Vol. 7 No. 10 October, 2022

International Journal of Mechanical Engineering

Study of Ratio-Based Financial Performance Analysis of Few Companies

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ABSTRACT

This study attempts to measure the financial performance of the ten Indian Stock Listed Companies for a period of ten years i.e. from 2012 to 2021. To achieve the objectives of this study, ratios are computed and further statistical inferences are done. The findings of the research revealed substantial differences across these financial ratios. This suggests that there are significant variations in financial performance or efficiency across the entities or samples being studied. Such insights can be invaluable for decision-makers in finance, investment, or management, allowing them to better understand and potentially address disparities in performance or efficiency among different entities. The Levene Test results, indicating significant differences in variances across financial ratios, necessitated the application of the Welch Test to appropriately evaluate mean differences. The Welch Test's noteworthy P-values across all financial ratios affirm the existence of notable divergences in financial outcomes among the companies. This variability suggests that companies operate under varying levels of financial health and efficiency, shaped by a complex interplay of industry-specific factors, management strategies, and market dynamics. The study emphasizes the critical importance of employing robust statistical techniques in financial analysis to derive precise and meaningful insights. Traditional analytical approaches may not suffice, particularly when dealing with disparate variances among datasets. By leveraging the Welch Test, this research offers a more nuanced comprehension of financial performance across companies, furnishing stakeholders with a reliable basis for informed decision-making.

KEYWORDS: Financial Performance Analysis, Ratio Analysis.

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INTRODUCTION

Financial Performance Analysis is a vital process for understanding the health and trajectory of a firm's financial standing. By investigating the relationships between items on the balance sheet and profit and loss account, this analysis uncovers both strengths and weaknesses within the organization. Financial performance analysis enables forecasting not only for the short term but also for the long term. This forecasting helps in planning and decision-making processes, allowing the company to anticipate challenges and opportunities. It helps in evaluating past decisions, reviewing performance, and implementing corrective actions if necessary. By adhering to accounting principles and conventions, companies can portray a comprehensible and transparent picture of their financial status, enabling effective decision-making and strategic planning. By assessing financial performance, companies can find areas for potential growth involving expanding into new markets, introducing new products or services, or optimizing existing processes to improve efficiency. Financial Performance Analysis helps varied stakeholders from different perspectives. Suppliers and creditors are interested in the liquidity of the firm to ensure timely payments and assess the risk of doing business with the company. Bondholders are anxious with the firm's cash flow ability to confirm that it can meet its debt obligations and provide returns on their investments. Investors focus on both current and expected future earnings, as well as the stability of those earnings, to assess the attractiveness and risk of investing in the company. Internal stakeholders, such as management, are interested in financial performance to ensure effective internal control, improve the company's financial condition, and enhance overall performance. In summary, effective financial performance measurement serves the interests of various stakeholders by providing them with the necessary information to make informed decisions regarding their involvement with the company. Financial analysts regularly measure the firm's liquidity, solvency, efficiency, profitability, operating efficiency, and financial stability in both short-term and longterm. Ratio analysis provides relative measures of the company's performance and can indicate evidences to the underlying financial position. For measuring financial position and financial efficiency, appropriate level of financial performance indicators is required with whom comparison can be made. Generally, liquidity Ratio, Profitability Ratio and Per share Ratio are highly useful in determining financial position, financial performance, and the financial stability of the company.

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REVIEW OF LITERATURE

The topic of financial performance analysis has garnered significant attention in academic literature. Researchers from various fields such as finance, accounting, economics, and management have contributed to this body of knowledge. Here are some studies in various industries found in the literature on financial performance analysis in India.

The study conducted by **Kumara and Abhilasha (2015)** provided a critical analysis of the financial performance of the Indian Automobile industry. The researchers aimed to assess various aspects such as liquidity, profitability, solvency, and efficiency through ratio analysis. They utilized secondary data from annual reports of the top ten companies listed in the ET 500 ranks, spanning a period of eight years from 2007 to 2014. The results of the study showed that strategic decision-makers within the automobile industry need to focus on factors that can exert a latent and significant impact on the performance of their companies. Also, the study emphasized the importance of assessing parameters such as economic value added (EVA) and refined economic value added (REVA) to comprehensively evaluate the financial performance of the companies under consideration. In summary, Kumara and Abhilasha's study underscored the necessity for industry players to consider a broader range of financial indicators and adopt a strategic approach to enhance their performance in the Indian Automobile sector.

The research paper by **Maisuria and Allad (2016)** focused on analysing the profitability of certain Indian IT companies over the period from 2010-11 to 2014-15. The study revealed differences in the profitability levels among the companies under study. Specifically, the paper highlighted that Oracle Financial Services performed satisfactorily in terms of Net Profit Ratio and Earnings Per Share (EPS). However, its performance in terms of Net Worth Ratio and Return on Capital Employed (ROCE) was deemed unsatisfactory. In contrast, Tata Consultancy Services (TCS) appeared as the highest-performing company according to the research findings. On the other hand, Tech Mahindra was identified as the lowest performer among the selected Indian IT companies based on the profitability ratios analysed in the study. Overall, the research paper provided insights into the varying levels of profitability among the selected Indian IT companies, with TCS leading the pack and Tech Mahindra lagging.

Kumar P, Singh R. K., & Kharab K. (2017) examined the efficiency and productivity dynamics of the Indian telecommunication sector from 2008 to 2015, employing a non-parametric Data Envelopment Analysis (DEA) approach. Here is a breakdown of the key findings and implications:

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The study reveals that the year-wise mean TFP growth is positive only in 2011 and 2013, with an overall negative TFP growth observed throughout the period. Negative TFP growth is primarily attributed to negative technology change rather than changes in firm inefficiency. Despite the negative TFP growth, the mean efficiency score is positive. This positive efficiency score is supported by a scale efficiency change, indicating that firms in the Indian telecommunication sector are operating efficiently in terms of scale. The study identifies several determinants positively affecting TFP growth in Indian telecommunication firms. These include profit intensity, advertisement intensity, import intensity, and capital intensity. Conversely, the firm's debt ratio negatively affects TFP growth. The findings suggest that policymakers can enhance the performance of telecommunication firms by focusing on increasing key determinants such as profit intensity, advertisement intensity, import intensity, and capital intensity. Additionally, reducing the firm's debt ratio may also contribute positively to TFP growth.

Rosy Dhingra, Kapil Dev, Madhuri Gupta (2018) considered a sample of eighteen FMCG companies listed on the Bombay Stock Exchange. The selection criteria for these companies was based on market capitalization. Data is collected for a period of twelve years, ranging from April 1, 2006, to March 31, 2017. The study utilizes Wilks' lambda and Multiple Discriminant Function Analysis for effective implementation of discriminatory analysis. These statistical methods help in assessing the discriminatory power of financial ratios in distinguishing between the different market performance categories. The results indicate that revenue from operations per share is identified as the most important ratio for assessing a company's market performance. Debt equity ratio and inventory turnover ratio are found to have moderate impact in evaluating a company's stock market performance. On the other hand, the dividend payout ratio is identified as having less impact in assessing the company's stock market performance. Overall, the study gives insights into the effectiveness of various financial ratios in discerning the market performance of FMCG companies over the specified time, helping in better understanding and decision-making within the industry.

Partha Ghosh (2019) in his study focused on comparing the financial performance of selected oil refineries in India over the period from 2005 to 2018. The objective was to identify differences in the financial positions and performances of these firms. The researcher used secondary data for their analysis. To attain the objective, the researchers did statistical analyses such as calculating means and variances to understand the central tendencies and variability within the data. Additionally, he likely conducted F-tests to determine whether there were significant differences

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between the financial metrics of the selected oil refineries. By employing these statistical techniques, the researcher aimed to draw conclusions regarding the financial performance disparities among the oil refineries under study.

Das, A. (2020) the objectives of the study were to analyse the liquidity position of the selected commercial banks and to examine the guidelines and provisions related to loan classification and loan loss provision. The conclusion drawn from the study indicates that the liquidity position of Nepal Bank Limited was found to be higher compared to Nabil Bank Limited. This suggests that Nepal Bank Limited may have more assets readily available to meet its short-term obligations. The average mean, standard deviation, and coefficient of variation of Nabil Bank Limited were observed to be higher than those of Nepal Bank Limited. This implies that Nabil Bank Limited may have higher returns, but it also indicates that it is riskier compared to Nepal Bank Limited.

Ghosh et al. (2021) studied the efficiency of five major steel companies was measured using two analytical techniques: Data Envelopment Analysis (DEA) and Factor Analysis. The study employed equity capital as an input variable and Profit After Tax (PAT) as an output variable for the DEA analysis. Additionally, working capital and total assets were used as input variables for the factor analysis. The primary objective of the study was to assess the efficiency levels of these steel companies based on their utilization of resources, particularly equity capital and working capital, to generate profits. By utilizing DEA and Factor Analysis, the researchers aimed to provide insights into the operational performance of these companies and identify areas where managerial decisions could be improved to enhance efficiency. Through these efficiency measurements, the study aimed to facilitate better decision-making among managers, enabling them to identify areas for improvement and implement strategies to enhance operational performance. Ultimately, the study contributes to the understanding of factors influencing the efficiency of steel companies and provides a framework for optimizing resource utilization and improving operational performance in the steel industry.

Dr. Kanchan& Teena Verma (2022) conducted a comprehensive examination and evaluation of the financial results of five pharmaceutical companies: Sun Pharmaceutical Industries Ltd., Dr. Reddy's Laboratories Limited, Cipla Limited, Lupin Limited, and Aurobindo Pharma Limited. The study period spans from March 2016 to March 2020.By doing so, the researchers seek to gain insights into the viability and financial soundness of the companies under consideration. The analysis conducted using ANOVA (Analysis of Variance) revealed a significant difference in the profitability of the selected pharmaceutical companies during the study period. This suggests that

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there are notable variations in the profit performance among the companies over the specified timeframe. Overall, the study provides valuable insights into the financial performance of the selected pharmaceutical companies, shedding light on their profitability dynamics and potentially contributing to informed decision-making among policymakers, administrators, planners, economists, and research workers in the pharmaceutical industry.

Literature review reveals various methodologies and techniques used to analyse financial performance, including ratio analysis, trend analysis, comparative analysis, regression analysis, and more advanced techniques such as Data Envelopment Analysis (DEA) and Factor Analysis. Overall, the literature on financial performance analysis provides a rich and diverse array of insights, methodologies, and empirical findings that contribute to our understanding of how to conduct our research.

RESEARCH METHODOLOGY:

The methodology of this study was meticulously designed to assess and compare the financial performance of a selection of prominent companies, including L&T, Asian Paints, Power Grid, NTPC, ONGC, Coal India, UltraTech, Tata Steel, Vedanta, and Noida Toll. The core objective was to analyze several key financial ratios-Earnings Per Share (EPS), Book Value (BV), Earning Yields (EY), Net Profit (NP), Return on Capital Employed (ROCE), Asset Turnover Ratio (ATR), Current Ratio (CR), Quick Ratio (QR), and Inventory Turnover Ratio (ITR)-to discern whether financial performance indicators differ significantly among these companies. To achieve this, the study embarked on a comprehensive data collection phase, wherein financial data pertaining to the aforementioned ratios were systematically extracted from the annual reports of the companies for the same time period, ensuring uniformity and comparability of the data. Recognizing the potential for variability in financial data across different companies and industries, the study initially applied the Levene Test to evaluate the homogeneity of variances among the selected financial ratios. The significance of variance differences observed prompted a deviation from traditional ANOVA tests in favor of the Welch Test, a more robust means of statistical analysis that accommodates variance inequality. The Welch Test was thus employed to meticulously compare the means of the financial ratios across the companies. This approach was underpinned by a commitment to rigorous statistical analysis and ethical considerations, including the confidentiality and integrity of financial data. Through this methodological framework, the research aimed to provide a nuanced understanding of the financial health and performance of the selected companies, contributing

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valuable insights for stakeholders and enhancing the academic discourse on financial performance

analysis.

RESULT AND ANALYSIS:

Descriptive Statistics

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		ROCE	10	11.30	2.54		ROCE	10	9.97	3.55
ATR 10 63.23 8.53 ATR 10 39.90 6.03		ATR	10	63.23	8.53		ATR	10	39.90	6.03
CR 10 1.17 0.29 CR 10 0.78 0.21		CR	10	1.17	0.29		CR	10	0.78	0.21
QR 10 0.86 0.24 QR 10 0.41 0.20		QR	10	0.86	0.24		QR	10	0.41	0.20
ITR 10 9.80 1.13 ITR 10 6.13 1.00		ITR	10	9.80	1.13		ITR	10	6.13	1.00

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Vedanta					Noida Toll				
Ratio	Ν	Mean	S.D.		Ratio	Ν	Mean	S.D.	
EPS	10	7.04	19.84		EPS	10	0.84	2.98	
BV	10	182.52	49.40		BV	10	23.68	3.71	
EY	10	-0.02	0.19		EY	10	-0.09	0.29	
NP	10	7.46	20.77		NP	10	-69.22	162.93	
ROCE	10	5.86	7.60		ROCE	10	1.76	11.47	
ATR	10	27.42	8.73		ATR	10	11.68	7.16	
CR	10	0.48	0.10		CR	10	0.50	0.31	
QR	10	0.32	0.14		QR	10	0.49	0.31	
ITR	10	5.93	1.48		ITR	10	387.44	408.58	

DOI: https://doi.org/10.56452/10-17

The descriptive statistics table presents an in-depth analysis of various financial ratios for a selection of companies, providing insights into their financial health and performance. For L&T, the data highlights a strong earnings per share (EPS) average of 52.14 with a standard deviation (S.D.) of 17.52, indicating variability in earnings power among its entities. Its book value (BV) stands at an average of 408.46 with a relatively low standard deviation, suggesting a consistent asset base across the measured period. Asian Paints shows a notable variance in its EPS, with a mean of 37.23 but a high standard deviation of 36.11, indicating significant fluctuations in earnings. However, its return on capital employed (ROCE) is exceptionally high at 32.70, showing efficient capital use, albeit with a higher variance as reflected in its standard deviation of 2.40. Power Grid and NTPC exhibit lower EPS averages compared to L&T and Asian Paints but demonstrate higher efficiency in earnings yields (EY), with Power Grid showing an EY of 0.09 and NTPC at 0.10, both indicating attractive earnings relative to share price. Their net profit (NP) ratios, particularly Power Grid's impressive average of 30.03 with a low standard deviation, signify consistent profitability.

ONGC and Coal India present interesting contrasts; ONGC has a balanced profile with a moderate EPS of 18.29 and a relatively high ROCE of 11.76, suggesting effective capital employment. Coal India, however, shows an outlier in net profit (NP) with an extraordinary mean of 3417.72, largely due to its scale of operations and market dynamics influencing profitability, although the variance is notably high. UltraTech Cement stands out with the highest EPS average of 105.98 among the companies analyzed, indicating strong earnings capacity. Its book value (BV) also significantly surpasses others at 878.49, pointing to a substantial asset base. Tata Steel and Vedanta, both in the metals and mining sector, exhibit differing financial health indicators. Tata Steel's EPS mean of 63.04 outperforms Vedanta's 7.04, suggesting higher profitability. However, Vedanta's negative EY indicates potential challenges in generating earnings relative to its share price. Noida Toll's financial ratios reveal a challenging situation, with a negative EPS mean and a significantly

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negative NP, reflecting operational or financial difficulties. However, its inventory turnover ratio (ITR) mean is remarkably high at 387.44, though this comes with high variance, indicating possible fluctuations in asset liquidity.

Ratio	Levene Statistic	DF1	DF2	P-value (Sig.)	Significant/ Insignificant
EPS (Earning Per Share)	6.539	9	90	.000	Significant
BV (Book Value)	12.551	9	90	.000	Significant
EY (Earning Yields)	20.346	9	90	.000	Significant
NP (Net Profit in %)	20.346	9	90	.000	Significant
ROCE (Return on Capital Employed)	15.473	9	90	.000	Significant
ATR (Asset Turnover Ratio)	14.343	9	90	.000	Significant
CR (Current Ratio)	13.770	9	90	.000	Significant
QR (Quick Ration)	14.038	9	90	.000	Significant
ITR (Inventory Turnover Ratio)	18.676	9	90	.000	Significant

Table: 1.1 Test of Homogeneity (Equality) of Variances

The table presents the results for various financial ratios, including Earnings Per Share (EPS), Book Value (BV), Earning Yields (EY), Net Profit (NP), Return on Capital Employed (ROCE), Asset Turnover Ratio (ATR), Current Ratio (CR), Quick Ratio (QR), and Inventory Turnover Ratio (ITR). Across all these ratios, the Levene Statistic reveals significant differences in variances, as indicated by a P-value of .000, far below the conventional threshold of .05 for statistical significance.

The significance of the Levene Statistic across all ratios implies that the assumption of equal variances among the groups being compared is not met. This finding is crucial because it suggests that the conditions for applying the traditional Analysis of Variance (ANOVA) tests might not be appropriate for this dataset. ANOVA typically requires the assumption of homogeneity of variances to be fulfilled for it to be reliably used. Therefore, the significant results from the Levene Test direct the analysis towards more robust methods that do not assume equal variances across groups, such as the Welch ANOVA or other non-parametric tests.

Table: 1.2 Robust Tests of Equality of Means of different Ratio

Ratio	Test Name	Statistic	DF1	DF2	P-value (Sig.)
EPS	Welch	30.356	9	34.964	.000
BOOK_VALUE	Welch	229.294	9	35.272	.000
EARNING_YIELDS	Welch	34.796	9	35.243	.000
NET_PROFIT	Welch	83.485	9	36.237	.000
ROCE	Welch	102.446	9	35.581	.000
ATR	Welch	202.575	9	35.382	.000
CR	Welch	54.333	9	35.834	.000
QR	Welch	48.461	9	35.946	.000
ITR	Welch	103.239	9	35.694	.000

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The table presents the Welch Test statistics for several key financial ratios: Earnings Per Share (EPS), Book Value (BV), Earning Yields (EY), Net Profit (NP), Return on Capital Employed (ROCE), Asset Turnover Ratio (ATR), Current Ratio (CR), Quick Ratio (QR), and Inventory Turnover Ratio (ITR). The significant test statistics, coupled with P-values of .000 across all ratios, demonstrate statistically significant differences in the means of these financial ratios among the companies studied. This indicates that, beyond just variance, the central tendency of these financial measures also differs significantly across companies, highlighting the diversity in financial performance and efficiency among the firms analyzed.

The high Welch statistic for Book Value (BV) at 229.294 and for Asset Turnover Ratio (ATR) at 202.575, with degrees of freedom (DF1) at 9 and DF2 hovering around the mid-30s, underscores particularly stark differences in these areas. This suggests that companies vary widely in their asset valuation and in how efficiently those assets are utilized to generate revenue. Similarly, significant statistics for ROCE (102.446) and Net Profit (NP) (83.485) highlight differences in profitability and capital efficiency among the companies, pointing to varying levels of operational and financial management effectiveness.

The results for more liquidity-focused ratios such as Current Ratio (CR) and Quick Ratio (QR), with statistics of 54.333 and 48.461 respectively, further illustrate the variance in the companies' liquidity positions, potentially affecting their short-term financial stability. The uniformity of the P-value across all ratios confirms that these differences are statistically significant, negating the likelihood that such variations could occur by chance. This underlines the importance of considering a diverse array of financial ratios when evaluating the performance and financial health of companies, as different ratios can highlight various aspects of a company's operational and financial status.

CONCLUSION:

The conclusion of this study, centered on the comprehensive analysis of financial ratios across a diverse set of companies, underscores the significant variability in financial performance within the corporate sector. Through meticulous examination utilizing both the Levene Test for equality of variances and the Welch Test for equality of means, this research has illuminated the substantial differences across key financial ratios such as Earnings Per Share (EPS), Book Value (BV), Earning Yields (EY), Net Profit (NP), Return on Capital Employed (ROCE), Asset Turnover Ratio (ATR), Current Ratio (CR), Quick Ratio (QR), and Inventory Turnover Ratio (ITR).

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DOI : https://doi.org/10.56452/10-17

The findings reveal that financial performance is not homogenous across the studied companies. The significant results from the Levene Test indicated the presence of varied variances among the financial ratios, necessitating the adoption of the Welch Test to accurately assess the differences in means. The Welch Test's significant P-values across all financial ratios confirm the presence of marked disparities in financial outcomes among the companies. This variability suggests that companies operate under differing financial health and efficiency levels, reflecting a complex interplay of industry-specific factors, management practices, and market conditions. Notably, the study highlights the critical importance of applying robust statistical methods in financial analysis to draw accurate and meaningful insights. Traditional analytical methods may not always be suitable, especially in the presence of heterogeneous variances among data sets. By employing the Welch Test, this research provides a more nuanced understanding of financial performance across companies, offering a solid foundation for stakeholders to make informed decisions.

Furthermore, the research contributes valuable insights into the comparative analysis of financial health and performance, facilitating a deeper understanding of the financial positioning of companies within their respective industries. For investors, policymakers, and corporate strategists, these insights are crucial for making informed investment decisions, formulating policies, and developing strategic plans to enhance financial performance and sustainability. In conclusion, this study not only adds to the academic literature on financial performance analysis but also serves as a practical guide for analyzing corporate financial health. The significant variations in financial ratios across companies underscore the necessity for a tailored approach to financial analysis, taking into consideration the unique contexts and challenges faced by each firm. As the corporate landscape continues to evolve, such analytical rigor will be increasingly important in navigating the complexities of financial performance and sustainability.

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