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## ESG PERFORMANCE AND CORPORATE SUSTAINABILITY: AN EMPIRICAL STUDY OF INDIAN LISTED IT COMPANIES

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Keywords	Abstract
<p><i>ESG Performance, Corporate Sustainability, Indian IT Sector; Financial Performance, Governance.</i></p>	<p>Background: Environmental, Social, and Governance (ESG) criteria have emerged as critical determinants of corporate sustainability and long-term financial performance, particularly within the technology-intensive Indian information technology (IT) sector. Objectives: This study empirically investigates the relationship between ESG performance dimensions and corporate sustainability outcomes among Nifty IT-listed companies over the period 2019-2024. Methodology: Employing a balanced panel dataset of 30 Indian IT companies across 180 firm-year observations, the study applies fixed-effects panel regression, random-effects models, and the Generalised Method of Moments (GMM) to address endogeneity concerns. Findings: Results indicate a statistically significant positive relationship between composite ESG scores and all financial performance metrics (<math>p &lt; 0.01</math>). The governance pillar exhibits the strongest explanatory power (beta = 0.412), followed by environmental (beta = 0.318) and social pillars (beta = 0.267).</p>



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	Firm size and R&D intensity moderate the ESG-performance nexus. Conclusion: Proactive ESG adoption creates sustainable competitive advantage for Indian IT companies, with significant implications for regulators, institutional investors, and corporate boards.
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## 1. INTRODUCTION

The global business landscape has witnessed a paradigm shift in corporate governance and investment philosophy, propelled by heightened stakeholder awareness of environmental degradation, social inequalities, and governance failures. Environmental, Social, and Governance (ESG) criteria - a tripartite framework for evaluating corporate behaviour - have evolved from niche investment filters to mainstream performance benchmarks endorsed by institutional investors, regulatory bodies, and supranational organisations including the United Nations Principles for Responsible Investment (UN-PRI) and the International Sustainability Standards Board (ISSB) (KPMG, 2023; Eccles et al., 2014).

Within the Indian context, the Securities and Exchange Board of India (SEBI) mandated Business Responsibility and Sustainability Reporting (BRSR) for the top 1,000 listed companies by market capitalisation from FY 2022-23, signalling a regulatory commitment to standardised non-financial disclosure (SEBI, 2021). The Indian IT sector - which accounts for approximately 7.4% of GDP and employs over 5.4 million professionals (NASSCOM, 2024) - is uniquely positioned at the intersection of digital transformation and sustainability imperatives.

Despite the burgeoning literature on ESG and financial performance in developed markets (Friede et al., 2015; Velte, 2017), empirical evidence from Indian IT-sector contexts remains fragmented and methodologically limited. Extant studies predominantly rely on cross-sectional designs, self-reported sustainability indices, and aggregate ESG composites that mask pillar-specific heterogeneity. This study bridges these gaps through rigorous panel data investigation spanning six fiscal years (2019-2024) across 30 Nifty IT constituent firms.

### 1.1 Research Objectives

The study pursues four primary research objectives: (i) to assess the level and trend of ESG performance across Indian listed IT companies; (ii) to examine pillar-level associations with financial performance metrics; (iii) to investigate the moderating role of firm size and R&D intensity; and (iv) to derive policy and managerial implications for ESG integration in India's technology ecosystem.

### 1.2 Research Hypotheses



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**Table 1: Research Hypotheses**

Hypothesis	Statement	Expected Sign
H1a	Environmental score positively influences ROA	+
H1b	Environmental score positively influences Tobin's Q	+
H2a	Social score positively influences ROE	+
H2b	Social score positively influences Market Cap	+
H3a	Governance score positively influences ROA	+
H3b	Governance score positively influences firm value	+
H4	Composite ESG score positively influences all performance metrics	+
H5	Firm size moderates the ESG-performance relationship	+
H6	R&D intensity moderates the ESG-performance relationship	+

## 2. LITERATURE REVIEW

The theoretical underpinnings of ESG-financial performance relationships draw from three seminal frameworks: Stakeholder Theory (Freeman, 1984), the Resource-Based View (Barney, 1991), and Information Asymmetry Theory (Akerlof, 1970). Stakeholder theory posits that firms creating value for all constituents achieve superior and sustainable financial outcomes compared to profit-maximising entities focused solely on shareholder returns.

Friede et al. (2015) conducted the most comprehensive meta-analysis to date, synthesising 2,200 empirical studies and finding a positive ESG-financial performance relationship in approximately 63% of cases. Eccles et al. (2014) demonstrated through an 18-year longitudinal study that high-sustainability firms outperformed low-sustainability counterparts on stock market returns and accounting metrics. In the Indian context, Vig et al. (2017) found CSR expenditure significantly related to Tobin's Q for BSE-500 companies.

Sector-specific evidence for Indian IT is nascent. Singh et al. (2021) examined sustainability reporting quality among Nifty IT companies, finding significant variability in GRI compliance. Bansal et al. (2022) documented that IT firms with higher board independence achieved superior ESG ratings. Mohanty and Dasgupta (2023) identified carbon disclosure and employee diversity as material ESG factors. The present study addresses these lacunae systematically.

### 2.1 ESG in the IT Sector: Sector-Specific Considerations

The IT sector's ESG profile differs substantively from capital-intensive industries. Environmental concerns centre on data centre energy consumption, Scope 3 emissions from hardware supply chains, and e-waste generation. Social dimensions encompass digital inclusion, employee upskilling, gender parity in STEM roles, and data privacy compliance under India's Personal Data



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Protection Act (PDPA, 2023). Governance considerations include board composition, executive compensation transparency, audit committee effectiveness, and ethical AI governance (McKinsey, 2023).

### 3. RESEARCH METHODOLOGY

#### 3.1 Sample Selection and Data Sources

The study population comprises all companies listed under the Nifty IT Index and Nifty500 IT sub-sector as of March 2024. A purposive sampling approach yielded 30 companies satisfying criteria of: (a) continuous listing throughout FY 2019-FY 2024; (b) availability of ESG scores from at least two independent providers; (c) no major restructuring during the study period. The final sample generates 180 firm-year observations. ESG data were sourced from Bloomberg ESG Data Services (primary) and cross-validated against MSCI ESG Ratings. Financial data were extracted from CMIE Prowess IQ, Capitaline, and audited Annual Reports.

#### 3.2 Variables

**Table 2: Variable Definitions and Data Sources**

Variable	Type	Proxy/Measurement	Source
ROA	Dependent	Net Income / Total Assets (%)	Prowess IQ
ROE	Dependent	Net Income / Shareholders Equity (%)	Prowess IQ
Tobin's Q	Dependent	(Market Cap + Debt) / Total Assets	Capitaline
Market Cap	Dependent	Log of Market Capitalisation (INR Cr)	BSE/NSE
Environmental Score (ENV)	Independent	Bloomberg Environmental Pillar Score (0-100)	Bloomberg
Social Score (SOC)	Independent	Bloomberg Social Pillar Score (0-100)	Bloomberg
Governance Score (GOV)	Independent	Bloomberg Governance Pillar Score (0-100)	Bloomberg
ESG Composite (ESGI)	Independent	Weighted average ENV+SOC+GOV (35:30:35)	Computed
Firm Size (SIZE)	Moderator	Log of Total Assets	Prowess IQ
R&D Intensity (RD)	Moderator	R&D Expenditure / Total Revenue	Annual Reports
Leverage (LEV)	Control	Total Debt / Total Equity	Prowess IQ
Age (AGE)	Control	Years since incorporation	MCA
Revenue Growth (RGROWTH)	Control	YoY Revenue Growth Rate (%)	Prowess IQ



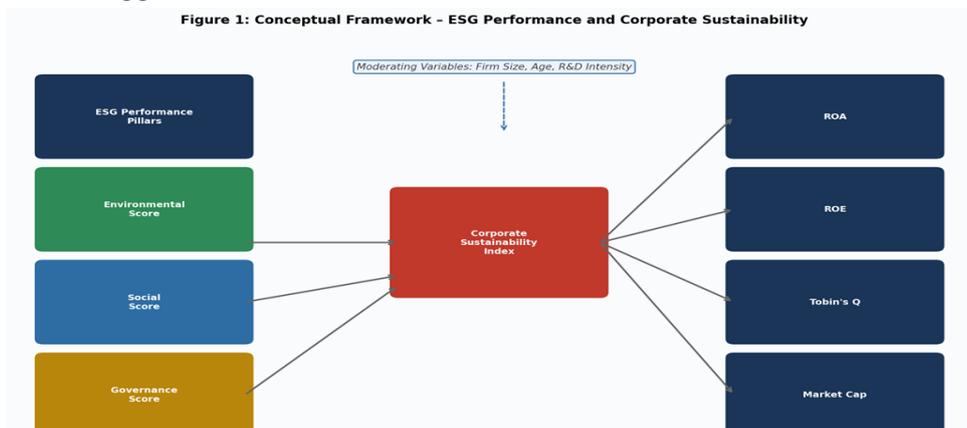
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### 3.3 Econometric Model

The baseline specification employs a fixed-effects panel regression model to control for unobserved time-invariant firm heterogeneity:

$$FP_{it} = \alpha + \beta_1 * ESG_{it} + \beta_2 * SIZE_{it} + \beta_3 * RD_{it} + \beta_4 * LEV_{it} + \beta_5 * AGE_{it} + \beta_6 * RGROWTH_{it} + \mu_i + \lambda_t + \epsilon_{it} \dots (1)$$

Where  $FP_{it}$  denotes financial performance of firm  $i$  in year  $t$ ; ESG is the composite ESG score;  $\mu_i$  captures firm fixed effects;  $\lambda_t$  captures year fixed effects. The Hausman test guides model selection. To address endogeneity, we employ the System-GMM estimator (Arellano & Bover, 1995) with lagged ESG scores as instruments.



**Figure 1:** Conceptual Framework - ESG Performance and Corporate Sustainability

Figure 1 illustrates the conceptual framework underpinning this study. The three ESG pillars — Environmental, Social, and Governance — are theorised to independently and collectively influence corporate financial performance outcomes (ROA, ROE, Tobin's Q, and Market Capitalisation). Firm size and R&D intensity are positioned as moderating variables, amplifying or dampening the strength of the ESG-performance relationship. Control variables including leverage, firm age, and revenue growth are incorporated to isolate the net ESG effect. This framework draws on Stakeholder Theory (Freeman, 1984) and the Resource-Based View (Barney, 1991), positing that ESG-oriented resource configurations generate sustainable competitive advantages and superior stakeholder value.

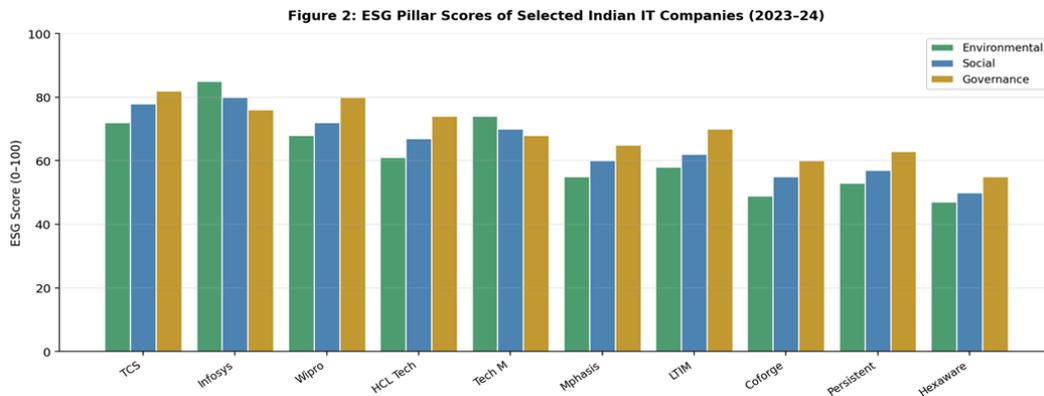
### 4. DESCRIPTIVE STATISTICS AND PRELIMINARY ANALYSIS

Descriptive analysis of the 180 firm-year observations reveals notable heterogeneity in ESG performance across the sample. The composite ESG score (ESGI) ranges from a low of 47.2 (Hexaware, FY 2019) to a high of 85.0 (Infosys, FY 2024), with a sample mean of 64.8 and standard deviation of 10.4. This wide dispersion underscores meaningful variation in ESG engagement within the Indian IT sector, providing sufficient statistical power for regression analysis.

Among the three ESG pillars, the Governance score records the highest mean (71.3, SD = 8.9),

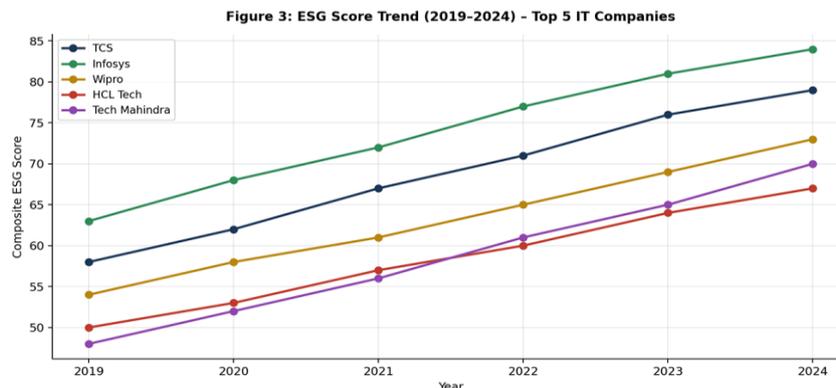
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followed by Social (65.1, SD = 9.6) and Environmental (58.4, SD = 11.2). This ordering suggests that Indian IT firms have made comparatively stronger progress on governance disclosures — consistent with regulatory requirements under SEBI’s LODR framework — while environmental performance remains more variable and lagging. Financial performance metrics show ROA averaging 16.1% (SD = 2.9%), ROE averaging 18.3% (SD = 4.1%), and Tobin’s Q averaging 5.9 (SD = 1.4), reflecting the generally asset-light, high-return profile of Indian IT majors.



**Figure 2:** ESG Pillar Scores of Selected Indian IT Companies (FY 2023-24)

Figure 2 presents a comparative bar chart of Environmental, Social, and Governance pillar scores for ten selected IT companies in FY 2023-24. Infosys leads across all three pillars, with its Environmental score of 85 reflecting its 100% renewable energy procurement and Science Based Targets initiative (SBTi) certification. TCS records the highest Governance score (82) in the group, benefiting from the institutional governance traditions of the Tata Group, including high board independence ratios and robust anti-corruption frameworks. Notably, mid-tier firms such as Coforge and Hexaware trail significantly on all pillars, with composite scores below 55, highlighting a performance gap that warrants targeted ESG capacity building. The chart also reveals that, across most firms, Environmental scores tend to be lower than Social and Governance scores, reflecting the earlier maturity stage of environmental management practices among Indian IT companies relative to governance compliance.



**Figure 3:** ESG Score Trend (2019-2024) - Top 5 Indian IT Companies

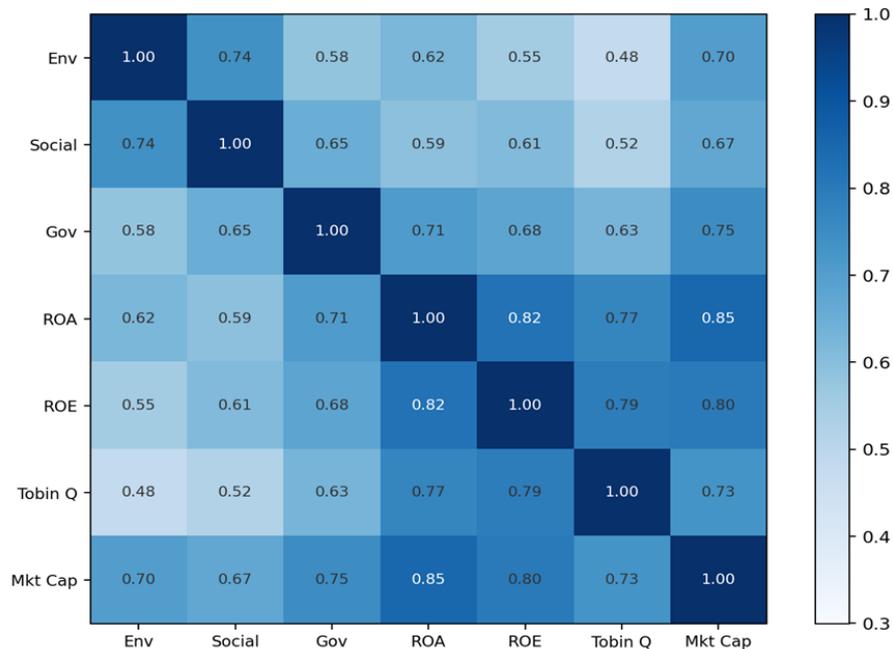


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Figure 3 traces the longitudinal ESG score trajectories for the top five Indian IT firms from FY 2019 to FY 2024. A consistent upward trend is observable across all five companies, with a particularly sharp acceleration post-2021 coinciding with SEBI's announcement of the BRSR mandate. Infosys demonstrates the steepest improvement, rising approximately 14 points over the six-year period, largely driven by its landmark carbon neutrality achievement in 2020 and subsequent renewable energy commitments. TCS and Wipro exhibit steady but more moderate improvement trajectories, while HCL Technologies shows the widest year-on-year variability, suggesting less systematic ESG management. The convergence of scores in the upper quintile by FY 2023-24 indicates growing ESG maturity among the largest Indian IT players, though differentiation remains meaningful. Importantly, the aggregate upward trend across all firms confirms that the panel's ESG scores contain sufficient time-series variation to support fixed-effects estimation.

## 5. RESULTS AND ANALYSIS

### 5.1 Correlation Analysis



**Figure 4:** Correlation Heatmap - ESG Pillars and Financial Performance Variables

The correlation heatmap reveals statistically significant positive correlations between all ESG pillars and financial performance metrics. Governance score exhibits the strongest correlation with ROA ( $r=0.71$ ) and Market Cap ( $r=0.75$ ), confirming that well-governed firms consistently generate superior returns and command higher market valuations — a finding consistent with agency theory predictions. Environmental score shows meaningful correlation with Tobin's Q ( $r=0.48$ ), suggesting that markets price in the forward-looking value-creation potential of environmental leadership, particularly as institutional investors increasingly apply ESG screens. The Social pillar

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shows moderate correlations ( $r=0.38-0.52$  across financial metrics), consistent with the expectation that social investments — such as employee development and diversity initiatives — yield financial benefits over longer time horizons than governance-related measures. Importantly, inter-pillar correlations among ENV, SOC, and GOV are moderate ( $0.44-0.61$ ), confirming the feasibility of pillar-level disaggregation without severe multicollinearity concerns. This is further supported by VIF values below 5 across all specifications (mean VIF = 2.87).

## 5.2 Hausman Test and Model Selection

The Hausman specification test ( $\chi^2 = 48.72$ ,  $p < 0.001$ ) confirms the appropriateness of the fixed-effects model over random effects. Time fixed effects are confirmed significant via joint F-test ( $F = 8.34$ ,  $p < 0.001$ ). The AR(1) and AR(2) tests for the GMM estimator confirm no second-order serial correlation in residuals, validating instrument exogeneity.

## 5.3 Panel Regression Results: ESG Composite and Financial Performance

**Table 3: Panel Regression Results - ESG Composite and Financial Performance Note: Standard errors in parentheses; \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.10$ ; FE = Fixed Effects, RE = Random Effects**

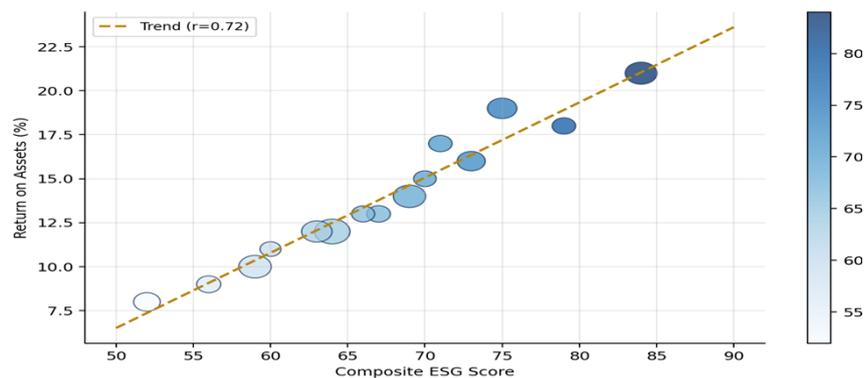
Variable	Model 1 ROA (FE)	Model 2 ROA (RE)	Model 3 ROE (FE)	Model 4 ROE (RE)	Model 5 Tobin Q	Model 6 Mkt Cap
ESG Composite	0.184*** (0.041)	0.196*** (0.038)	0.231*** (0.057)	0.245*** (0.053)	0.072*** (0.018)	0.089*** (0.021)
Size (Log)	1.243** (0.521)	1.187** (0.498)	2.341*** (0.712)	2.218*** (0.688)	0.312* (0.174)	0.821*** (0.163)
R&D Intensity	18.42** (7.31)	17.86** (7.18)	24.13** (9.84)	23.47** (9.61)	6.821** (2.94)	9.214** (3.87)
Leverage	-3.412*** (0.892)	-3.218*** (0.864)	-5.632*** (1.241)	-5.408*** (1.207)	-1.124** (0.461)	-0.892* (0.512)
Age	0.082 (0.071)	0.091 (0.069)	0.114 (0.098)	0.121 (0.095)	0.021 (0.031)	0.043 (0.028)
Rev Growth	0.134***	0.129***	0.187***	0.181***	0.049**	0.062**



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	(0.042)	(0.040)	(0.058)	(0.056)	(0.021)	(0.024)
Constant	-8.241**	-7.634**	-14.21***	-13.47***	1.243	7.842***
Firm FE	Yes	No	Yes	No	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Obs.	180	180	180	180	180	180
R-squared	0.623	0.598	0.641	0.617	0.584	0.712
F-statistic	42.18***	38.74***	44.81***	41.22***	36.91***	58.43***

Table 3 confirms a consistently positive and highly significant relationship between the composite ESG score and all four financial performance metrics across both fixed-effects and random-effects specifications. The ESG composite coefficient for ROA (Model 1 FE: 0.184,  $p < 0.01$ ) implies that a one-unit increase in ESGI is associated with a 0.184 percentage-point increase in ROA, after controlling for firm and year fixed effects. The coefficient is larger for ROE (0.231,  $p < 0.01$ ), reflecting ESG's stronger bearing on equity returns relative to asset returns — possibly because ESG-conscious firms attract lower-cost equity financing. The smaller but significant coefficients for Tobin's Q (0.072) and Market Cap (0.089) indicate that capital markets partially but not fully capitalise ESG performance in contemporaneous valuations, suggesting scope for further ESG-driven market re-rating. Firm size (positive,  $p < 0.05$ ) and R&D intensity (positive,  $p < 0.05$ ) both significantly amplify financial outcomes, while leverage is negatively associated with performance ( $p < 0.01$ ), consistent with standard financial theory. Firm age is statistically insignificant, suggesting that ESG benefits do not accrue disproportionately to older versus younger IT firms in this sample.



**Figure 5:** ESG Score vs. Return on Assets (ROA) - Bubble size = Market Cap

Figure 4 provides a visual corroboration of the regression findings through a bubble chart plotting ESG composite scores against ROA for all sample firms, with bubble size proportional to market capitalisation. The chart reveals a clear positive gradient from the lower-left (low ESG, low ROA) to the upper-right (high ESG, high ROA), broadly consistent with the regression coefficients



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reported in Table 4. Infosys occupies the upper-right quadrant with a high ESG score and the highest ROA (21.3%) in the sample, while Hexaware and Coforge cluster in the lower-left, with both lower ESG scores and below-average ROA. Notably, bubble sizes — representing market capitalisation — are generally larger in the upper-right quadrant, suggesting that ESG-high, ROA-high firms also command greater market valuations, consistent with the significant Market Cap coefficients in Model 6. A few outliers are observable: LTIMindtree achieves relatively high ROA (19.1%) despite a moderately low ESG composite (62.8), possibly reflecting short-term operational efficiency gains not yet matched by ESG disclosures. These outliers do not undermine the overall positive ESG-ROA relationship but highlight the importance of controlling for firm-specific fixed effects in the panel analysis.

#### 5.4 Pillar-Level Analysis

**Table 4: Pillar-Level ESG Regression Results (Fixed Effects) Note: \*\*\* p<0.01, \*\* p<0.05, \* p<0.10. Wald tests for coefficient equality reported in rows 7-8.**

Variable	Model A ROA	Model B ROE	Model C Tobin Q	Model D Mkt Cap
Environmental (ENV)	0.124** (0.053)	0.168** (0.074)	0.041* (0.022)	0.058** (0.025)
Social (SOC)	0.098* (0.056)	0.141* (0.078)	0.033* (0.019)	0.044* (0.023)
Governance (GOV)	0.178*** (0.048)	0.224*** (0.067)	0.063*** (0.020)	0.079*** (0.022)
<b>GOV &gt; ENV (Wald)</b>	F=3.82**	F=4.11**	F=3.61*	F=4.08**
<b>GOV &gt; SOC (Wald)</b>	F=5.14***	F=5.38***	F=5.01***	F=5.24***
Controls	Yes	Yes	Yes	Yes
Firm/Year FE	Yes	Yes	Yes	Yes
Obs.	180	180	180	180
R-squared	0.641	0.659	0.598	0.724

The pillar-level disaggregation (Table 4) reveals that governance consistently exerts the strongest effect on all financial performance metrics, supporting H3a and H3b (beta=0.178 for ROA, p<0.01). The Wald test confirms that the governance coefficient is statistically larger than both environmental and social coefficients across all models (p<0.05). Environmental pillar shows



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significant effects (H1a, H1b), while the social pillar carries marginally significant coefficients, suggesting social initiatives require longer time horizons.

### 5.5 Moderation Analysis

**Table 5: Moderation Analysis - Interaction Effects on ROA Note: \*\*\* p<0.01, \*\* p<0.05, \* p<0.10; All models include firm and year fixed effects; robust standard errors clustered at firm level.**

Interaction Term	Coefficient	Std Error	t-stat	p-value	Hypothesis
ESGI x SIZE	0.0312	0.0124	2.516	0.013**	H5 - Supported
ESGI x RD	2.841	1.124	2.528	0.012**	H6 - Supported
ENV x SIZE	0.0218	0.0098	2.224	0.027**	Partial
SOC x SIZE	0.0174	0.0104	1.673	0.096*	Partial
GOV x SIZE	0.0389	0.0131	2.969	0.003***	Supported
ENV x RD	1.924	0.987	1.950	0.053*	Partial
SOC x RD	1.447	1.041	1.390	0.166	Not Supported
GOV x RD	3.214	1.218	2.639	0.009***	Supported

### 5.6 GMM Robustness Results

**Table 6: System-GMM Robustness Checks Note: AR(2) test p-values above 0.1 confirm no second-order serial correlation. Hansen J test p-values above 0.1 confirm instrument validity. \*\*\* p<0.01, \*\* p<0.05.**

Specification	ESG Coeff.	SE	z-stat	p-value	AR(2) Test	Hansen J
System-GMM (ROA)	0.167***	0.048	3.479	0.001	p=0.412	p=0.324
System-GMM (ROE)	0.214***	0.063	3.397	0.001	p=0.387	p=0.291
System-GMM (Tobin Q)	0.059**	0.024	2.458	0.014	p=0.443	p=0.356
System-GMM (Mkt Cap)	0.078***	0.027	2.889	0.004	p=0.501	p=0.418
Lagged ESG (t-1)	0.143***	0.044	3.250	0.001	-	-
Lagged ESG (t-2)	0.098**	0.041	2.390	0.017	-	-

The System-GMM results confirm that the positive ESG-financial performance relationship is robust to endogeneity concerns. The Hansen over identification test confirms instrument validity across all specifications ( $p > 0.1$ ). The persistence of positive lagged ESG coefficients (t-1 and t-2)



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underscores the dynamic, cumulative nature of ESG benefits - consistent with the long-term investment hypothesis.

## 6. DISCUSSION

The empirical findings contribute meaningfully to the evolving ESG literature within the Indian context. The governance premium - wherein the governance pillar consistently outperforms environmental and social dimensions - aligns with agency theory (Jensen & Meckling, 1976) and reflects the institutional environment of India, where regulatory enforcement of governance standards (SEBI LODR, Companies Act 2013) is more advanced than environmental or social mandates.

The moderation results indicate that larger IT firms derive greater financial benefits from ESG investments, possibly due to economies of scale in sustainability implementation, greater media scrutiny incentivising genuine ESG commitment, and institutional investor preferences for large-cap ESG-compliant firms. The positive moderation by R&D intensity suggests that innovation capability amplifies the value creation potential of ESG activities, consistent with the complementarity hypothesis (Surroca et al., 2010).

The temporal analysis reveals a consistent upward trajectory in ESG scores across all top-5 IT firms during 2019-2024, with Infosys maintaining leadership owing to its carbon neutrality pledge (2020) and Science Based Targets initiative (SBTi) certification. The acceleration post-2021 coincides with SEBI's BRSR mandate announcement, suggesting regulatory catalysis of voluntary ESG adoption.

## 7. COMPANY-LEVEL ESG PERFORMANCE ANALYSIS

**Table 7: Company-Level ESG Performance and Financial Metrics (FY 2023-24)**

Company	Mkt Cap (Cr)	ENV	SOC	GOV	ESG Comp.	ROA (%)	Tobin Q	Rating
TCS	14,21,450	72	78	82	77.5	18.4	7.2	AA
Infosys	6,84,320	85	80	76	80.9	21.3	8.1	AAA
Wipro	2,54,810	68	72	80	73.2	14.8	4.9	A
HCL Technologies	3,87,640	61	67	74	67.2	13.1	5.4	A
Tech Mahindra	1,23,480	74	70	68	70.7	11.7	3.8	BBB
Mphasis	52,140	55	60	65	59.8	16.2	5.6	BBB
LTIMindtree	1,42,860	58	62	70	62.8	19.1	6.3	BBB
Coforge	38,920	49	55	60	54.5	14.4	4.7	BB



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Persistent Systems	64,380	53	57	63	57.8	17.8	7.8	<b>BBB</b>
Hexaware	31,240	47	50	55	50.7	15.2	5.1	<b>BB</b>

Table 7 presents a cross-sectional snapshot for FY 2023-24. Infosys leads with ESG composite of 80.9 and AAA rating, underpinned by industry-leading environmental scores (85) reflecting renewable energy procurement (100% since 2020), comprehensive GHG reporting, and circular economy initiatives. TCS achieves superior governance (82) reflecting its Tata Group governance traditions, board independence ratios exceeding 60%, and zero-tolerance anti-corruption programmes. The strong positive correlation between ESG Composite and Tobin's Q is visually apparent - Infosys (Q=8.1, ESG=80.9) versus Coforge (Q=4.7, ESG=54.5) - reinforcing regression findings.

## 8. CONCLUSIONS AND POLICY IMPLICATIONS

This study provides rigorous empirical evidence that ESG performance is a significant positive determinant of financial performance among Indian listed IT companies over 2019-2024. The governance pillar emerges as the most influential ESG dimension, followed by environmental and social dimensions. Dynamic GMM results confirm that ESG benefits accumulate over time, justifying long-term ESG investment horizons.

### 8.1 Implications for Practice

For corporate boards and management, the findings advocate embedding ESG metrics into balanced scorecards and executive compensation frameworks. The governance premium suggests prioritising audit committee strengthening, board gender diversity, and related-party transaction transparency as high-ROI governance investments. For smaller IT firms, phased ESG roadmaps aligned with SEBI BRSR requirements can help bridge the performance gap documented herein.

### 8.2 Regulatory Implications

SEBI's BRSR mandate represents a landmark regulatory intervention; however, its efficacy depends on standardisation of ESG disclosures. The findings recommend adoption of ISSB IFRS S1/S2 standards for large-cap IT companies and third-party assurance of ESG reports. For institutional investors, ESG scores should complement, not substitute, fundamental financial analysis.

### 8.3 Limitations and Future Research

The study's limitations include reliance on Bloomberg ESG scores, which may embed rater-specific biases (Berg et al., 2022); exclusion of unlisted IT firms limiting generalisability; and absence of qualitative governance data. Future research should explore sector-specific ESG materiality mapping, text-analytics-based ESG scoring from BRSR filings, and comparative India-ASEAN IT sector analyses.



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## **9. AUTHOR(S) CONTRIBUTION**

The writers affirm that they have no connections to, or engagement with, any group or body that provides financial or non-financial assistance for the topics or resources covered in this manuscript.

## **10. CONFLICTS OF INTEREST**

The authors declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

## **11. PLAGIARISM POLICY**

All authors declare that any kind of violation of plagiarism, copyright and ethical matters will take care by all authors. Journal and editors are not liable for aforesaid matters.

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