Green Metrics, Bright Prospects: Financial Rhythms of KPI Green Energy

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Abstract

The financial performance of a company serves as a critical determinant of its success and long-term sustainability. This research delves into the financial health of KPI Green Energy Limited over a period spanning 2016 to 2024, using an extensive analysis of key financial ratios. Advanced statistical tools such as ANOVA, regression analysis, and DuPont analysis are employed to evaluate the company's profitability, liquidity, operational efficiency, and leverage. The study incorporates the Altman Z-Score to assess
bankruptcy risk and financial stability. Additionally, future financial ratios are forecasted using the Compound Annual Growth Rate (CAGR) methodology, providing a forward-looking perspective on KPI Green Energy's financial trajectory. A Green Asset Ratio (GAR) analysis is further integrated to align financial performance with environmental sustainability, drawing on the framework proposed by Brühl (2023). Findings reveal significant financial trends, including variability in profitability, debt management challenges, and fluctuating liquidity metrics. Regression analysis highlights statistically significant associations between key financial ratios, offering deeper insights into interdependencies. The Altman Z-Score analysis indicates the company's proximity to financial distress, providing actionable insights for stakeholders. Benchmarking against industry standards, the study identifies both strengths and areas for improvement. This research emphasizes the importance of prudent financial planning, effective risk
management, and sustainability practices in steering KPI Green Energy toward sustained growth and long-term value creation. The study contributes to a broader understanding of financial dynamics within the renewable energy sector, providing actionable insights for both academia and industry professionals.

Keywords: Financial Performance Analysis, Green Energy Sector, Profitability Ratios, Sustainability Metrics, Altman Z-Score, Green Asset Ratio

2. Introduction

The green energy companies were so finicky with regard to the financial evaluation process that it was becoming almost impossible to maintain relevance for it in the evolving arena of sustainable development.

Hence, this has become an issue of concern and continuity giving the sector attention over financing. The financial analysts might want to see how viable these companies are and, indeed, the performance dynamics of an investment therapeutic gift to an investor, policymaker, or stakeholder. The financial analysis is undertaken to figure out whether a company is efficiently operated, in debt-to-equity management, profitable, liquid, and potentially sustainable. When it comes to green energy, financial analysis assumes an even important role as these companies generally adopt a capital-intensive business model, are fairly subject to regulatory changes, and are either dependent on subsidies or long-term PPAs.

Besides that, traditional parameters like RoE, Net Profit Margin, and EBIT must be coupled with green parameters such as GAR, Carbon Intensity, and ESG indices to render a full picture. Effective financial analysis, therefore, supports strategic planning, investment decision-making, risk mitigation, and regulatory compliance—all of which are pivotal in a sector driven by long-term transformation.

KPI Green Energy Limited, founded in India, specializes in renewable energy solutions, focusing primarily on solar energy. It operates under the Independent Power Producer (IPP) and Captive Power Producer (CPP) business models, delivering energy solutions for both utility-scale projects and captive consumers. Over the years, the company has played a pivotal role in advancing sustainable energy initiatives, contributing to India's energy transition and climate goals.

In recent years, KPI Green Energy has demonstrated significant growth, expanding its asset base and scaling its operations. However, with expansion comes financial complexity, including variations in profitability, debt reliance, and liquidity challenges. As renewable energy demand surges globally, the company faces the dual challenge of capitalizing on growth opportunities while ensuring financial stability.

3. Research Objectives

1. To assess the company’s financial health using key financial ratios.
2. To identify trends in operational efficiency and profitability.
3. To evaluate the impact of financial decisions on the company’s growth.
4. To recommend strategies for enhancing financial stability and operational effectiveness.

4. Methodology

The research methodology employed in this study involves a comprehensive analysis of KPI Green Energy's financial performance over the period 2016 to 2024. Data for the analysis was sourced from the company's financial statements and other relevant records. Key financial ratios such as Book Value Per Share, Return on Assets (RoA), Return on Equity (ROE), and others were calculated and analyzed to assess financial stability and operational efficiency. Statistical tools, including ANOVA and regression analysis, were applied to identify trends, relationships, and variances among the ratios. DuPont analysis was utilized to break down and understand the components driving Return on Equity (ROE). Furthermore, future financial projections were developed using the Compound Annual Growth Rate (CAGR) method. The study also included an evaluation of the Green Asset Ratio based on specific assumptions, providing insights into the company's alignment with sustainability goals. This methodology ensures a thorough and multidimensional assessment of the company’s financial health and performance trends.

5 Literature Review

1. Almondo (2025) embarked on a data-driven analysis of green energy companies in Europe, focusing on certain key financial ratios and KPIs and their effect on profitability. According to the study, the asset-light business model, government subsidy, and diversification of sources of energy acted as the major drivers of firm performances, and hence it is presumed that these factors can work along the same lines for Indian counterparts, such as KPI Green.

2. Giannuzzo and his coauthors (2024) have given a rather broad framework regarding renewable energy communities with a focus on environmental and financial KPIs. Their study underscored the escalating importance of decentralized energy systems and stakeholder inclusion, which can set determinants of capital allocation and operational metrics that apply to renewable firms. Working with bacterial cellulose in green energy harvesting,

3. Kangarshahi et al. (2025) used the lens of sustainability-focused KPIs to say even non-conventional technologies ought to meet financial and environmental criteria-a view that can be extended to solar energy enterprises.

4. In the Best 50 Corporate Citizens report, Shin (2009) found that businesses employing environmental KPIs tend to outshine others financially. This benchmarking of ESG-related corporate performances thus sets a context for examining renewable energy firms through a financial as well as a sustainability lens.

5. Pistore et al. (2023) designed a framework for regenerative indoor environments and linked building-related metrics to energy-related KPIs. This research established concrete relationships between sustainability metrics and financial planning in a corporate context, thereby providing for the Being-Quite Efficient-Energy-Profitable nexus.

6. Kuenkel (2015) highlights collective leadership and systemic thinking for sustainability transitions. His work proposes co-created KPI frameworks that integrate financial and environmental targets: an excellent conceptual basis for renewable energy firms building scalable models.

7. Lee (2019) investigated how health at work, energy use, and design influence organizational KPIs. Though contextualized under workplace health, the findings have relevance for renewable companies seeking to evolve internal sustainability metrics that ultimately bear on profitability.

8. Data from healthcare living labs was used by Miller et al. (2021) to demonstrate how renewable energy-related investments correlate with public health KPIs. The inclusion of co-benefits in green projects could enhance their financial attractiveness if they are linked to social returns on investment.

9. Hale (2018) covered behavioral economic tools such as green defaults and their effect on sustainable consumption. The paper makes a connection from ESG to the user behavior and policy design—a consideration of utmost importance when green companies operate in regulated environments.

10. Wahyuni et al. (2023) analyzed entrepreneurship education funding models and KPI structures. While the focus remained in academia, this paper will shed light on how early-stage green ventures might structure their performance metrics and align them with financial objectives.

11. Bello (2023) looked into machine learning algorithms for credit risk assessment and highlighted how AI-assisted KPIs enhance lending decisions. These insights hold relevance for capital-intensive green energy companies in managing their debt and credit exposure.

12. Gaies et al. (2022) considered investor sentiment related to financial instability in the context of renewable energy investment. It is actioned on the idea that performance KPIs can act as predictors of volatility in green finance markets.

13. Jackson (2022) reviewed the evolving trends within financial statements analysis, citing their gradual shift toward sustainability-adjusted KPIs. His findings support applications of ESG metrics in traditional ratio-based financial analyses, which may be of interest to firms in the green sector.

14. According to Adewale et al. (2023), big data transforms financial analysis in such a way that it allows KPIs to be optimized in real time. For green companies, this entails a paradigm shift in the monitoring of performance metrics and how they are used going forward.

15. Mastilo et al. (2024) ranked financial indicators using the MEREC and MARCOS methods, applying a MCDM approach in banking. The approach could similarly be used in green projects to assess the weightage of KPIs for evaluation and risk analysis.

16. Borodin et al. (2021) went into details of mathematical forecast models that integrate AI with financial ratio analysis. The toolsets are usable for profitability and debt forecasting in dynamic fields such as renewable energy

17. In the study of Varma et al. (2022), the impact of fintech KPIs on the financial structure working of sustainability-linked businesses was studied. The study ties technology-driven innovation to managing KPIs in firms in the energy sector.

18. Fridson and Alvarez (2022) wrote and published a seminal work on financial statement interpretation. Their method of adjusting traditional metrics for the industry context is invaluable in looking at green energy firms with alternative cost structures.

19. Chandra and Mayya (2022) studied the profitability ratios for the FMCG sector to provide a reference point for the pattern of margin ratios, return ratios, and asset utilization ratios across industries. These models lend the lens of comparison for renewable sector benchmarking.

20. Sihombing et al. (2022) have discussed liquidity and debt KPIs in agro-based companies. Their conclusions regarding cash flow sensitivity and working capital constraints are also relevant for green infrastructure firms.

21. Sutrismi et al. (2024) applied financial distress models to consumer goods companies, using ROCE and gearing ratios. These lessons can be applied to green firms, especially in situations of policy uncertainty or interest rate fluctuations.

22. Mehdi et al. (2024) introduced OPARA as a KPI ranking method. This methodology provides an objective ranking of performance indicators which is useful in evaluating complex energy projects.

23. Romiti et al. (2023) conducted win ratio analysis for selection of alternative performance metrics in healthcare trials. Literally, medical-based, the study introduces an evaluation format that could be modified in ESG impact assessments.

24. Mao et al. (2022) proposed a win ratio determination formula for sample sizes. Their version adds more mathematical rigor to KPI assessment and could be used in renewable projects where social or environmental outcomes are being assessed.

25. Wang et al. (2023) proposed Max-Min Ratio Analysis to discriminate feature learning in AI. It could be used in performing feature selection in financial risk scoring systems for green energy portfolios.

26. Pianezze et al. (2021) studied stable isotope analysis in food traceability. Though outside the scope of energy, their aspect of verification and traceability strikes a chord with green projects that need verification of renewable origin.

27. Sihombing et al. (2022) stated common size analysis in agro firms and showed a method of visualizing ratio trends. This will allow the comparison of green firm performances from year to year, considering seasonal revenues.

28. Fadillah et al. (2024) looked into profitability and solvency ratios to uncover distress in Indonesian companies. These financial indicators can further assist renewable companies in creating early warning systems for cash flow or leverage risks.

29. According to Ali (2015), interest-free and ethical banking systems promote inclusive finance. Such alternative instruments are gaining traction in building infrastructure for sustainability, for instance, green bonds and sukuk.

30. Krishna et al. (2022) studied KPIs of green supply chain within Industry 4.0 frameworks. Their study results emphasize the inclusion of smart technologies to increase sustainability and operational efficiencies in solar and wind energy companies.

6. Financial Performance Analysis

6.1 Profitability - The Margin Matrix

Profitability ratios are the class of financial ratios that determine the capability of a company to derive earnings as against revenues, assets, equity, and any other input. These are indicators that help analyze and evaluate a firm's financial situation and operational efficiency. Common profitability ratios include Net Profit Margin, Return on Assets (ROA), Return on Equity (ROE), and Gross Profit Margin. Analysts, investors, and management use these ratios to gain insight into the effectiveness of sales conversions into profits and how resources are utilized to generate returns. Profitability knowledge is vital for comparing changes over time, benchmarking against competitors, and making well-informed strategic decisions.

Table-1 : Profitability Ratio Calculations

NAME	2016	2017	2018	2019	2020	2021	2022	2023	2024
I. GROSS PROFIT RATIO	79.58	125.04	89.73	59.00	76.8	83.04	68.22	45.76	58.26
II.NET PROFIT RATIO	27.92	31.21	23.39	25.71	10.92	21.27	20.24	15.97	14.22
III.OPERATING PROFIT RATIO	26.36	12.00	7.97	6.23	2.92	6.85	8.58	10.08	7.48
IV. RETURN ON INVESTMENTS(ROI)	26.36	12.00	7.97	6.23	2.92	6.85	8.58	10.08	7.48
V. RETURN ON ASSET(ROA)	14.33	9.81	6.89	5.52	2.18	5.85	6.54	7.57	4.93
VI. RETURN ON CAPITAL EMPLOYED(ROCE)	38.23	20.17	7.18	8.97	8.91	14.37	18.03	17.68	15.64
VII. RETURN ON EQUITY(ROE)	56.64	25.63	14.99	8.99	6.63	18.40	28.72	34.34	13.86
VIII. EQUITY MULTIPLIER	25.81	17.36	26.25	18.25	18.43	15.04	11.63	15.83	8.06
IX. EARNINGS PER SHARE	8.09	7.95	6.06	6.35	3.60	12.24	24.69	21.69	18.08
X. DIVIDEND PER SHARE	-	-	-	-	-	-	1.00	1.51	0.32
XI. DIVIDEND PAYOUT RATIO	0.00	0.00	0.00	0.00	0.00	0.00	4.03	6.97	1.75
RE/AT	0.19	0.36	0.37	0.50	0.27	0.11	0.12	0.21	0.37

Profitability ratios for KPI Green Energy paint a broad picture of its financial performance through the years. The Gross Profit Ratio (GPR), Specifically, shows much variability from a maximum of 125.04% to a minimum of 45.76%. This denotes that expenses were held very much in control during some periods while phases of high cost procurement and production were experienced. It is interesting to note that the company's GPR was often much higher than the industry average band of 50%–70%, thereby reflecting the company's efficiency in cost control and pricing strategy. On the other hand, the Net Profit Ratio (NPR) has exhibited a decreasing trend, falling from 27.92% in 2016 to 14.22% in 2024, which could signify an increase in operating expenses or interest charges. However, NPR touching about 20% in some years was, albeit above the average industry range of 10%–15%, an excellent result of operational efficiency during some periods.

The operating profit ratio (OPR) fluctuated even wider, with a range of 2.92% to 26.36%, proving incidences of changes in operational skills of cost and fixed expenses): above 15% being good in the renewable sector; below 15% at times due to non-control of operational expenditure. This has similarly seen a drastic downturn, from 26.36% down to 7.48%, indicative of improper capital use or perhaps costs tied to expansion or debt servicing. This downward trend is crucial since the average ROI for the sector is usually between 8%-12%, and KPI has performed well only in the initial years.

Down with the collars, the ROA followed suit, slumping from 14.33% to 4.93%. While the initial figures were actually higher than the industry averages (5%-10%), their recent fall signified that the company was generating less profit through its assets than before. On the contrary, the ROCE ranged between 38.23% and 15.64%, contrary to the sectoral average of 10%-15%, which i.e., despite its declining trend, still implies efficient capital productivity. Return on Equity saw a sharp decline from 56.64% to 13.86% and may be the consequence of increasing equity base or decreasing net income; still, the figure remains competitive with the industry norms of 10%-15%.

The company's Equity Multiplier (EM) underwent a sharp fall from 25.81 to 8.06, denoting slow divergence from a high debt-dependent profile. Though the result is still out of the 2–5 ideal range of financially stable green-energy companies, it shows improving capital structures. Earnings Per Share (EPS) figures depict shareholder returns, having gone from 8.09 to 24.69 and then down to 18.08, indicating certain fluctuations in profitability or dilution. The general EPS trend, despite the dips of late, is constructive for investor confidence and intimates considerable performance in the early years.

Lastly, the company seems more selective in forging shareholder returns through dividends. The Dividend Per Share record is blank for many early years but later rockets to 1.51 only to fall back to 0.32, showing an evolving yet inconsistent dividend policy. This is akin to the renewable sector norm, where companies prefer reinvesting profits for growth. The Dividend Payout Ratio (DPR) followed a similar path, rising from near 0% to 6.97%, and then falling to 1.75%. This payout pattern is consistent with a growth-oriented firm, although it indicates room for improvement in terms of providing stable returns to shareholders. Overall, the financial metrics present a picture of a company that started strong, experienced growth challenges, but continues to maintain performance above industry benchmarks in several key areas.

6.2 Solvency Capital Backbone Check

Solvency ratios are very important financial metrics used to gauge a company's ability to satisfy its long-term financial obligations. While liquidity ratios deal with short-term financial health, solvency ratios concern themselves with a company's capital structure and the ability to remain solvent in the long run. Debt-to-Equity Ratio, Interest Coverage Ratio, and Equity Ratio are among the usual types of solvency ratios. These indicators assist investors, creditors, and management in assessing the degree of financial risk a company undertakes, mainly regarding its dependence on debt and the ability to pay interest thereon. Therefore, a good solvency will attest to a good financial base, whereas a bad one may indicate financial distress or over-leverage.

Table-2 : Solvency Ratio Calculations

NAME	2016	2017	2018	2019	2020	2021	2022	2023	2024
EQUITY RATIO	0.47	0.47	0.53	0.69	0.44	0.37	0.30	0.29	0.54
DEBIT RATIO	0.00	0.00	0.00	0.00	0.00	0.00	0.21	0.20	0.14
DEBT TO EQUITY RATIO	2.95	1.61	1.18	0.63	2.04	2.15	3.39	3.53	1.81
DEBT TO TOTAL ASSESTS RATIO	0.75	0.62	0.54	0.39	0.67	0.68	0.77	0.78	0.64
CAPITAL GEARING RATIO	0.000	0.000	0.002	0.001	0.011	0.004	0.696	0.668	0.258

PROPRIETARY RATIO	0.25	0.38	0.46	0.61	0.33	0.32	0.23	0.22	0.36

The solvency profile depicts some enlightening instances as interpreted with respect to basic financial ratios. The equity ratio that declined within the range of 0.29 and 0.69 depicts that, at times, shareholder's equity is employed to finance assets. The peak in 2019 of 0.69 would imply less reliance on external debt and therefore financial suavity, whereas the modulo indicates an increase in reliance on external borrowing, settling at 0.29 in 2023. Correspondingly, debt ratios maintain a conservative view from zero in the initial years to 0.21 and 0.14 in the later years, respectively. Although below the average of the renewable energy industry (0.2-0.5) for such figures, they somehow indicate the gradual shift toward a prudent use of debt by the company with its growth.

Remaining solvency indicators such as that of the debt-to-equity ratio keep fluctuating from 0.63 in 2019 up to 3.53 in 2023. The low value in 2019 is indicative of less financial risk, whereas the high value in 2023 points at heavy leveraging and thus likely vulnerability. The debt-to-total-assets ratio sings the same song with a climb from 0.39 in 2019 to 0.78 in 2023, over and above the standard industry benchmark of 0.4-0.6. These figures pressure debt dependency in the firm's asset financing mechanism and possibly an aggressive expansion phase over recent year.

The capital gearing ratio, which measures the relationship between fixed-cost capital and equity, showed an upward movement from 0.004 in 2016 to 0.696 in 2022, before taking a nosedive to 0.258 in 2024. Such movements speak about how the company went from a stage of either high or low fixed-cost financing. The proprietary ratio, hovering between 0.22 (2023) and 0.61 (2019), paints a similar picture of the firm's dependency on equity capital. The higher side of the range denotes a good equity base, whereas the lower side could highlight some risks. Thus, these solvency indicators cumulatively suggest that while for a majority of the time, the company has generally kept these ratios within or near the commonly accepted norm of its industry, the recent inclination toward debt would be something to watch out for if longevity of the company's financial stability is to be ensured.

6.3 Liquidity Lens

Liquidity ratios in finance are considered indicators of a company's ability to fulfill its immediate payments and obligations out of its current assets. Liquidity ratios are of paramount importance to stakeholders- Investors, lenders and management-to signal whether a firm will be able to keep up enough cash flow to stay operational in the short run without experiencing solvency problems. These liquidity ratios work by comparing assets like cash, receivables, and inventory against its liabilities—to be precise—the liabilities whose due dates fall within one year.

In light of this, the most common liquidity ratios include the current ratio, which measures total current assets against current liabilities, and the quick ratio, which excludes inventory and other less liquid assets from the calculation. Good liquidity also serves to instill investor confidence, building good credit standing and enhancing the financial flexibility of a company. Firms in capital-intensive industries and in markets characterized by volatility must ensure that adequate liquidity cushions are maintained so as to absorb extraordinary expenses or market shocks without compromising their long-term objectives.

Table-3 : Liquidity Ratio Calculations

NAME	2016	2017	2018	2019	2020	2021	2022	2023	2024
CURRENT RATIO	0.9	1.1	1.7	3.2	1.1	2.2	1.3	1.1	1.5
QUICK RATIO	0.34	0.93	1.58	2.36	0.61	1.42	0.79	0.61	1.13
ABSOLUTE LIQUID RATIO	0.12	0.07	0.08	0.11	0.14	0.39	0.12	0.17	0.17

The liquidity position of the company as evidenced by ratios reveals its strength and weaknesses over the examined years. The ideal current ratio is 1.5-2.0; from the time under observation, it reached a minimum of 0.9 during 2016 and a maximum of 3.2 in 2019. The abnormally higher ratio in 2019 suggests excess liquidity and, hence, idle funds. In contrast, years like 2016, 2020, 2023, and 2024, when the ratio was close to or below 1.0, cast serious doubts as regards the company's capability of meeting its short-term obligations. Generally, for the renewable energy sector, as cash flows in such an environment may not be ever steady, a mean range of 1.2-1.8 is accepted, thus raising a question over liquidity outside this level in several periods.

The quick ratio, excluding inventory, hence measuring the most liquid assets, exhibited wide fluctuations from 0.34 in 2016 to 2.36 in 2019. Lower values, more so for 2016 (0.34) and 2020 (0.61), raise signposts for probable liquidity distress unless the liquidation of inventory is foreseen. Conversely, values peaked in 2019 to show the strongest liquidity, almost certainly from idle funds. Compared to the industry norm of 0.8 to 1.5, KPI's performance remains irregular. Meanwhile, the absolute liquid ratio, which gauges the firm's immediate payment capacity through cash or equivalents, remained consistently below the ideal benchmark of 0.5–1.0, with values between 0.07 (2017) and 0.39 (2021). Despite approaching adequacy in 2021, the persistent underperformance underscores the need for better cash reserve strategies, especially since the renewable energy sector often faces irregular revenue flows due to project-based operations.

6.4 Debt Shield Dynamics – The Coverage Calculations

Coverage ratios are important financial tools used to evaluate a company's ability to service its fixed financial obligations, such as interest payments and debt repayments. These ratios indicate how comfortably a company can meet its financial commitments using its earnings, and they play a vital role in assessing creditworthiness and long-term financial stability. Common coverage ratios include the **Interest Coverage Ratio**, **Debt Service Coverage Ratio (DSCR)**, and **Fixed Charge Coverage Ratio**, among others.

A higher coverage ratio generally signals strong financial health, indicating that the company earns significantly more than its financial obligations. Conversely, lower ratios suggest financial strain and a greater risk of default, which can affect investor confidence and access to future financing. Coverage ratios are particularly useful for lenders, investors, and credit rating agencies to assess the risk profile of a business, especially those operating in capital-intensive industries.

Table-4 Coverage Ratios Calculations

NAME	2016	2017	2018	2019	2020	2021	2022	2023	2024
DEBT SERVICE COVERAGE RATIO	0	0	0	0	0	2.78	3.14	2.62	3.65
INTEREST COVERAGE RATIO	0	0	0	0	2.54	2.88	2.60	3.73	2.84

FIXED CHARGE COVERAGE RATIO	0	0	0	0	3.49	3.65	2.99	4.25	3.30

The coverage ratios of KPI Green Energy paint a vivid picture of its great financial evolution in terms of fulfilling debt-related obligations over time. Debt Service Coverage Ratio (DSCR) measures the firm's ability to meet the payment of principal and interest through net operating income and had been 0.00 from 2016 to 2020, implying that no debt obligation existed or there was so little income to cover such obligation during those years. However post-2020, DSCR witnessed a marked improvement, reaching 2.62 in 2023 and further climbing to 3.65 in 2024. This upward trajectory suggests increasing profitability and excellent debt control, where the company had earned more than threefold its debt servicing requirement in 2024, a level well above the ideal industry benchmark of 1.5–2.0. The Interest Coverage Ratio followed a similar pattern, showing 0.00 from 2016 to 2019, which meant either no interest expenses or insufficient earnings to cover them. However, from 2020 onward, it fluctuated between 2.54 and 3.73, showing that the company generated sufficient earnings to meet its interest expenses consistently. An ICR of 3.73 in 2023 represented the strength of the operating income and discipline in financial management, in good alignment with the safe industry range between 2.0 and 3.0.

Like the DSCR and ICR trends, the Fixed Charge Coverage Ratio (FCCR) was 0.00 from 2016 to 2019 and saw a sharp improvement during the subsequent years. The FCCR went up from 2.99 in 2022 to a high of 4.25 in 2023, showing a phenomenal ability to meet its fixed charges, comprising lease and interest payments. In capital-intensive renewable energy sectors, a ratio higher than 2.0 is considered to be excellent, and KPI's performance in this regard over recent years is an indication of high operational efficiency together with earnings stability. On a combined basis, these coverage ratios show a transition from an early stage with limited obligations to a mature stage of exceptional financial capacity to bear interest and fixed debt costs.

6.5 Activity - The Asset Velocity Vortex

Activity ratios or efficiency/turnover ratios serve as financial metrics that measure the operating efficiency of a firm particularly with respect to inventory, receivables, payables, and assets. These ratios measure the speeds at which several accounts are turned into sales or cash, which can give indications concerning how the firm manages its working capital and optimizes the use of resources.

Activity ratios include the Inventory Turnover ratio, Receivables Turnover Ratio, Asset Turnover Ratio, and Payables Turnover Ratio. Higher values generally indicate that assets are being effectively used, whereas lower values may imply underutilization, inefficiency, or mismanagement of cash flows. These ratios turn out to be beneficial when it comes to evaluating company performance against industry averages and the consequent actions that can be taken for cost control, production planning, and credit policies. On the other hand, for stakeholders, these ratios display the rate at which the firm's resources are being converted into revenue.

Table-5 Activity Ratios Calculations

NAME	2016	2017	2018	2019	2020	2021	2022	2023	2024
TOTAL ASSESTS TURNOVER RATIO	0.51	0.31	0.29	0.21	0.20	0.27	0.32	0.47	0.35

FIXED ASSETS TURNOVER	0.85	0.39	0.38	0.34	0.29	0.45	0.54	0.72	0.93
CAPITAL TURNOVER RATIO	0.94	0.38	0.34	0.24	0.27	0.32	0.42	0.63	0.52
CURRENT ASSETS TURNOVER RATIO	1.28	1.53	1.28	0.59	0.73	0.87	1.04	1.68	0.66

With KPI Green Energy's activity ratios, one can see how well it has been using its resources over the years to generate revenue. Total Assets Turnover Ratio (TATR) represents changing efficiency of asset use as it fluctuated from 0.20 in 2020 to 0.51 in 2016. TATR really rose to 0.47 in 2022 only to drop a little to 0.35 in 2023, suggesting inconsistent use of assets. These figures are appropriate for the renewable energy segment where a TATR of 0.3 to 0.6 is common due to huge initial investments and longer gestation periods for revenue. KPI is generally in line with this norm, however, it attaches more importance to increasing or maintaining efficiency.

Tale is also told throughout the FATR of slight improvement starting in 2016 at 0.85 and dipping in 2020 to 0.29 only to gradually increase and reach 0.93 by 2024. This indicates a recent boost in farmhouse efficiency and the utilization of infrastructure like solar plants. Ideally, renewable energy companies would like to have FATR between 0.5 and 1.0, which KPI's 2023 (0.72) and 2024 (0.93) figures qualify for very well. Despite the fluctuations, these values still fall within the expected industry range of 0.5 to 1.0, reflecting moderately efficient capital usage.

Lastly, the Current Assets Turnover Ratio (CATR) reflects mixed performance in short-term asset efficiency. The ratio hit a peak of 1.68 in 2022, showcasing excellent utilization, but dropped to 0.66 by 2024, possibly due to excess inventories or underutilized receivables. As the typical CATR for the sector ranges from 1.0 to 1.5, KPI's recent figures suggest room for improvement in short-term asset management. Together, these activity ratios underline the company's evolving journey toward operational optimization amidst the capital-intensive nature of the renewable energy industry.

7 Statical Analysis

7.1 The Triple-Trigger Framework – The DuP0nt Analysis

An important diagnostic tool known as the DuPont Analysis is used to analyze a company's Return on Equity (ROE) into several components and thereby provide a deeper understanding of the causes of profitability. Developed by the DuPont Corporation in the 1920s, the model divides ROE into three ratios of main concern: net profit margin, asset turnover, and equity multiplier. This hierarchic method helps analysts and stakeholders evaluate whether operational efficiency, asset use, or financial leverage is behind a company's performance. Instead of using ROE as a yardstick, the DuPont Analysis opens up the core characteristics of an entity in terms of efficiency and risk, providing for comparison among companies and industries. They can especially analyze and explain changes in financial performance throughout time and provide guidance for strategic decision-making.

Table-6 Dupont Analysis

DuPont Analysis Roe = NP*ATR*current ratio	

Year	Net Profit Margin (%)	Asset Turnover	Current Ratio	ROE (DuPont)
2016	27.95	0	0.9	0.0000
2017	31.54	0.4	0.9	0.1135
2018	23.43	0.3	0.8	0.0562
2019	25.8	0.3	0.3	0.0232
2020	10.95	0.3	1.2	0.0394
2021	21.36	0.3	1.6	0.1025
2022	20.37	0.4	1.6	0.1304
2023	16.07	0.6	2	0.1928
2024	14.33	0.5	1.1	0.0788

The DuPont Analysis for KPI Green Energy delineates the Return on Equity (RoE) into its three principal constituents: Net Profit Margin (NP), Asset Turnover Ratio (ATR), and Equity Multiplier (EM). Any increase or decline in RoE passing through these components gives an insight into the causes of these changes with the passage of time.

A RoE of almost zero was witnessed in 2016, primarily because no measurable Asset Turnover (ATR) was present; meanwhile, Net Profit Margin was healthy enough at 27.95%. In 2017, the rise in RoE to 0.1135 (11.35%) came about as a consequence of improvements in ATR (0.4) and constant management of equity (0.9 Equity Multiplier). However, 2018 witnessed a drop in RoE to 0.0562 (5.62%) as the Net Profit Margin and the ATR reductions in tandem reflected less profitability and operational efficiency.

From 2019 to 2020, RoE kept slippage and dated low in 2019 at 2.32 percent due to heavy loss in the Equity Multiplier (0.3) coupled with no change in the ATR. In 2020, with Net Profit Margin declining to 10.95%, a rise in Equity Multiplier (at 1.2) slightly improved the RoE to 0.0394 (3.94%).

RoE regained strength in the years 2021 to 2023 on account of stable ascending trends in ATR and Equity Multiplier. RoE surged to 0.1025 (10.25%) in 2021 when Net Profit Margin (21.36%) and Equity Multiplier (1.6) improved. By 2022, RoE increased even more to 0.1304 (13.04%), establishing strong trends for both ATR and Net Profit Margin. The year 2023 observed the highest RoE of 0.1928 (19.28%), supported by a strong ATR of 0.6 and the highest Equity Multiplier of 2.0, even if Net Profit Margin was dwindling at 16.07%.

However, in 2024, RoE slumped alarmingly to 0.0788 (7.88%) because of the decrease in Net Profit Margin (14.33%) and ATR (0.5), as well as the drastic drop in the Equity Multiplier (1.1). This low RoE confirms the difficulties that the company has faced in keeping profits, operational efficiencies, and leverage under check.

7.1.2 Variance Analysis between RoE and DuPont RoE

Table-7 Variance between Calculated RoE and Dupont RoE

Variance

Normal RoE	RoE (DuPont)	Variance
0.57	0.0000	0.5663
0.26	0.1135	0.1429
0.15	0.0562	0.0938
0.09	0.0232	0.0666
0.07	0.0394	0.0268
0.18	0.1025	0.0815
0.29	0.1304	0.1567
0.34	0.1928	0.1505
0.14	0.0788	0.0598

- Variance analyses between Normal RoE and RoE computed by DuPont analysis give an essential insight into the reasons for differences between the real observed RoE and the RoE that the components of the DuPont formula yield.
- In 2016, the DuPont RoE was 0.0000, thus creating a high variance of 0.5663 against a Normal RoE of 0.57. This large distance is the result of a zero Asset Turnover Ratio being taken for the DuPont calculation, which, in turn, suppressed the calculated RoE.
- From 2017 to 2019, the variance continued its slow decline, indicating increasing alignment between Normal RoE and DuPont RoE as the operational and financial factors got stabilized. For instance, in 2017, the variance was 0.1429, and this dropped to 0.0666 in 2019, reflecting closer parity as factors of profitability and leverage were better represented in the DuPont model.
- From the years 2020 to 2023, however, different fluctuations occurred in the variance, reaching its peak at 0.1567 in 2022. This suggests that while the DuPont model effectively captured the interplay of profitability, operational efficiency, and leverage, there were still discrepancies likely caused by external factors or unique operational events not accounted for in the model.
- In **2024**, the variance dropped to 0.0598, marking one of the closest alignments between Normal RoE and DuPont RoE. This reflects a convergence between actual performance and the theoretical model, likely due to a more stable financial and operational environment.

7.2 Regression Analysis

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.666564025
R Square	0.4443076
Adjusted R Square	-0.1113848
Standard Error	27.96067445
Observations	9

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	4	2500.371626	625.0929	0.799557	0.583193124
Residual	4	3127.197263	781.7993		
Total	8	5627.568889			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	130.3125109	46.89148962	2.779023	0.049868	0.120864107	260.5041578	0.120864107	260.5041578
RoA	-449.3904767	943.3680854	-0.47637	0.658666	-3068.60018	2169.819227	-3068.60018	2169.819227
ROE	-145.5130463	230.8062762	-0.63046	0.562621	-786.334002	495.3079093	-786.334002	495.3079093
ROCE	322.5313675	318.5117932	1.01262	0.368517	-561.799142	1206.861877	-561.7991417	1206.861877
EBITA Margin	-115.0841567	115.8469802	-0.99342	0.376737	-436.726938	206.5586245	-436.7269379	206.5586245

Image 1 : Regression Analysis Output

This regression, therefore, seeks to establish the relationship between Net Profit Margin-an essential measure of profit-and four major indicators of financial performance: Return on Assets (RoA), Return on Equity (RoE), Return on Capital Employed (ROCE), and EBITA Margin. The choice of Net Profit Margin as the dependent variable reflects a decision made because, theoretically, it measures the final profitability once all expenses, taxes, and interest adjustments have been made. Hence it is seen as an outcome measure influenced by operational and financial efficiency. The independent variables are fundamental profitability and efficiency measures usually employed in analyzing financial data and were chosen because of their theoretical association and importance with the bottom-line profitability.

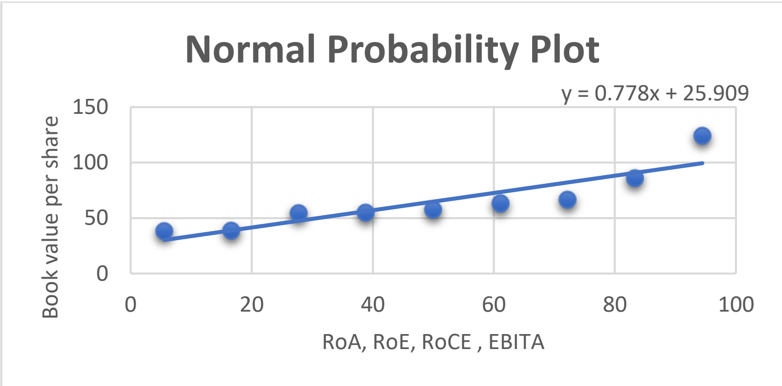
With the adjustment for the independent variables in the model, the coefficient of determination remains at 0.444, indicating that 44.4% of the variation in Net Profit Margin is explained by RoA, RoE, ROCE, and EBITA Margin. While this gives the model a moderate explanatory power, the negative adjusted R-square of -0.111 implies overfitting. Most of this negative adjusted value is comparable to the small sample size, which is far fewer observations (9 observations) for greater predictors (4 variables), implying that the model may not stand the external audience beyond the actual data used.

The bad F-value arising from ANOVA provides more evidence of the lack of statistical significance, having an F-value of 0.799 and a p-value of 0.583. Since that p-value is far beyond the verification level set at 0.05, we cannot reject the null hypothesis that all coefficients were zero. Therefore, collectively, the model does far less in tossing out variations in Net Profit Margin.

Looking from the individual coefficients, none of these independent variables showed any meaningful predictive power. RoA had a negative coefficient (-449.39) with a p-value of 0.659, meaning there was no meaningful relationship between it and Net Profit Margin. Similarly, RoE's coefficient was -145.51 ($p = 0.563$), and EBITA Margin's was -115.08 ($p = 0.377$)—again, both insignificant. Contrarily, ROCE's coefficient was positive at 322.53, yet with a p-value of 0.368, which meant it was also insignificant. The confidence intervals for all four variables include zero, which presents more evidence of unreliability of coefficient estimates. The only one that can be said to be marginally significant is the intercept ($p = 0.049$), which theoretically represents the expected Net Profit Margin when all predictors equal zero—a situation with almost no real-life interpretative value.

Overall, the regression model does not really offer much value as either an explanatory or predictive tool. The implication of these results is that RoA, RoE, ROCE, and EBITA Margin do not significantly affect Net Profit Margin in the observed dataset. Possible explanations for this are multicollinearity (some expected overlap between certain predictors such as RoA, RoE, and ROCE), data spread or variability, or even sample size limitations.

Figure 2 Normal probability Plot from Regression



7.3 ANOVA (Analysis of Varience)

CURRENT RATIO
0.9
1.1
1.7
3.2
1.1
2.2
1.3
1.1
1.5

Count	Sum	Average	Variance
9	18180	2020	7.5
9	14.1	1.566667	0.5325

SS	df	MS	F	P-value	F crit
18333329.05	1	18333329	4564788	4.47E-45	4.493998
64.26	16	4.01625			
18333393.31	17				

Year	Quick Ratio
2016	0.3
2017	0.9
2018	1.6
2019	2.4
2020	0.6
2021	1.4
2022	0.8
2023	0.6
2024	1.1

Anova: Single Factor

SUMMARY

Groups	Count	Sum	Average	Variance
Year	9	18180	2020	7.5
Quick Ratio	9	9.7	1.077778	0.411944

ANOVA

Source of Variation	SS	df	MS	F	P-value	F crit
Between Groups	18342211	1	18342211	4636587	3.95E-45	4.493998
Within Groups	63.295556	16	3.955972			
Total	18342275	17				

Figure 3 ANOVA Output

7.3.1 ANOVA Results for Current Ratio

- **F-statistic**: The F-statistic value is extremely large, which indicates that the variation between the groups (the years in this case) is much larger than the variation within the groups. This suggests that the current ratios across different years differ significantly.

- **P-value**: The P-value is very small (4.47386E-45), much smaller than the typical significance level (usually 0.05). This means that the null hypothesis (which assumes no difference between groups) is rejected, and there is strong evidence that the **Current Ratio** varies significantly over the years.
- **Conclusion**: There is a significant difference in the **Current Ratios** across the years. The variation in the current ratio is not due to random chance, and different years show statistically different ratios.

7.3.2 ANOVA Results for Quick Ratio

- **F-statistic**: Like the current ratio, the F-statistic for the quick ratio is also extremely large, indicating that there is a significant difference between the years in terms of the **Quick Ratio**. The variation between the years is much greater than the variation within the years.
- **P-value**: The P-value is similarly very small (3.94875E-45), which suggests that the differences between the years are statistically significant. Therefore, the null hypothesis of no difference between years is rejected.
- **Conclusion**: There is a significant difference in the **Quick Ratios** across the years. The differences in quick ratios are not by chance, and there are meaningful variations in quick ratios over time.

7.4 Bankruptcy Barometer - Altman Z Score

The Altman Z-Score remains the best financial model to calculate the chance of the company going bankrupt or into financial distress. The model was originally developed by Edward I. Altman in 1968 to test a combination of five financial ratios-that is, working capital to total assets, retained earnings to total assets, EBIT to total assets. This composite measure helps in identifying companies that are at risk of insolvency well before visible signs emerge. The Z-Score is particularly useful for investors, lenders, and credit agencies as an early warning signal, especially in capital-intensive and high-risk sectors like manufacturing and energy. A score above 3.0 typically indicates financial stability, while a score below 1.8 signals potential bankruptcy risk. The model remains a cornerstone in predictive financial analytics and credit risk assessment.

It combines five financial ratios into a single score:

Z-Score=1.2(X1)+1.4(X2)+3.3(X3)+0.6(X4)+1.0(X5)

Where:

- X_1 = Working Capital / Total Assets (approximated by Current Ratio)
- X_2 = Retained Earnings / Total Assets (RE/TA)
- X_3 = EBIT / Total Assets (EBIT/TA)
- X_4 = Market Value of Equity / Total Liabilities (MAE/TL)
- X_5 = Sales / Total Assets (Sales/TA)

Interpretation:

- $Z > 2.99 \rightarrow$ Safe Zone (Low bankruptcy risk)
- $1.81 < Z < 2.99 \rightarrow$ Grey Zone (Moderate risk)
- $Z < 1.81 \rightarrow$ Distress Zone (High risk of bankruptcy)

Table 8 Altman Z Score Calculation

Altman Z-Score Table						
Year	Current Ratio	RE/TA	EBIT/TA	MAE/TL	Sales/TA	Altman Z-Score
2016	0.9	0.19	0.21	0.72	0.51	3
2017	1.1	0.36	0.16	0.7	0.31	3.1
2018	1.7	0.37	0.07	0.36	0.29	3.3
2019	3.2	0.5	0.08	0.34	0.21	5.22
2020	1.1	0.27	0.04	0.18	0.2	2.14
2021	2.2	0.11	0.08	0.18	0.27	3.43
2022	1.3	0.12	0.08	0.13	0.32	2.4
2023	1.1	0.21	0.1	0.06	0.47	2.45
2024	1.5	0.37	0.07	0.06	0.34	2.92

Staying stable between 2016 and 2018, the Altman Z-Score of KPI Green Energy in the range of 3.0 to 3.3 kept it in the safe zone without interruption. These Altman Z-Score levels were supported by the liquidity level (Current Ratio was improving from 0.9 to 1.7), the dynamics of retained earnings (RE/TA around 0.36-0.37), and operating profits of the company. The Z-score in 2019 reached the highest peak, 5.22, with good working capital (Current Ratio of 3.2), high RE/TA (0.5), and positive margins, indicating top-notch financial health. With the decline in EBIT/TA (0.04) and MAE/TL (0.18), i.e., profitability pressures and reduction in market valuation pressure, the altitude of Z-scores felt 2.14 in 2020 and thus entered the grey zone. The recovery picked up pace in 2021 when the Z-score went back to the safe zone at 3.43, though retained earnings and equity strength did take a bit of a hit. In 2022-23, with Z-scores mostly between 2.4 and 2.45, the company remained in the grey zone due to poor MAE/TL (down to 0.06) and moderate profitability. In **2024**, the Z-score improved to **2.92**, just below the safe threshold, supported by better retained earnings and asset turnover, but still affected by low equity valuation and limited EBIT contribution.

8. CAGR Based Of Forecasting Future Financial Ratios

The fundamental idea in CAGR based financial ratio forecasting is to take into consideration the Compound Annual Growth Rate in order to forecast the future values of financial ratios such as Return on Equity (ROE), EBITDA margin, or Book Value per Share. Based on the historical data, analysts representing companies use this method to predict the future growth or decline in the value of such ratios, which gives an insight into financial performance.

CAGR-Based Forecasting of Ratios:

A CAGR is the average annual growth rate of a financial metric (such as a ratio) over a period of time. Therefore, the CAGR is the means used to estimate the expected growth or decline values for a financial ratio in the future years based on its performance in the past years used in the forecasting of financial ratios. CAGR Formula for Forecasting:

$$CAGR = \left(\frac{\text{Ending Value}}{\text{Beginning Value}}\right)^{\frac{1}{n}} - 1$$

CAGR=
Where:

- **Ending Value** = the final value of the ratio in the given period.
- **Beginning Value** = the initial value of the ratio.
- **n** = the number of years (or periods) between the two values.

Table 9 CAGR Calculations

	CAGR Based Forecast		
Indicator	**2025**	**2026**	**2027**
Book Value Per Share	152.77	188.06	231.50
RoA %	4.64%	4.38%	4.14%
ROE %	12.61%	11.48%	10.44%
ROCE %	16.10%	16.55%	17.01%
EBDIT Margin %	29.65%	25.17%	21.37%
EBIT Margin %	26.24%	22.93%	20.04%
PBT Margin %	16.93%	14.77%	12.88%
Net Profit Margin %	12.54%	10.97%	9.60%

9. Green Asset Ratio

The Green Assets Ratio (GAR) considers other KPIs to measure the environmental sustainability of financial institutions. It is defined as a ratio of green assets against total assets, with green assets being those invested in environmentally sustainable activities pursuant to the EU taxonomy on sustainable activities or any other sustainable finance framework.

The GAR intends to offer a certain insight on the quantum of green assets maintained in the portfolios of any bank or financial institution. These green assets generally include activities that contribute to environmental sustainability initiatives; for example, renewable energy projects, green bonds, and other investment opportunities that aim to reduce climate change parameters and conserve biodiversity.

Who Proposed It:

The Green Asset Ratio (GAR) was proposed by Brühl, V. (2023) in the article The Green Asset Ratio (GAR): a new key performance indicator for credit institutions, string from the Eurasian Economic Review (Volume 13, Issue 1). The article implies that GAR could be used as a tool to assist credit institutions in evaluating their exposure to green assets and in determining how far it aligns with their sustainability goals.

Purpose and Importance:

- **Transparency:** The GAR enables stakeholders like investors, regulators, and the public to easily grasp such aspects of the environmental effects of financial institution investments.
- • **Sustainability Performance:** It helps institutions understand and report on their progress toward the more sustainable path they pursue and the intended climate-related financial goals.
- • **Regulatory Compliance:** For institutions in the EU, the GAR might also serve as proof of complying with regulations concerning sustainable finance..

We have tried to calculate GAR for this company using some assumptions :

Capacity Growth:

1. **IPP Capacity Growth:** Capacity grows linearly by **25 MW per year**, starting from **25 MW in 2016** and reaching **225 MW in 2024**.
2. **Base Capacity Investment Cost:** The cost of building capacity is ₹4 crore per MW, reducing by **5% every 3 years** due to technological advancements and cost efficiency.

Revenue Growth:

3. **Base Revenue (2016):** Monthly revenue for **25 MW in 2016** is ₹1.81 crore, derived from proportional revenue generation per MW.
4. **Revenue Proportionality to Capacity:** Revenue increases by ₹1.81 crore/month for every additional **25 MW** of capacity.
5. **Efficiency Improvement:** Annual revenue-to-capacity ratio improves by **2% per year** due to increased operational efficiency.

PE Ratio:

6. **Rising PE Ratio:** The PE ratio increases **linearly from 20.0 in 2016** to **45.0 in 2024**, reflecting growing market confidence in green energy and investor interest in the company.

Cost Efficiency:

7. **Cost Reduction Every 3 Years:** The cost of building capacity decreases by **5% every three years**, starting at ₹4 crore/MW in 2016.

Other Metrics:

8. **Green Revenue Contribution Ratio:** Assumes that **100% of revenue is from green energy sources**, meaning there is no diversification into non-green assets.
9. **Market Price Growth:** The market price per share grows proportionally with annual revenue.
10. **EPS Calculation:** EPS is calculated using the formula:

General Assumptions:

11. **No Operational Losses:** The company operates at full capacity with no downtime or revenue loss.
12. **Linear Growth:** All metrics such as revenue, capacity, and cost grow or reduce linearly based on the stated assumptions.

13. **Stable Demand:** There is consistent demand for green energy, supporting linear revenue growth.
14. **Fixed Revenue per MW (Base):** Revenue per MW remains constant initially, but efficiency gains increase it by 2% annually.

Table 10 Green Asset Ratio Calculations

Year	IPP Capacity (MW)	Monthly Revenue (₹ Cr)	Annual Revenue (₹ Cr)	Revenue-to-Capacity Ratio (₹ Cr/MW)	Total Investment (₹ Cr)	Green Asset Turnover Ratio	PE Ratio	EPS (₹)
2016	25	1.81	21.72	0.868	100	0.217	20	1.09
2017	50	3.62	43.44	0.885	200	0.217	23.1	1.88
2018	75	5.43	65.16	0.902	300	0.217	26.2	2.49
2019	100	7.24	86.88	0.92	380	0.229	29.4	2.96
2020	125	9.05	108.6	0.938	475	0.229	32.5	3.34
2021	150	10.86	130.32	0.957	570	0.229	35.6	3.66
2022	175	12.67	152.04	0.976	646	0.235	38.8	3.92
2023	200	14.48	173.76	0.995	732	0.237	41.9	4.15
2024	225	16.29	195.48	1.015	810	0.241	45	4.34

10. Limitations

- Being based on a smaller set of sample points (9 years), statistical analyses such as regression and so on might be hampered in their explanatory powers.
- Assumptions used in the calculations of Green Asset Ratio might not conform to the real-world complexity or the ebb of market volatility.
- Accounting data were secondary data, which could have been inconsistent, as well as void of adjudicated estimation errors.
- The study focuses on a unique company (KPI Green Energy), making it impossible to generate findings generalizable to the greater renewable energy sector.
- Multicollinearity between financial ratios such as RoE, RoA, ROCE may give skewed regression outcomes and diminish variable independence.
- CAGR-based forecasting, linear growth being the assumption, may not hold within ever-changing market conditions or regulatory shifts.
- Macroeconomic situations, policy changes, and external shocks affecting the financial performance are not considered with full weight.

- Lack of forecasting power renders the regression model useless for drawing any firm conclusions regarding what really drives profitability.
- Some ratios such as Payables Turnover seem to exhibit wild volatility, which may be due to inconsistent accounting treatment, or it may be caused by some one-off event.

11. Future Direction

To improve financial performance, KPI Green Energy should:
1. Optimize asset utilization to enhance RoA.
2. Reallocate capital to high-return projects to boost ROE.
3. Focus on cost control to maintain EBDIT Margin.
4. Enhance operational efficiency to improve Asset Turnover Ratio.
5. Maintain prudent leverage to stabilize Debt-to-Equity Ratio.

12. Conclusion

This research provides a comprehensive analysis of KPI Green Energy's financial performance over nine years. While growth has been observed in certain areas, challenges remain in capital efficiency and profitability. Statistical analyses, including ANOVA, regression, and DuPont frameworks, provide actionable insights. By addressing these issues and leveraging strengths, the company can sustain its trajectory in the renewable energy sector.

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