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Financial Health Assessment of Major Listed Renewable Energy Companies in India (2019–2024)

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Abstract

The renewable energy sector plays a crucial role in India's sustainable development and energy transition. Given its capital-intensive nature and exposure to macroeconomic shocks, assessing the financial health of renewable energy firms is essential. This study evaluates the financial performance of major listed renewable energy companies in India during FY2019–FY2024, covering pre-pandemic, pandemic, and post-pandemic phases. Using secondary data from audited financial statements, the study applies ratio analysis, One-Way ANOVA, correlation analysis, and the Altman Z-Score model. The findings indicate that despite temporary fluctuations during the pandemic, there is no statistically significant structural change in liquidity, profitability, leverage, or efficiency. Firms maintained adequate solvency, moderate profitability, and low financial distress risk. Market valuation is found to be positively associated with asset-based profitability. The study concludes that the renewable energy sector in India demonstrates financial resilience and structural stability.

Keywords: Renewable Energy, Financial Health, Financial Ratios, Altman Z-Score, India

1. Introduction

India's renewable energy sector has emerged as a key driver of sustainable economic growth, supported by policy initiatives and rising energy demand. With a target of achieving 500 GW of non-fossil fuel capacity by 2030, the sector has attracted significant investments. However, the industry remains capital-intensive and exposed to financial risks such as high leverage, delayed receivables, and project execution challenges.

The COVID-19 pandemic further disrupted operations through supply chain delays and reduced revenues. While the sector has shown recovery post-pandemic, a comprehensive financial evaluation of listed renewable firms across multiple financial dimensions remains limited.

This study addresses this gap by assessing financial stability, resilience, and structural performance of major renewable energy firms in India during FY2019–FY2024.

2. Literature Review

Existing studies highlight both growth and financial challenges in the renewable energy sector. Research indicates that the pandemic led to revenue declines and increased leverage, while recovery trends remain uneven across firms. Prior studies are often limited to single firms or small samples and lack comprehensive financial ratio analysis.

Additionally, most research focuses on macro-level insights or stock performance, with limited emphasis on firm-level financial health and sub-sectoral comparisons. There is also a lack of integrated analysis combining liquidity, profitability, leverage, efficiency, and financial distress indicators.

This study bridges these gaps by providing a multi-dimensional financial assessment using a large sample of listed firms over a six-year period.

3. Research Methodology

This study adopts a quantitative research design using secondary data collected from audited financial statements of over 50 renewable energy companies listed on BSE and NSE.

Study Period

FY2019–FY2024 (Pre-pandemic, Pandemic, Post-pandemic)

Key Variables

- **Liquidity:** Current Ratio, Quick Ratio
- **Profitability:** ROA, ROE, Net Profit Margin
- **Leverage:** Debt-to-Equity Ratio, Interest Coverage Ratio
- **Efficiency:** Asset Turnover, Inventory Turnover
- **Market Performance:** P/E Ratio
- **Financial Distress:** Altman Z-Score

Analytical Tools

- Descriptive Statistics
- One-Way ANOVA
- Correlation Analysis
- Regression Analysis
- Altman Z-Score Model

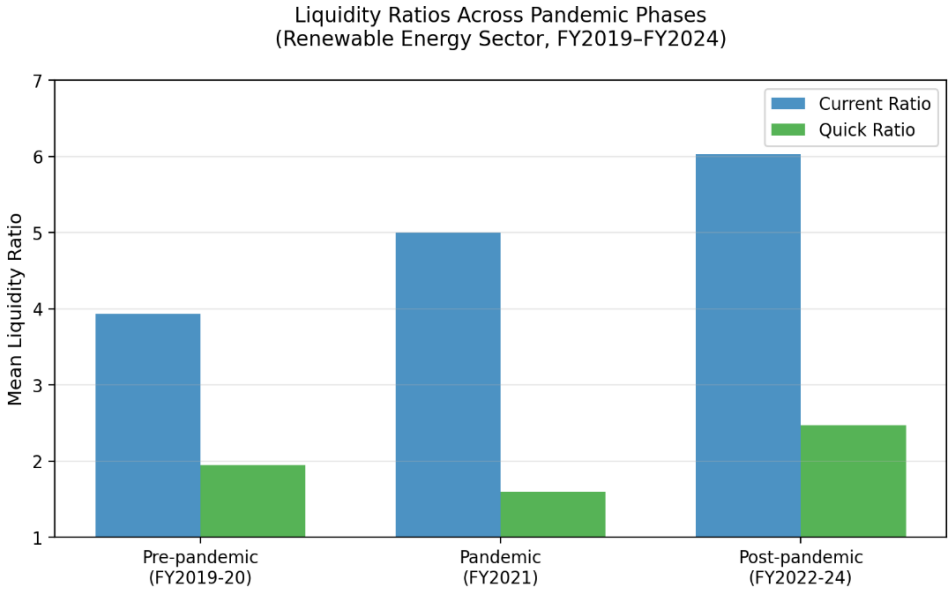
The level of significance is set at 5%.

4. Results and Discussion

4.1 Liquidity Analysis

Liquidity ratios remained above standard benchmarks throughout the study period. ANOVA results indicate no statistically significant differences across years ($p > 0.05$), suggesting stable short-term solvency despite pandemic disruptions.

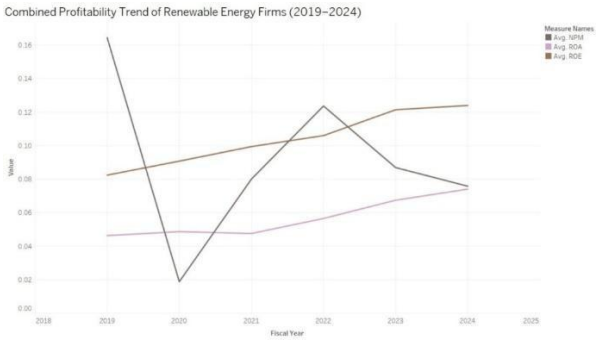
Ratio	N	Mean	Std. Dev.	Min	Max
Current Ratio	259	3.42	6.79	1.23	38.30
Quick Ratio	259	4.42	6.90	1.26	38.31



4.2 Profitability Analysis

Profitability indicators show moderate performance with gradual improvement in the post-pandemic period. However, ANOVA results confirm no significant variation across years, indicating structural stability in earnings performance.

Ratio	N	Mean	Std. Dev.	Min	Max
ROA	220	0.067	0.095	-0.343	0.332
ROE	174	0.105	0.255	-1.123	0.445
NPM	279	0.091	0.436	-4.677	3.111



4.3 Leverage and Risk Analysis

The Debt-to-Equity ratio increased during the pandemic but normalized in later years. Interest Coverage Ratio improved post-pandemic. Statistical tests indicate no significant structural changes, reflecting stable financial risk exposure.

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ANOVA

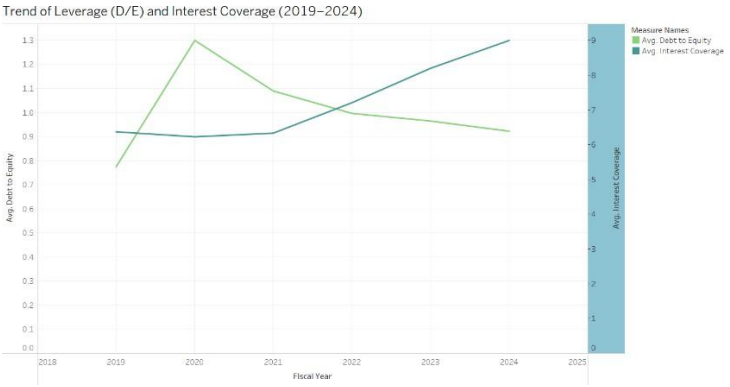
Debt_to_Equity

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	4.344	5	.869	.453	.811
Within Groups	322.050	168	1.917		
Total	326.394	173			

ANOVA

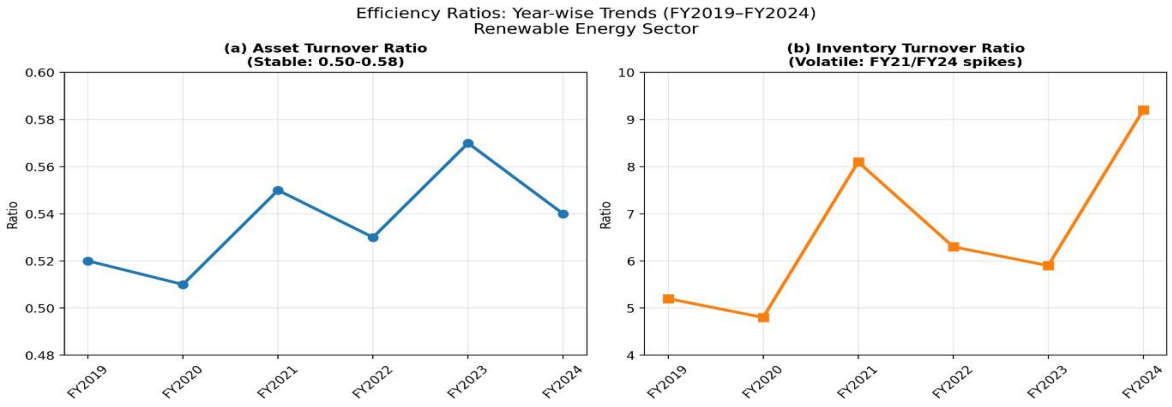
Interest_Coverage

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	195.951	5	39.190	2.052	.074
Within Groups	3265.347	171	19.096		
Total	3461.298	176			



4.4 Efficiency Analysis

Asset Turnover remained consistent across the study period, indicating stable asset utilization. Inventory Turnover showed variability but no statistically significant differences, suggesting firm-level variations rather than systemic changes.



4.5 Market Valuation

Correlation analysis shows a significant positive relationship between ROA and P/E Ratio, indicating that investors value asset efficiency. ROE shows weak association, while Net Profit Margin has no significant impact on valuation.

Correlation Results

Variable Pair	Correlation (r)	p-value	Interpretation
P/E & ROA	0.340	0.001	Moderate positive, significant
P/E & ROE	0.254	0.050	Weak positive, marginally significant
P/E & NPM	0.065	0.487	Not significant

4.6 Financial Distress Analysis

Altman Z-Score values remained within the safe zone throughout the study period. No statistically significant differences were observed across phases, confirming strong financial resilience.

ANOVA

Altman_Z_Score

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	79.138	2	39.569	1.418	.245
Within Groups	4772.928	171	27.912		
Total	4852.066	173			

5. Conclusion

The study concludes that India's renewable energy sector demonstrates strong financial stability and resilience despite pandemic-related disruptions. Liquidity and leverage remained within acceptable limits, while profitability showed gradual improvement. Financial distress risk remained low, and firms maintained stable operational efficiency.

The findings highlight that the sector's structural strength is supported by long-term contracts, regulatory frameworks, and strategic importance in India's energy transition.

6. Implications

- **Investors:** Focus on asset efficiency (ROA) for valuation decisions
- **Policymakers:** Strengthen financial frameworks to support capital-intensive growth
- **Managers:** Maintain balanced leverage and efficient asset utilization

7. Limitations and Future Scope

The study is limited to secondary financial data and excludes macroeconomic and technical performance factors. Future research may incorporate ESG metrics, firm-level case studies, and predictive financial modeling.

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