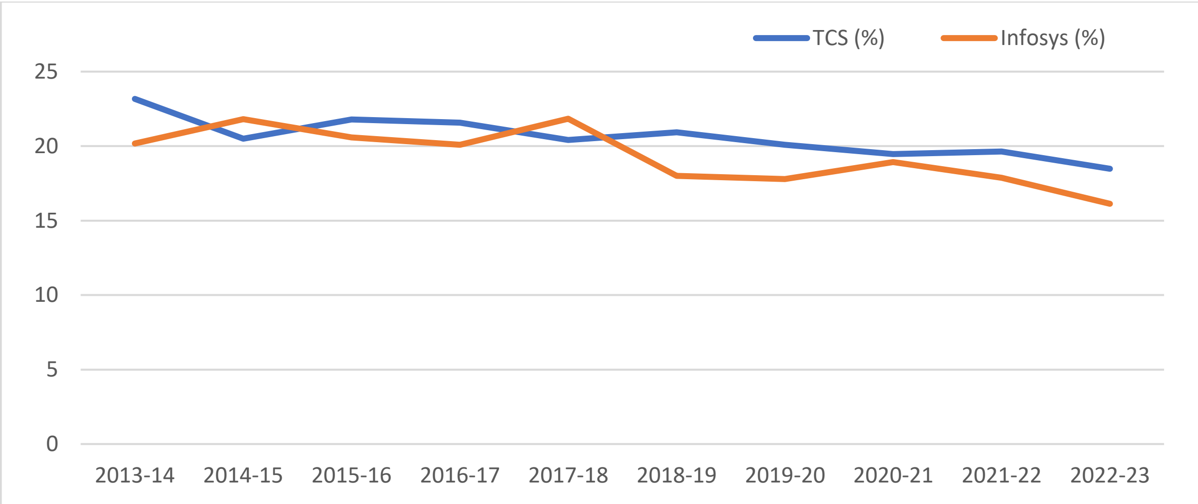
$$\text{Net Profit Margin} = (\text{Net Profit} / \text{Total Revenue}) * 100$$

Table 1: NPM Ratio of TCS & Infosys

Financial Year	TCS (%)	Infosys (%)
2013-2014	23.17	20.18
2014-2015	20.49	21.80
2015-2016	21.78	20.58
2016-2017	21.57	20.09
2017-2018	20.41	21.84
2018-2019	20.93	18.01
2019-2020	20.08	17.78
2020-2021	19.46	18.92
2021-2022	19.64	17.87
2022-2023	18.48	16.13

Source: Calculated & Compiled from TCS and Infosys' annual financial reports.

Graph: 1 NPM Ratio of TCS & Infosys (%)



Interpretation: In the most recent financial year 2022-23, TCS achieved a net profit margin of 18.48%, while Infosys had a slightly lower margin of 16.13%. Both companies experienced a decline in NPM compared to the previous year, with TCS dropping from 19.64% to 18.48% and Infosys from 17.87% to 16.13%. However, TCS generally maintained higher NPMs over the five years, fluctuating between 20.93% (in 2018-19) and 18.48% (in 2022-23), whereas Infosys ranged from 18.92% (in 2020-21) to 16.13% (in 2022-23). The data suggests that TCS has historically managed to generate higher profits relative to its revenue compared to Infosys, but both companies have experienced some margin compression in recent years, potentially indicating challenges in managing costs and maintaining profitability.

Asset Turnover Ratio (ATR): The asset turnover ratio is a tool used in finance to gauge how effectively a company is putting its resources to work in making money. Essentially, it shows how much revenue a company is generating compared to the total value of its assets. A higher ratio means the company is making more money per dollar of assets it owns, suggesting it's using its resources efficiently. To calculate it, you divide the company's total revenue by its total assets.

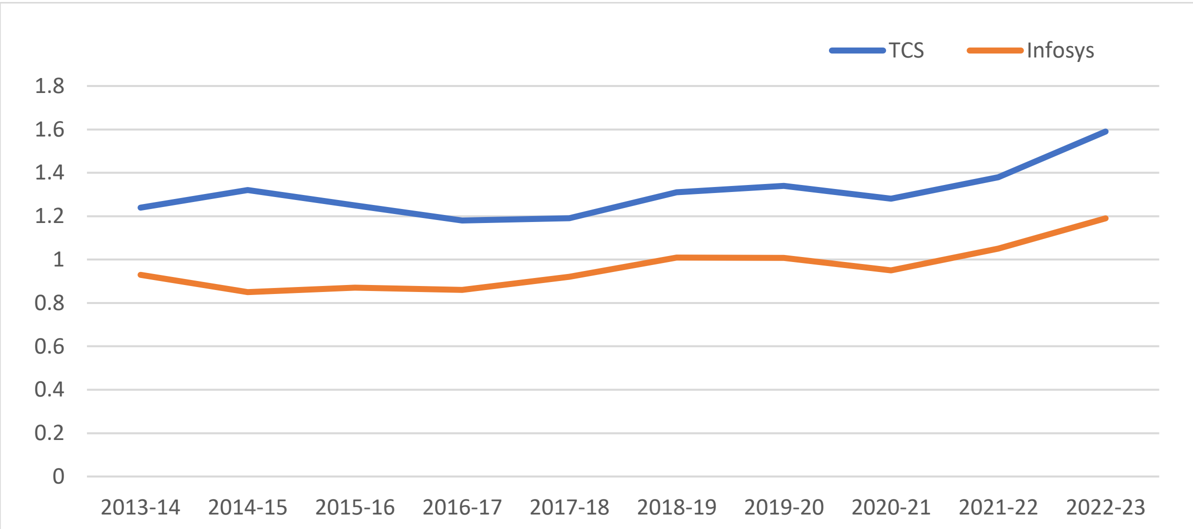
Asset Turnover Ratio = Total Revenue / Total Assets

Table 2: Assets Turnover Ratio

Financial Year	TCS	Infosys
2013-2014	1.24	0.93
2014-2015	1.32	0.85
2015-2016	1.25	0.87
2016-2017	1.18	0.86
2017-2018	1.19	0.92
2018-2019	1.31	1.009
2019-2020	1.34	1.008
2020-2021	1.28	0.95
2021-2022	1.38	1.05
2022-2023	1.59	1.19

Source: Calculated & Compiled from TCS and Infosys' annual financial reports.

Graph: 2 Assets Turnover Ratio of TCS & Infosys



Interpretation: TCS ATR has been consistently performing better than Infosys for all the years, indicating that TCS has been more effective in generating revenue from its assets. From 2018-19 to 2022-23, TCS's Assets Turnover Ratio has steadily increased, reflecting its improving efficiency in asset utilization. On the other hand, Infosys also shows an upward trend in the ratio, though it remains below TCS throughout the period. The difference in their ratios suggests that TCS has been more successful in generating revenue relative to its asset base compared to Infosys, possibly due to better operational management and utilization of resources.

Equity Multiplier Ratio: The Equity Multiplier, also known as the Leverage Ratio, is a financial metric that measures the extent to which a company uses debt to finance its assets. It represents the percentage of a company's assets that are supported by the investments made by its shareholders, rather than by borrowing money. A higher equity multiplier suggests that the business is relying more on debt financing, whereas a lower equity multiplier indicates a larger proportion of assets being funded by shareholders' equity. The formula for computing the Equity Multiplier is as follows:

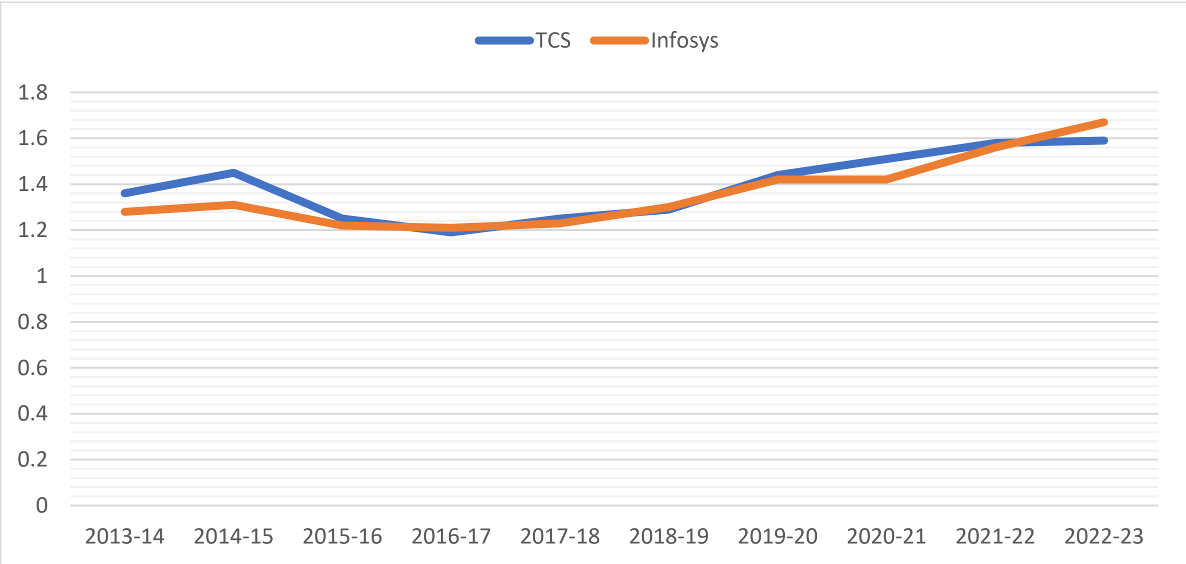
Equity Multiplier = Total Assets / Shareholders' Equity

Table 3: Equity Multiplier Ratio

Financial Year	TCS	Infosys
2013-2014	1.36	1.28
2014-2015	1.45	1.31
2015-2016	1.25	1.22
2016-2017	1.19	1.21
2017-2018	1.25	1.23
2018-2019	1.29	1.30
2019-2020	1.44	1.42
2020-2021	1.51	1.42
2021-2022	1.58	1.56
2022-2023	1.59	1.67

Source: Calculated & Compiled from TCS and Infosys' annual financial reports.

Graph: 3 Equity Multiplier of TCS & Infosys



Interpretation: TCS and Infosys have both experienced fluctuations in their Equity Multiplier Ratios during this period. In 2022-23, TCS's Equity Multiplier increased to 1.588, while Infosys's Equity Multiplier decreased to 1.668. Despite these changes, TCS consistently maintained a lower Equity Multiplier than Infosys in all years, indicating that TCS relied less on debt financing to fund its assets compared to Infosys. The decreasing trend in TCS's Equity Multiplier over the years indicates a potential shift toward using more equity financing, while Infosys experienced fluctuations without a clear trend.

Return on Equity (ROE): In the DuPont system, Return on Equity (ROE) is a key financial metric used to assess a company's profitability and efficiency in generating returns for its shareholders. The DuPont system breaks down ROE into three components, allowing for a more comprehensive analysis of the factors that contribute to the overall return on equity. By multiplying the three components together, we obtain the ROE. The formula for ROE in the DuPont system is as follows:

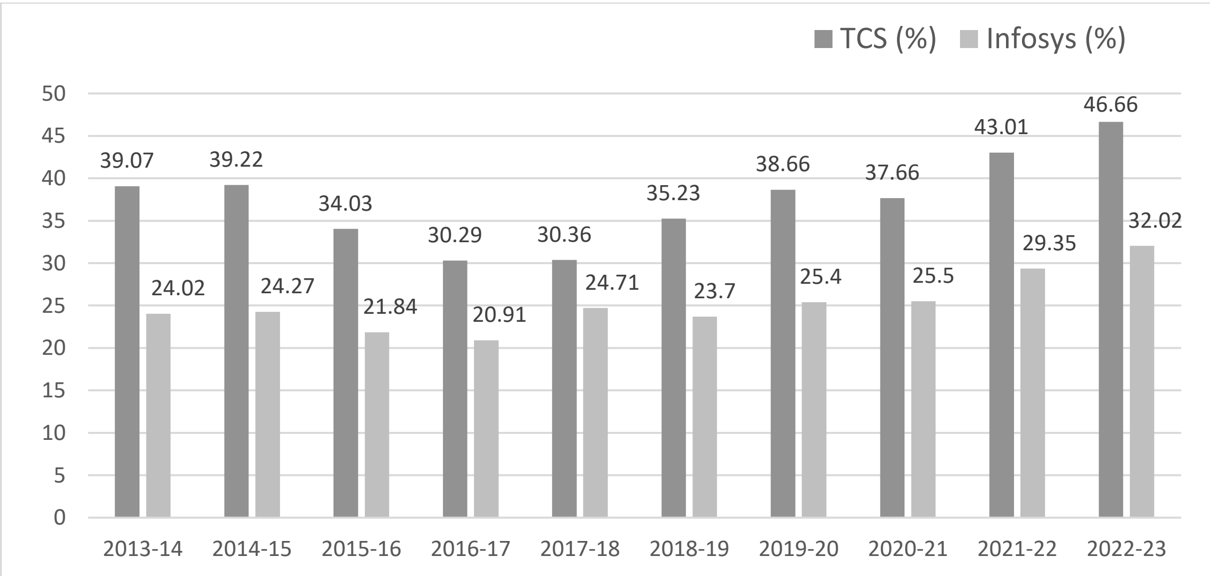
ROE = (Net Profit Margin**) x (**Asset Turnover**) x (**Equity Multiplier**)**

Table 4: Return on Equity of Infosys and TCS

Financial Year	TCS (%)	Growth rate (YOY)	Infosys (%)	Growth rate (YOY)
2013-2014	39.07	-	24.02	-
2014-2015	39.22	0.38 %	24.27	1.04 %
2015-2016	34.03	(13.23) %	21.84	(10.01) %
2016-2017	30.29	(10.99) %	20.91	(4.25) %
2017-2018	30.36	0.23 %	24.71	18.17 %
2018-2019	35.23	16.04 %	23.70	(4.09) %
2019-2020	38.66	9.74 %	25.40	7.17 %
2020-2021	37.66	(2.59) %	25.50	0.39 %
2021-2022	43.01	14.2 %	29.35	15.1 %
2022-2023	46.66	8.49 %	32.02	9.1 %

Source: Calculated using ROE formula

Graph: 4 Return on Equity of TCS & Infosys



Interpretation: Both Infosys and TCS have shown a positive trend in ROE over the years, indicating improved profitability and shareholder value. In 2022-23, TCS achieved an impressive ROE of 46.66%, while Infosys recorded a ROE of 32.02%. TCS consistently maintained a higher ROE than Infosys in all the years, suggesting that TCS has been more effective in generating profits relative to its shareholders' equity compared to Infosys. The rising trend in both companies' ROE indicates positive financial performance and efficient utilization of shareholder capital.

Testing of Hypothesis using independent sample T-test

Table 5: T-test

Particulars	ROE of TCS	ROE of Infosys
Mean	37.419	25.172
Variance	26.79468	10.92202
Observations	10	10
Pooled Variance	18.85835	
Hypothesized Mean Difference	0	
df	18	
t Stat	**6.30613**	
P(T<=t) one-tail	3.03E-06	
t Critical one-tail	1.734064	
P(T<=t) two-tail	6.06E-06	
t Critical two-tail	**2.100922**	

Source: Calculated by MS EXCEL

Table:6 Acceptance & Rection of Null Hypothesis

T-test	Significance level	t-calculated	t-critical	Compare	Result
One-tail	0.05	6.30613	1.73406	t-cal. > t- critical	$H_{0:}$ Rejected $H_{a:}$ Accepted
Two-tail	0.05	6.30613	2.10092	t-cal. > t- critical	$H_{0:}$ Rejected $H_{a:}$ Accepted

Observation: Based on the results of the analysis of Return on Equity (ROE) for TCS and Infosys, the following observations can be made:

Mean ROE: The average ROE for TCS is 37.419%, while the average ROE for Infosys is 25.172%. This indicates that, on average, TCS has been more profitable and efficient in generating returns for its shareholders compared to Infosys.

Variance: The variance of ROE for TCS is 26.79468, and for Infosys, it is 10.92202. The higher variance in TCS's ROE suggests that its profitability has been more volatile over the years compared to Infosys.

Hypothesis Testing: The hypothesis test is conducted to determine if there is a significant difference in the mean ROE between TCS and Infosys. The hypothesized mean difference is 0, implying that there is no assumed difference between the two companies' ROEs.

t Statistic and p-value: The calculated t statistic is 6.30613, and the p-value for a one-tail test is 0.00000303. For a two-tail test, the p-value is 0.00000606. Since the p-value is much smaller than the significance level (usually 0.05), it suggests strong evidence to reject the null hypothesis (assumed mean difference of 0). Thus, there is a statistically significant difference in the mean ROE between TCS and Infosys.

t Critical Values: The critical t-value for a one-tail test at a significance level of 0.05 is 1.734064, and for a two-tail test, it is 2.100922. Since the calculated t-statistic (6.30613) exceeds both critical values, it further supports the rejection of the null hypothesis.

Findings & Suggestions

Findings:

Net Profit Margin (NPM): Both companies have experienced fluctuations in their net profit margins over the selected years. TCS generally maintained higher NPMs compared to Infosys, indicating better profitability and cost management. However, both TCS and Infosys faced a decline in NPM in recent years, which might suggest challenges in maintaining profitability.

Asset Turnover Ratio (ATR): TCS consistently outperformed Infosys in converting its assets to generate revenue. The increasing trend in both companies' assets turnover suggests improved utilization of assets over time, with TCS showing a more significant improvement but there is a huge difference between the ATR of both companies.

Equity Multiplier Ratio: TCS consistently maintained a lower equity multiplier compared to Infosys, this indicates that TCS is less dependent on debt financing to fund its assets. TCS's decreasing trend in the equity multiplier suggests a shift towards using more equity financing, while Infosys exhibited fluctuations without a clear trend.

Return on Equity (ROE): Both companies demonstrated a positive trend in ROE, indicating improving profitability and efficiency in generating returns for shareholders. Based on the statistical analysis of ROE for TCS and Infosys, there is strong evidence to suggest that TCS has a significantly higher average ROE compared to Infosys. This may indicate better financial performance and more efficient use of shareholder capital by TCS relative to its competitor, Infosys. TCS has generally maintained a healthy ROE over the years, indicating efficient utilization of assets and profitability. However, there have been some fluctuations in ROE, influenced by changes in net profit margin, assets turnover, and equity multiplier.

Hypothesis Testing: The findings from the independent t-test reveal a significant contrast in the Return on Equity between TCS and Infosys. TCS's superior average ROE implies that it has been more successful in delivering returns to its investors compared to Infosys.

Suggestions:

Cost Management: After analysis the study shows a decline in NPM ratio for both companies, focusing on cost management strategies could help in maintaining profitability. Identifying areas for cost reduction without compromising quality can lead to improved financial performance.

Asset Utilization: While both the businesses have shown positive improvements in asset turnover ratios, further enhancing asset utilization could lead to increased revenue generation. Optimizing resource allocation and operational efficiency can help maximize returns from existing assets.

Debt Management: Infosys could consider strategies to reduce its reliance on debt financing, which might contribute to a lower equity multiplier. This could potentially lead to improved financial stability and reduced financial risk.

Profitability Enhancement: Exploring ways to enhance net profit margins can positively impact overall financial performance. Strategies such as diversifying revenue streams, improving pricing models, and streamlining operations could contribute to better profitability.

Capital Structure Optimization: TCS's shift towards using more equity financing might indicate a proactive approach to balancing its capital structure. Infosys could evaluate its financing mix to ensure an optimal balance between equity and debt financing.

Continuous Improvement: Both companies should continue their efforts to maintain the positive trend in ROE. This could involve ongoing monitoring of financial indicators, adapting to market changes, and consistently seeking opportunities to enhance shareholder value.

Competitive Analysis: Examining industry peers' financial performance and practices can provide insights into areas of improvement. Identifying best practices and benchmarks can guide both TCS and Infosys in setting performance targets.

Innovation and Differentiation: Exploring avenues for innovation and differentiation can contribute to increased revenue and profitability. Diversifying service offerings, embracing emerging technologies, and capturing new markets can create competitive advantages.

Risk Management: Given the fluctuating financial indicators, both companies should prioritize effective risk management strategies. This includes assessing market risks, regulatory changes, and global economic factors that could impact their financial performance.

Investor Communication: Effectively communicating the financial health and performance of the companies to investors and stakeholders can enhance their confidence. Transparency about strategies, risks, and financial goals can foster trust and attract potential investors.

In conclusion, the DuPont analysis provides valuable insights into TCS and Infosys' financial performance. By focusing on areas such as cost management, asset utilization, equity financing, and overall profitability, both companies can work towards sustaining and enhancing their financial performance in the ever-changing business landscape.

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