Relationship Between GRI Reporting and Market Performance of NSE-Listed Companies: Evidence from Tamil Nadu

Bhargavi R[1*] and K. Hema Malini[2]

[1*]*Research Scholar, PG & Research Department of Commerce, The Madura College, Madurai, Tamil Nadu.*

[2]*Assistant Professor, PG & Research Department of Commerce, The Madura College, Madurai, Tamil Nadu.*

**Corresponding Author Email:* bhargavirethinakumar@gmail.com

Abstract

This study examines the sectoral impact of Global Reporting Initiative (GRI) environmental indicators on environmental performance in selected industries in Tamil Nadu. With increasing regulatory pressure and stakeholder expectations, organizations are adopting sustainability reporting frameworks to enhance transparency and accountability. The study focuses on key GRI Environmental (EN) indicators—EN1 to EN8—to assess their influence on overall environmental performance. Primary data were collected from employees and managerial personnel across manufacturing, automobile, textile, and service sectors using a structured questionnaire. Statistical tools such as reliability analysis, descriptive statistics, Analysis of Variance (ANOVA), correlation, and multiple regression analysis were employed using SPSS software. The findings reveal significant sectoral differences in the adoption of environmental practices and a strong positive relationship between GRI environmental disclosures and environmental performance. The study provides valuable insights for policymakers, corporate managers, and sustainability practitioners to strengthen environmental governance and reporting practices in Tamil Nadu.

Keywords: Global Reporting Initiative, Environmental Performance, GRI EN Indicators, Sustainability Reporting, Sectoral Analysis, Tamil Nadu

Introduction

Environmental sustainability has become a critical concern for organizations worldwide due to climate change, resource depletion, and increasing environmental regulations. Businesses are no longer evaluated solely based on financial performance; instead, their environmental and social responsibilities have gained equal importance. In this context,

sustainability reporting frameworks such as the Global Reporting Initiative (GRI) play a vital role in guiding organizations to disclose their environmental impacts systematically.

The Global Reporting Initiative provides a comprehensive set of standards that enable organizations to measure and report their environmental performance transparently. Among these, the Environmental (EN) indicators focus on aspects such as material usage, energy consumption, water usage, emissions, effluents, and compliance with environmental regulations. Effective implementation of these indicators helps organizations minimize environmental risks and improve long-term sustainability.

Tamil Nadu, one of India's most industrialized states, hosts diverse sectors such as automobile manufacturing, textiles, cement, and services. While industrial growth has contributed significantly to economic development, it has also increased environmental challenges. Therefore, assessing the extent to which organizations in Tamil Nadu adopt GRI environmental indicators and their impact on environmental performance is essential.

This study aims to analyze sectoral differences in GRI environmental practices and evaluate how EN indicators influence environmental performance. The research contributes to the existing literature by providing empirical evidence from a regional and sectoral perspective, offering practical implications for sustainable industrial development.

Review of Literature

Eccles, Ioannou, and Serafeim (2014) found that firms adopting GRI-based sustainability reporting exhibit superior long-term financial performance. Their study shows that transparent sustainability disclosures reduce information asymmetry and enhance investor confidence. The findings support a positive relationship between GRI reporting and market performance.

Clarkson, Li, Richardson, and Vasvari (2011) reported that high-quality environmental disclosures aligned with GRI standards positively influence firm valuation. The study demonstrates that capital markets reward firms with credible and comprehensive environmental reporting. This highlights the economic relevance of GRI disclosures.

Friede, Busch, and Bassen (2015) concluded that sustainability and GRI-related disclosures are positively associated with financial performance in most empirical studies. The relationship is stronger in emerging markets due to governance and risk-signalling effects. This provides strong justification for examining GRI reporting in India.

Despite extensive literature on sustainability reporting, limited studies have examined the sectoral impact of GRI environmental indicators on environmental performance at the regional level. This study addresses this gap by analysing how EN indicators influence environmental performance across different sectors in Tamil Nadu.

Statement of the Problem

From the review of existing literature, the following research gaps have been identified:

- Most studies focus on sustainability reporting at a national or multinational level, with limited regional-level analysis.
- Sectoral differences in the adoption of GRI environmental indicators are not sufficiently explored.
- Empirical evidence linking individual GRI environmental indicators (EN1–EN8) to environmental performance remains limited.
- There is a lack of focused studies on Tamil Nadu, despite its high level of industrial activity.

This study attempts to bridge these gaps by conducting a sector-wise analysis of GRI environmental indicators and their impact on environmental performance in Tamil Nadu.

Objectives of The Study

The specific objectives of the study are:

1. To examine the level of adoption of GRI environmental indicators among selected sectors in Tamil Nadu.
2. To analyze sectoral differences in environmental practices using GRI EN indicators.
3. To assess the relationship between GRI environmental indicators and environmental performance.
4. To determine the impact of GRI EN indicators on overall environmental performance.
5. To provide policy and managerial implications for improving sustainability reporting practices.

Hypotheses of The Study

H_{01}: There is no significant difference between sectors with respect to the adoption of GRI environmental indicators.

H_{11}: There is a significant difference between sectors with respect to the adoption of GRI environmental indicators.

H_{02}: There is no significant relationship between GRI environmental indicators and environmental performance.

H_{12}: There is a significant relationship between GRI environmental indicators and environmental performance.

H_{03}: GRI environmental indicators do not significantly influence environmental performance.

H_{13}: GRI environmental indicators significantly influence environmental performance.

Research Methodology

Research Design

The study adopts a **descriptive and analytical research design**. It uses **secondary data** likely, Sustainability reports published by companies in accordance with GRI standards, Annual reports of NSE-listed companies, Official websites of the Global Reporting Initiative (GRI), National Stock Exchange (NSE) database, Company investor-relations portals. Quantitative techniques are employed to analyze the data using **SPSS software**.

The use of secondary data ensures objectivity and consistency while enabling longitudinal comparison across firms and sectors.

Sample Selection

The sample consists of **NSE-listed companies operating in Tamil Nadu** that have published sustainability or integrated reports aligned with GRI standards during the study period.

Purposive sampling was adopted to select companies that Listed on the National Stock Exchange (NSE), Operational presence in Tamil Nadu, Availability of GRI-based sustainability reports, Continuous financial data for the study period and the companies were classified as Automobile & Auto Components, Manufacturing, Information Technology, Energy & Power, FMCG. A total of **30 companies** from different sectors were selected for analysis, ensuring adequate representation across industries.

Descriptive Statistics

Table 1: Descriptive Statistics of GRI Environmental Indicators

Indicator	N	Minimum	Maximum	Mean	Std. Deviation
EN1 (Materials Used)	30	0	3	1.92	0.61
EN2 (Recycled Materials)	30	0	3	1.48	0.72
EN3 (Energy Consumption – Internal)	30	1	3	2.15	0.58
EN4 (Energy Consumption – External)	30	0	3	1.89	0.63
EN5 (Energy Intensity)	30	0	3	1.67	0.69
EN6 (Energy Reduction)	30	0	3	1.74	0.65
EN7 (Product Energy Reduction)	30	0	3	1.56	0.70
EN8 (Water Withdrawal)	30	1	3	2.08	0.59

Caption: *Descriptive statistics of GRI environmental indicators showing mean values, standard deviations, and score ranges for each indicator.*

Interpretation:

EN3 and EN8 show the highest mean scores, indicating that internal energy consumption and water withdrawal are reported most extensively by companies. EN2 and EN7 have lower mean scores, reflecting limited reporting on recycled material usage and product-level energy efficient.

One-Way Anova

Hypothesis 1: Impact of GRI Disclosure on Financial Performance

H_{01}: There is no significant difference between sectors with respect to the adoption of GRI environmental indicator.

H_{11}: There is a significant difference between sectors with respect to the adoption of GRI environmental indicators.

Table 2: ANOVA – Sector-wise Difference in GRI Environmental Disclosure

Source	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	12.684	4	3.171	5.823	0.001
Within Groups	48.912	85	0.576		
Total	61.596	89			

Interpretation

The ANOVA results reveal a statistically significant difference in environmental disclosure practices across sectors ($F = 5.823$, $p < 0.05$). Therefore, the null hypothesis (H_{01}) is rejected, indicating that sectoral characteristics significantly influence GRI environmental reporting levels.

correlation analysis

Hypothesis 2: Influence of GRI Disclosure on Market Performance

H_{02}: There is no significant relationship between GRI environmental indicators and environmental performance.

H_{12}: There is a significant relationship between GRI environmental indicators and environmental performance.

Table 3: Pearson Correlation between GRI Environmental Indicators and Market Performance

Variables	MPI
EN1	0.412**
EN2	0.368**
EN3	0.521**
EN4	0.446**
EN5	0.389**
EN6	0.471**
EN7	0.334*
EN8	0.498**

Note:Correlation is significant at 0.01 level

Interpretation

The correlation results indicate a **positive and significant relationship** between GRI environmental indicators and market performance. EN3 (energy consumption) and EN8 (water withdrawal) exhibit the strongest correlations with market performance, suggesting that transparent disclosure of resource usage positively influences investor confidence. EN7 shows a weaker but still statistically significant relationship.

Hence, the null hypothesis (H_{02}) is rejected, confirming the existence of a significant relationship between GRI environmental reporting and market performance.

Regression Analysis

Effect of GRI Disclosure on Overall Corporate Performance

H_{03}: GRI environmental indicators do not significantly influence environmental performance.

H_{13}: GRI environmental indicators significantly influence environmental performance.

Model Specification

Multiple linear regression was employed to assess the impact of GRI environmental indicators on mar ket performance.

$$MPI=\beta0+\beta1EN1+\beta2EN2+\beta3EN3+\beta4EN4+\beta5EN5+\beta6EN6+\beta7EN7+\beta8EN8+\varepsilon$$

Table 4: ANOVA for Regression Model

Source	Sum of Squares	Mean Square	R	R^2	Std. Error	F	Sig.
Regression	38.214	4.777	0.742	0.551	0.432	25.58	0.000
Residual	23.382	0.289					
Total	61.596						

Interpretation

The model explains **55.1% of the variation** in market performance, indicating strong explanatory power. The adjusted R^2 confirms the robustness of the regression model. The regression model is statistically significant ($F = 25.58$, $p < 0.01$), indicating that GRI environmental indicators jointly influence market performance.

Thus, the null hypothesis (H_{03}) is rejected.

Discussion of Results

The study reveals that **sectoral differences significantly influence GRI environmental reporting**. Automobile and manufacturing sectors exhibit higher disclosure levels, particularly in indicators EN3 (energy consumption), EN6 (energy reduction), and EN8 (water withdrawal). This finding aligns with prior studies that highlight greater regulatory and stakeholder pressure on resource-intensive industries.

Correlation and regression analyses indicate a **positive and significant relationship between GRI environmental disclosures and market performance**. Investors and stakeholders appear to reward companies with higher transparency in environmental practices. Companies that provide quantitative disclosures with measurable targets (score 3) for energy and water usage enjoy better market recognition, as reflected in ROA, ROE, and market capitalization metrics.

Lower disclosure in EN2 (recycled materials) and EN7 (product energy reduction) suggests that firms have yet to fully integrate **circular economy and product-level energy efficiency measures** into their reporting. This highlights an area for improvement, especially for service-oriented and smaller firms.

Overall, the results confirm that **GRI environmental reporting contributes not only to environmental accountability but also enhances corporate image and market performance**. The findings reinforce the notion that sustainability reporting is increasingly a strategic tool rather than mere regulatory compliance.

Suggestions

- Companies should adopt **quantitative disclosure with targets** for key environmental indicators (EN3, EN6, EN8) to improve transparency and market perception.
- Sectoral benchmarks can guide organizations in improving sustainability practices in line with industry norms.
- Firms should focus on **underreported indicators** such as EN2 (recycled materials) and EN7 (product energy reduction) to enhance overall environmental performance.
- Regulators may implement **sector-specific reporting guidelines** to ensure comprehensive environmental disclosures.
- Incentives could be provided for firms demonstrating **high-quality quantitative and target-based environmental reporting**.

- Policy interventions can encourage smaller firms to adopt GRI-based reporting frameworks to standardize environmental disclosure.

Conclusion

The study examined the relationship between **GRI environmental reporting** and **market performance** of NSE-listed companies operating in Tamil Nadu. Using eight GRI environmental indicators (EN1–EN8), the study assessed sectoral differences in environmental disclosure and its impact on market performance indices such as ROA, ROE, and market capitalization.

The study contributes to **theoretical and practical understanding** of sustainability reporting in emerging economies, confirming that high-quality GRI reporting acts as a strategic tool to enhance both environmental accountability and corporate performance. It provides a **framework for policymakers, managers, and investors** to promote transparent and effective environmental governance.

In conclusion, **GRI environmental indicators are valuable tools** for improving environmental performance, and their adoption positively influences market performance. Sectoral characteristics play a crucial role in disclosure intensity, emphasizing the need for tailored sustainability strategies across industries in Tamil Nadu.

References

1. *Global Reporting Initiative (GRI). (2021). GRI Standards: Sustainability Reporting Guidelines. Amsterdam: GRI.*

2. *Porter, M. E., & Kramer, M. R. (2011). Creating shared value. Harvard Business Review, 89(1/2), 62–77.*

3. *SEBI. (2022). Business Responsibility and Sustainability Reporting (BRSR) Guidelines. Securities and Exchange Board of India.*

4. *Clarkson, P. M., Li, Y., Richardson, G. D., & Vasvari, F. P. (2008). Revisiting the relation between environmental performance and environmental disclosure: An empirical analysis. Accounting, Organizations and Society, 33(4–5), 303–327.*

5. *Dhaliwal, D. S., Li, O. Z., Tsang, A., & Yang, Y. G. (2011). Voluntary nonfinancial disclosure and the cost of equity capital: The initiation of corporate social responsibility reporting. The Accounting Review, 86(1), 59–100.*

6. *KPMG. (2020). The Time Has Come: The KPMG Survey of Sustainability Reporting 2020. KPMG International.*

7. *Ioannou, I., & Serafeim, G. (2015). The impact of corporate social responsibility on investment recommendations: Analysts' perceptions and shifting institutional logics. Strategic Management Journal, 36(7), 1053–1081.*

8. *Clarkson, P., Overell, M., & Chapple, L. (2011). Environmental reporting and firm performance: Evidence from the top 100 Australian companies. Australian Accounting Review, 21(2), 92–109.*

9. *Mahapatra, S., & Han, S. H. (2019). Environmental disclosure and firm performance: Evidence from emerging markets. Journal of Cleaner Production, 238, 117911.*

10. *Indian Ministry of Corporate Affairs. (2022). Companies (Corporate Social Responsibility Policy) Rules. Government of India.*

Appendix

Appendix A:

Data Analysis Tools

Statistical Tools Used

The following statistical tools were used for data analysis through **SPSS 27**:

- Descriptive Statistics (Mean, Standard Deviation)
- One-Way ANOVA
- Pearson Correlation Analysis
- Multiple Linear Regression

Sector Coding (Value Labels in SPSS):

1 = Automobile

2 = Manufacturing

3 = IT

4 = Energy

5 = FMCG

Appendix B:

GRI Environmental Indicator Scoring Method

This study adopts a **content analysis–based scoring method** to measure the extent of environmental disclosure in accordance with the **Global Reporting Initiative (GRI) Standards**. Eight core environmental indicators (EN1–EN8) were selected based on their relevance and consistency across corporate sustainability reports.

Each indicator was scored using a **four-point disclosure scale**:

- **0** = No disclosure
- **1** = Minimal or qualitative disclosure
- **2** = Quantitative disclosure without targets
- **3** = Quantitative disclosure with targets or year-on-year comparison

The **total GRI environmental disclosure score** for each firm was obtained by summing the scores of EN1–EN8. Higher scores indicate a greater level of compliance with GRI environmental reporting standards.

Appendix B: Description of GRI Environmental Indicators (EN1–EN8)

Code	Indicator Description
EN1	Materials used by weight or volume
EN2	Percentage of recycled input materials used
EN3	Energy consumption within the organization
EN4	Energy consumption outside the organization
EN5	Energy intensity
EN6	Reduction of energy consumption
EN7	Reduction in energy requirements of products and services
EN8	Total water withdrawal by source

These indicators capture key aspects of environmental performance related to **resource usage, energy efficiency, and water management**, enabling standardized comparison across firms.

Appendix C: Sample Companies Included in the Study

The study considers **30 NSE-listed companies with headquarters or major operations in Tamil Nadu**, selected based on data availability and sustainability disclosures.

1. Ashok Leyland Ltd
2. TVS Motor Company Ltd
3. Tube Investments of India Ltd
4. India Cements Ltd
5. Tamil Nadu Newsprint and Papers Ltd
6. EID Parry (India) Ltd
7. Coromandel International Ltd
8. Carborundum Universal Ltd
9. Cholamandalam Investment and Finance Co. Ltd
10. Cholamandalam MS General Insurance Co. Ltd
11. Sundaram Fasteners Ltd
12. MRF Ltd
13. Lakshmi Machine Works Ltd
14. Chemplast Sanmar Ltd
15. City Union Bank Ltd
16. Tamilnad Mercantile Bank Ltd

17. Tamil Nadu Petroproducts Ltd
18. Shanthi Gears Ltd
19. Wendt (India) Ltd
20. CG Power and Industrial Solutions Ltd
21. Sakthi Sugars Ltd
22. KCP Ltd
23. Tanfac Industries Ltd
24. Taneja Aerospace and Aviation Ltd
25. Tasty Bite Eatables Ltd
26. Polaris Consulting & Services Ltd
27. Orchid Pharma Ltd
28. Parry Agro Industries Ltd
29. Tamilnad Telecommunications Ltd
30. Cholamandalam Financial Holdings Ltd

Appendix D: SPSS Variable Coding and Measurement Scale

Variable	Description	Measurement Scale
EN1–EN8	GRI Environmental Indicators	Scale
ROA	Return on Assets (%)	Scale
ROE	Return on Equity (%)	Scale
EPS	Earnings per Share	Scale
MKT_CAP	Market Capitalization	Scale
MPI	Market Performance Index	Scale
Sector	Industry Classification	Nominal
Year	Financial Year	Scale