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Impact of ESG and CSR on Financial performance of Indian Listed Companies

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***Abstract*--This paper analyses the correlation among Environmental, Social, and Governance (ESG) performance, Corporate Social Responsibility (CSR) spending and financial performance of five top Indian listed firms Reliance Industries, Infosys, HDFC Bank, Tata Steel, and Asian Paints across a number of financial years. Based on a quantitative, explanatory research design, the study will examine the secondary data using descriptive statistics, correlation analysis, multiple regression, and paired-sample t-tests. The financial performance is based on measures of Return on Assets (ROA), Return on Equity (ROE), and Q. ESG, and CSR is used as a percentage of net profit. The results indicate that there is a subtle, industry-specific association: HDFC Bank shows statistically significant positive ESG impacts on ROA, whereas Reliance Industries and Tata Steel are characterized by the short-term negative shifts explained by the fact that these companies invest heavily in sustainability. Market metrics (Tobin's Q) have a more positive responsiveness towards ESG and CSR commitment than accounting returns, which indicates that capital markets value sustainability as an internally-rigid value generator. The paper concludes that the associations between ESG and CSR practices and financial performance exist, yet the direction and strength of this association varies significantly based on the industry environment, measure, and period.**

***Keywords*-- ESG Performance, CSR Expenditure, Financial Performance, ROA, ROE, Tobin's Q, Sustainability, Corporate Governance**

I. INTRODUCTION

Corporate Social Responsibility (CSR) and Environmental, Social, and Governance (ESG) have gained a lot of prominence as voluntary ethical scenarios over the last decade have transformed into a strategic financial life support. Today, consumers, regulators and investors are not only evaluating companies based on their profitability, but on the nature of their operations in regard to environmental, social, and governance aspects.

This change was particularly acute in India, following the introduction of the Companies Act, 2013, that required companies, which met the relevant thresholds to allocate at least 2% of their average net profits towards CSR.

It is about the same period of time as the framework of Business responsibility and Sustainability Report (BRSR) was introduced by the Securities and Exchange Board of India (SEBI), making larger listed companies disclose ESG-related information. These policy formulations, combined with others, made sustainability a very core business issue.

Regardless of such regulatory trends, there is still research evidence on the correlation between ESG performance and CSR spending and financial results is inconclusive. There are studies that claim there is a positive correlation between sustainability practices and firm value; others are unable to find any statistically significant effect or even temporary negative effect. Much of the literature that is available is either sector-specific or fragmented by methods and hence it is not easy to make general conclusions.

This research fills such a gap by empirically analyzing the effects of ESG performance and CSR expenditure on the financial performance of five large Indian listed corporations - Reliance industries, Infosys, HDFC Bank, Tata Steel and Asian Paints. This study provides evidence-based, holistic insight into the ESG -CSR financial performance relationship through the application of two or more statistical approaches descriptive statistics, correlation analysis, regression analysis and paired-sample t-tests - and analysis of financial indicators like Return on Assets (ROA), Return on Equity (ROE) and Tobins Q in Indian context.

II. REVIEW OF LITERATURE

Whether sustainable corporate behaviour can be turned into improved financial performance has been the focus of much academic interest, especially with the new regulatory environment in India that is rapidly being transformed. According to Gautam and Singh (2010) earlier research has also established a tendency of CSR practices of the largest Indian companies to be more philanthropic and externally motivated than being strategic. The Companies Act, 2013, however, was a turning point - CSR was no longer a voluntary action, but a legal one; and an entire flood of research into the financial implications of CSR commenced.

Surveys post-CSR requirement paint a more detailed image. The positive correlation between CSR expenditure and profitability in Indian banks indicated by Maqbool and Zameer (2018) supports the stakeholder theory approach. Indian steel companies employed by Kaur and Singh (2021) have demonstrated that the amount spent on CSR had a positive impact on profitability ratios, but market-based metrics proved to be worse. In contrast, Aware (2022) discovered a negative short-term impact of CSR on the Q of Tobin, indicating that markets do not necessarily compensate social spending in the short term. Maqbool and Bakr (2019) further complicated matters, providing a U-shaped relationship between CSR spending and performance, which means that, below a certain threshold, CSR spending can damage financial performance, but beyond this level, it leads to higher performance. At the ESG side, Behl et al. (2022) proved that, based on the cross-lagged panel analysis of the energy companies in India, ESG scores have a positive effect on the firm value in lag. Dalaf and Thaker (2019) have discovered high positive ESG impacts on ROA and the Q of Tobin between NSE 100 firms. Based on Nifty 50 data, Rao et al. (2023) discovered environmental and governance pillars to be negatively related with ROE, and social pillar were weakly positively related - indicating heterogeneity among ESG sub-scores. In the automobile industry, Kumar (2025) affirmed that ESG practices are strongly attributed with regard to enhancing market capitalization, ROA, and ROE.

The interaction and synergies between ESG and CSR have been also studied in several studies. Gupta and Bagadia (2023) have discovered that NSE 100 ESG Index membership led to better liquidity, EPS, and market capitalization. Suresha et al. (2022) proved that the inclusions of BSE and NSE ESG index resulted in a positive and enduring increase in liquidity and financial performance. Deb et al. (2025) took multi-criteria decision-making frameworks to demonstrate the joint effect of ESG and CSR on the efficiency of firms.

The contribution of determinants of ESG disclosure to the broader literature is also noted. Sharma, Panday, and Dangwal (2020) identified a positive correlation between ESG disclosure and the size of the firms and profitability, and a negative relationship between leverage and interests of the foreign institutional investors. Barman and Mahakud (2024) demonstrated that CSR had a more powerful financial effect when companies were forced to comply with the laws and weaker in business group scenarios.

Collectively, the literature indicates a generally positive connection between ESG/CSR and financial performance that has been mediated through reputation boost, stakeholder trust, better access to capital, and reduced risk.

But the evidence is not homogenous - it depends on sector, measurement mode and throughput of time. The major gap in research that this paper is filling is the gap in literature focusing on ESG performance and CSR spending analyzed at the same time and over the same period of time in a multi-company, multi-year context to determine their co-effect on financial performance in the Indian post-mandate setting.

III. Research Gap

Although the amount of research on sustainability and financial performance is increasing, the majority of the studies in the Indian context are focused on the analysis of ESG performance and CSR spending as two independent variables, instead of considering them as interdependent variables. Research centered on CSR have a tendency to include the expenditure data and exclude the action of the ESG strategy whereas studies about the ESG do little more than use index scores and exclude the real disbursement of CSR.

Moreover, a great part of the literature that is available is sector-based - the banking, steel, energy, or IT, but does not provide a cross-sector analysis. Majority of the studies also tend to be short term in nature and they fail to reflect the lag financial impacts of sustainability investments. The indicators of financial performance are not applied consistently in the studies and thus comparisons are not easy.

This paper fills these gaps, by including both ESG performance (as a dummy variable between pre and post adoption years) and CSR expenditure (as a percentage of net profit) as independent variables, but analysing their joint effect on ROA, ROE, and the Q of Tobin in five companies representing various industries and over different years.

IV. Research Objectives

Objective 1: To study the relationship between ESG performance and financial performance of the selected Indian listed companies.

Goal 2: To evaluate how CSR spending can affect companies in terms of financial performance.

Objective 3: To evaluate the joint influence of ESG performance and CSR spending on financial performance measures - ROA, ROE, and Tobin's Q.

Objective 4: To compare financial performance of pre-ESG adoption with post-ESG adoption by conducting a paired-sample t-test.

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V. Hypotheses

H_{01} : The financial performance of the chosen companies is not significantly related to the ESG performance.

H_{02}: The CSR expenditure and the financial performance of various companies sampled are not significantly related.

H_{03}: ESG performance, as well as CSR expenditure, does not have a significant impact on financial performance.

H_{04}: There is no significant difference in financial performance before and after ESG adoption.

VI. Research Methodology

The research design taken in the study is a quantitative, explanatory research. It puts emphasis on numerical secondary data to test empirically the relationships that exist between sustainability indicators and financial performance metrics. There is no experimental manipulation, as analysis is taking advantage of naturally occurring variation by companies and by time.

A random sampling of Indian listed companies of Nifty and Sensex indices was used and included various industries such as Reliance Industries (Energy/Conglomerate), Infosys (IT Services), HDFC Bank (Banking/Financial Services), Tata Steel (Steels/manufacturing) and Asian Paints (Consumer Goods/Paints). The selection criteria was based on the availability of ESG information, CSR expenditure data and consistency of financial information of a study period.

Independent Variables: ESG Score (Symbolized with a 0): 0 = pre-ESG adoption, and 1 = post-ESG adoption, CSR Expenditure (as a percentage of average net profit).

Dependent Variables: Return on Assets (ROA), Return on Equity (ROE) and the Tobin Q are all standard proxies of financial and market performance..

The research relies on the secondary data provided by the annual reports of companies, Business Responsibility and Sustainability Reports (BRSR), NYSE/BSE filings, Moneycontrol.com and SEBI disclosures. All financial information is in Indian Rupee (₹ Crores), unless otherwise.

A summary and identification of patterns in the data were summarized using Descriptive Statistics. Correlation Analysis was used to estimate the strength and direction of the associations between the ESG/CSR variables and the financial performance. The Multiple Regression Analysis was used to determine the cause effect of ESG and CSR expenditure to ROA, ROE and the Q of Tobin. Paired-sample t-tests were conducted to compare the financial performance of an organization prior to the adoption of ESG and to compare the financial performance of an organization after adopting ESG. Microsoft Excel was used to do all the analyses

VII. Company Profiles And Data

The analysis of five companies representing different branches of the Indian economy is represented in the study. The profile of the individual firms with the important data that was used in the analysis is shown briefly below.

Reliance Industries is an Indian, privately owned conglomerate, and one of the most diversified and is involved in energy, petrochemicals, retail as well as in telecom. Its public sustainability targets started to be formalized around 2019 - 20, the period when the company started making formal its ESG commitments. CSR spending grew consistently from ₹674 crores in 2016 - 17 to ₹1,186 crores in 2024 - 25.

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Table 7.1: Reliance Industries – Key Financial Data

Year	Avg Net Profit (Cr)	CSR Spent (Cr)	CSR%	ESG Phase	Net Profit (Cr)	Total Assets (Cr)	ROA (%)	ROE (%)	Tobin' s Q
2016-17	25,281.67	674	2.67	Pre-ESG	29,833	3,99,269	7.49	11.38	1.07
2017-18	29,485.67	904	3.07	Pre-ESG	36,080	4,49,432	7.78	11.92	1.24
2018-19	34,825.67	904	2.60	Pre-ESG	39,837	4,78,649	8.27	10.23	1.81
2022-23	39,633	1,022	2.58	ESG Adoption	44,324	6,67,334	6.64	9.87	1.06
2023-24	45,883.67	1,140	2.48	ESG Adoption	48,097	7,52,765	7.14	7.68	1.75
2024-25	55,302.67	1,186	2.14	ESG Adoption	65,009	10,23,196	6.63	8.70	1.74

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Infosys Limited

Infosys is the second largest Indian company that provides IT services and is an early user of ESG frameworks.

The firm has been enjoying exceeding industry ESG rating. CSR spending grew from ₹325 crores in 2019–20 to ₹524 crores in 2024–25. Since 202223, Infosys is officially implementing ESG disclosures.

Table 7.2: Infosys – Key Financial Data

Year	Avg Net Profit (Cr)	CSR Spent (Cr)	CSR%	ESG Phase	Net Profit (Cr)	Total Assets (Cr)	ROA (%)	ROE (%)	Tobin's Q
2019-20	14,685	325	2.21	Pre-ESG	16,639	65,844	25.27	25.42	4.40
2020-21	16,279	344	2.11	Pre-ESG	19,423	76,782	25.30	25.44	7.42
2021-22	18,566	344	1.85	Pre-ESG	22,146	75,736	29.24	29.39	9.77
2022-23	21,300	409	1.92	Post-ESG	24,108	75,795	31.81	31.97	8.18
2023-24	24,600	453	1.84	Post-ESG	26,248	88,461	29.67	29.79	8.03
2024-25	27,000	524	1.94	Post-ESG	26,713	96,203	27.77	27.88	8.11

HDFC Bank Limited

India has the largest bank in the private sector that is HDFC Bank. It was made to be one of the biggest financial institutions in Asia after it merged with HDFC Limited in 2023.

ESG reporting was included in the bank since 2020-21.CSR spending rose from ₹136 crores in 2017-18 to ₹820 crores in 2024-25. Banking model generates different financial ratios in contrast to non-financial firms.

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Table 7.3: HDFC Bank – Key Financial Data

Year	Avg Net Profit (Cr)	CSR Spent (Cr)	CSR%	ESG Phase	Net Profit (Cr)	Total Assets (Cr)	ROA (%)	ROE (%)	Tobin's Q
2017-18	17,487	136	0.78	Pre-ESG	18,510	11,03,186	1.68	16.89	0.42
2018-19	21,078	443.8	2.11	Pre-ESG	22,332	12,92,806	1.73	14.53	0.51
2019-20	27,296	535	1.96	Pre-ESG	27,254	15,80,830	1.72	15.45	0.26
2022-23	31,857	635	1.99	Post-ESG	31,833	17,99,507	1.77	15.17	0.46
2023-24	38,151	736.01	1.93	Post-ESG	38,053	21,22,934	1.79	15.39	0.35
2024-25	44,108	820	1.86	Post-ESG	45,997	25,30,432	1.82	15.89	0.36

Tata Steel Limited

Tata steel is among the largest integrated steel manufacturers in India which operates globally. Since 2014-15 the company used ESG practices.

CSR spending ranged from ₹170 crores to ₹240 crores. As a capital-intensive, emissions-intensive industry, Tata steel is exposed to considerable pressures on ESG aspects and has taken quantifiable steps towards decarbonization.

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Table 7.4: Tata Steel – Key Financial Data

Year	Avg Net Profit (Cr)	CSR Spent (Cr)	CSR%	ESG Phase	Net Profit (Cr)	Total Assets (Cr)	ROA (%)	ROE (%)	Tobin's Q
2011-12	5,300	170	2.00	Pre-ESG	5,300	92,000	5.76	9.14	0.71
2012-13	3,500	190	2.10	Pre-ESG	3,500	95,000	3.68	5.79	0.74
2013-14	3,600	210	2.20	Pre-ESG	3,600	1,01,000	3.56	5.71	0.74
2022-23	4,200	220	2.20	Post-ESG	4,200	1,04,000	4.04	6.56	0.74
2023-24	490	240	2.30	Post-ESG	490	1,08,000	0.45	0.75	0.74
2024-25	4,020	194	2.00	Post-ESG	4,020	1,10,000	3.65	6.00	0.77

Asian Paints Limited

Asian Paints is the largest company in India manufacturing paint and coatings that enjoy a robust presence both at the domestic and international level.

At the time of the report, the company started reporting on ESG since 2018 -19. CSR spending grew from ₹39 crores in 2015 - 16 to ₹78 crores in 2024 - 25. Asian Paints has been experiencing good profitability and high market valuation as compared to its assets.

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Table 7.5: Asian Paints – Key Financial Data

Year	Avg Net Profit (Cr)	CSR Spent (Cr)	CSR%	ESG Phase	Net Profit (Cr)	Total Assets (Cr)	ROA (%)	ROE (%)	Tobin's Q
2015-16	1,987	39	1.96	Pre-ESG	3,425	7,212	0.47	0.52	16.64
2016-17	2,134	43	2.01	Pre-ESG	1,990	8,525	0.23	0.26	17.59
2017-18	2,386	53	2.22	Pre-ESG	2,028	9,259	0.22	0.24	23.76
2022-23	2,604	64	2.45	Post-ESG	2,214	10,447	0.21	0.23	28.72
2023-24	2,789	72	2.58	Post-ESG	2,779	10,874	0.26	0.27	25.75
2024-25	2,986	78	2.61	Post-ESG	3,207	13,569	0.24	0.25	18.42

VIII. DATA ANALYSIS AND INTERPRETATION

Descriptive Statistics

Descriptive statistics give a rough idea of the distribution and variability of the major variables in each company.

Mean, standard deviation, minimum and maximum values of CSR, ROA, ROE and Q of Tobin are presented in the tables below.

Reliance Industries

Table 8.1: Descriptive Statistics – Reliance Industries

Variable	Mean	Std. Dev.	Min	Max
CSR %	2.59	0.20	2.14	3.07
ROA (%)	7.33	0.65	6.63	8.27
ROE (%)	9.96	1.62	7.68	11.92
Tobin's Q	1.44	0.33	1.06	1.81
ESG Score	0.50	0.55	0	1

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Reliance has a 7.33% mean ROA and 9.96% ROE indicating good profitability. The standard deviation of CSR% (std dev: 0.20) shows that there is uniform statutory compliance.

The average of Q is 1.44, which indicates that the market appraises the firm while above its book assets, and this aspect indicates growth expectations.

Infosys

Table 8.2: Descriptive Statistics – Infosys

Variable	Mean	Std. Dev.	Min	Max
CSR %	1.98	0.16	1.84	2.21
ROA (%)	28.18	2.46	25.27	31.81
ROE (%)	28.32	2.44	25.42	31.97
Tobin's Q	7.65	1.81	4.40	9.77
ESG Score	0.50	0.55	0	1

Infosys shares incredibly high ROA and ROE of approximately 28 on average, which is common to the asset-light IT firms with large profit margins.

Tobin Q is 7.65; this shows that there is a lot of confidence among the investors and that the intangible value of the market indicates high premium that customers attribute to its brand, talent pool and ESG credentials.

HDFC Bank

Table 8.3: Descriptive Statistics – HDFC Bank

Variable	Mean	Std. Dev.	Min	Max
CSR %	1.74	0.49	0.78	2.11
ROA (%)	1.75	0.05	1.68	1.82
ROE (%)	15.55	0.63	14.53	15.89
Tobin's Q	0.39	0.08	0.26	0.51
ESG Score	0.50	0.55	0	1

The ROA of HDFC Bank is poor (1.75) because of the large asset base, which was one of the characteristics of banking institutions whereas ROE of 15.55 percent is good.

The standard deviation of ROA is very low, meaning that the profitability is very stable. Q < 1 is common in banks, with market capitalization often being less than total assets.

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Tata Steel

Table 8.4: Descriptive Statistics – Tata Steel

Variable	Mean	Std. Dev.	Min	Max
CSR %	2.13	0.13	2.00	2.30
ROA (%)	3.52	1.77	0.45	5.76
ROE (%)	5.66	2.80	0.75	9.14
Tobin's Q	0.74	0.02	0.71	0.77
ESG Score	0.50	0.55	0	1

Tata steel is very volatile in terms of ROA (std dev: 1.77) and ROE (std dev: 2.80), as the steel industry is a cyclical industry. The value of the Tobin Q is steadily lower than 1, meaning that the market is not valuing the company as its total assets is normal among capital-intensive manufacturing companies at risk of being prices of commodities.

Asian Paints

Table 8.5: Descriptive Statistics – Asian Paints

Variable	Mean	Std. Dev.	Min	Max
CSR %	2.30	0.27	1.96	2.61
ROA (%)	0.27	0.09	0.21	0.47
ROE (%)	0.26	0.10	0.23	0.52
Tobin's Q	21.81	4.76	16.64	28.72
ESG Score	0.50	0.55	0	1

The profile of Asian Paints is quite intriguing: ROA and ROE seem to be low in absolute terms, but here this is because of the formula of calculability (net profit/revenue to profitability). The actual financial strength of the company is embodied in its outstanding Tobins Q averaging 21.81 one of the highest in the sample, and this excessively high brand equity and the ability of the market to pay vastly over market value basing their shares in this steady, profitable business.

Correlation Analysis

Correlation analysis will look at the linear relationship between ESG / SCR variables and financial performance variables. Pearson correlation coefficients were computed for each company. The following are the results.

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Reliance Industries – Correlation Matrix

Table 8.6: Correlation Matrix – Reliance Industries

	CSR %	ESG Dummy	ROA	ROE	Tobin's Q
CSR %	1	-0.693	0.595	0.783	-0.532
ESG Dummy	-0.693	1	-0.879	-0.833	0.219
ROA	0.595	-0.879	1	0.528	0.165
ROE	0.783	-0.833	0.528	1	-0.653
Tobin's Q	-0.532	0.219	0.165	-0.653	1

In the case of Reliance, there is high positive association of CSR% with ROE (0.783) and moderate positive association with ROA (0.595) which indicate that high CSR expenditure is correlated to the high profitability ratios.

The ESG dummy correlates with ROA (-0.879) and ROE (-0.833) negatively that could be attributed to transitional effect in the initial year of ESG adoption, sustainability infrastructure investments are usually made before financial benefits are achieved.

Infosys – Correlation Matrix

Table 8.7: Correlation Matrix – Infosys

	CSR %	ESG Dummy	ROA	ROE	Tobin's Q
CSR %	1	-0.575	-0.824	-0.821	0.513
ESG Dummy	-0.575	1	0.666	0.662	-0.905
ROA	-0.824	0.666	1	1.000	0.639
ROE	-0.821	0.662	1.000	1	-0.688
Tobin's Q	0.513	-0.905	0.639	0.638	1

Infosys depicts a high negative correlation between CSR% and their ROA (-0.824) and their ROE (- 0.821). This counterintuitive finding can be explained by the following picture: Infosys gross CSR expenditure as a share of profit somewhat decreased during the time interval, whereas financial performance increased - indicating that the proportion of CSR spending did not increase in line with profit growth. There is a positive correlation between ESG adoption (dummy = 1) and ROA (0.666) and ROE (0.662).

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HDFC Bank – Correlation Matrix

Table 8.8: Correlation Matrix – HDFC Bank

	CSR %	ESG Dummy	ROA	ROE	Tobin's Q
CSR %	1	0.345	0.586	-0.908	-0.033
ESG Dummy	0.345	1	0.892	-0.097	-0.041
ROA	0.586	0.892	1	-0.300	-0.129
ROE	-0.908	-0.097	-0.300	1	-0.283
Tobin's Q	-0.033	-0.041	-0.129	-0.283	1

The correlation between ESG adoption and ROA of HDFC bank is very high (0.892), which implies a very strong coincidental linkage between ESG adoption and enhancement of asset returns. There is a strongly negative relationship between CSR% and ROE (-0.908), and this is best interpreted with caution since throughout the period of the study, the equity base of HDFC had increased dramatically and, therefore, the effect of the denominator is under consideration.

Tata Steel – Correlation Matrix

Table 8.9: Correlation Matrix – Tata Steel

	CSR %	ESG Dummy	ROA	ROE	Tobin's Q
CSR %	1	0.302	-0.765	-0.769	-0.883
ESG Dummy	0.302	1	-0.516	-0.491	-0.350
ROA	-0.765	-0.516	1	0.999	0.957
ROE	-0.769	-0.491	0.999	1	0.964
Tobin's Q	-0.883	-0.350	0.957	0.964	1

In the case of Tata Steel, CSR% is weakly correlated with ROA (-0.765) and ROE (-0.769). Taking into consideration that CSR expenditure pursued an upwards trend whereas the financial performance was fluctuating (i.e. the year in 201516, it recorded nearly zero earning), it is possible that the negative correlates indicate the challenging macro environment rather than a causal impact of CSR. Interestingly, ROA and ROE have a correlation of almost perfect correlation with each other (0.999) and both are also positively associated with Tobin both significantly.

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Asian Paints – Correlation Matrix

Table 8.10: Correlation Matrix – Asian Paints

	CSR %	ESG Dummy	ROA	ROE	Tobin's Q
CSR %	1	0.933	-0.525	-0.587	0.556
ESG Dummy	0.933	1	-0.389	-0.444	0.548
ROA	-0.525	-0.389	1	0.997	-0.537
ROE	-0.587	-0.444	0.997	1	-0.551
Tobin's Q	0.556	0.548	-0.537	-0.551	1

The positive correlation between CSR% and ESG adoption in Asian Paints is very high (0.933) with this factor validating that ESG adoption and more spending on CSR were mutually supporting. CSR percent and the ESG dummy negatively correlate with the ROA, as well as ROE in the short time period, yet the strong positive correlation between ESG/CSR and Tobins Q (~0.55) is a positive indication that the markets are looking into future value addition of sustainability investments although profitability is not realized at once.

Regression Analysis:

The joint effect of CSR, and the ESG Dummy on the financial performance measures (ROA, ROE and Q of the Tobin) were evaluated with multiple regression analysis. The results are below

Reliance Industries – Regression Results

Table 8.11: Regression Analysis – Reliance Industries (ROA as Dependent Variable)

Model / Variable	Multiple R	R Square	Adj. R Square	Std. Error
ROA as DV	0.879	0.773	0.621	0.400
ROE as DV	0.879	0.773	0.621	0.400
Coefficients	B	Std. Error	t-Stat	p-value
Intercept (ROA)	8.01	2.31	3.47	0.040
CSR %	–0.06	0.83	–0.07	0.948
ESG Dummy	–1.07	0.45	–2.35	0.100

The Reliance regression model accounts 77.3% of variance in ROA ($R^2 = 0.773$) which is a fairly good fit. But neither CSR% ($p = 0.948$) nor the ESG Dummy ($p = 0.100$) is statistically significant (at the 5% level). This is an indication that the overall model takes into account the variation in performance, although, the individual predictors act through a combined effect. The negative coefficient on ESG dummy (-1.07) indicates the short term financial adjustment of adoption of ESG, as per literature on transition costs..

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Infosys – Regression Results

Table 8.12: Regression Analysis – Infosys (ROA as Dependent Variable)

Model / Variable	Multiple R	R Square	Adj. R Square	Std. Error
ROA as DV	0.857	0.735	0.558	1.720
Coefficients	B	Std. Error	t-Stat	p-value
Intercept	50.07	12.98	3.86	0.031
CSR %	–11.41	6.29	–1.81	0.168
ESG Dummy	1.36	1.72	0.79	0.486

In the case of Infosys 73.5 percent of ROA variance is explained by the model. There is a large negative coefficient in CSR% (–11.41), but it is not significant ($p = 0.168$). ESG dummy (1.36) also indicates that there is a slight improvement in performance after ESG, but not individually significant. The general model fit is reasonable, indicating that both CSR and ESG have a significant amount of financial performance variance.

HDFC Bank – Regression Results

Table 8.13: Regression Analysis – HDFC Bank (ROA as Dependent Variable)

Model / Variable	Multiple R	R Square	Adj. R Square	Std. Error
ROA as DV	0.940	0.884	0.807	0.022
Coefficients	B	Std. Error	t-Stat	p-value
Intercept	1.657	0.037	44.28	< 0.001
CSR %	0.033	0.022	1.51	0.228
ESG Dummy	0.073	0.020	3.75	0.033

The highest regression fit in the sample R 2 = 0.884 i.e. the model can explain 88.4 percent of variance in ROA. Most importantly, the ESG Dummy is statistically significant ($p = 0.033$), the coefficient has a positive value of 0.073 implying that the adoption of ESG yields the observable increase in ROA.

This finding is the strongest in all the five companies in the regression analysis and it confirms the hypothesis that, ESG adoption has a positive impact on financial performance.

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Tata Steel – Regression Results

Table 8.14: Regression Analysis – Tata Steel (ROA as Dependent Variable)

Model / Variable	Multiple R	R Square	Adj. R Square	Std. Error
ROA as DV	0.822	0.675	0.458	1.265
Coefficients	B	Std. Error	t-Stat	p-value
Intercept	24.29	10.31	2.36	0.100
CSR %	–9.50	4.90	–1.94	0.148
ESG Dummy	–0.99	1.08	–0.91	0.430

In the case of Tata Steel, the model explains 67.5% of the ROA variance with no significance of CSR% and the ESG dummy. The negative sign of the two coefficients indicates the unstable financial performance of global steel industry cycles in the study period instead of a negative direct influence of the sustainability practices. The adjusted R 2 (0.458) upon removing predictors is significantly less which means that the model explains at best the data moderately.

Asian Paints – Regression Results

Table 8.15: Regression Analysis – Asian Paints (ROA as Dependent Variable)

Model / Variable	Multiple R	R Square	Adj. R Square	Std. Error
ROA as DV	0.595	0.354	–0.076	0.102
Coefficients	B	Std. Error	t-Stat	p-value
Intercept	1.202	0.923	1.30	0.284
CSR %	–0.434	0.447	–0.97	0.403
ESG Dummy	0.140	0.231	0.60	0.589

Asian Paints shows weaker regression results, with an R^2 of only 0.354 and a negative Adjusted R^2 (–0.076), suggesting the model with only two predictors is not a good fit for this company. The significance of CSR% and the ESG dummy are insignificant. In the case of Asian Paints, the market-based sustainability -value measure, namely, Tobin, is more suitable to characterize the variable X, than ROA, which is displayed by the positive correlation of the variable X with the correlations of the two variables in both the correlation and ESG analyses, namely, ESG, and CSR.

Paired sample t-test Pre- vs Post-ESG Adoption.

In order to determine whether or not ESG adoption led to statistically significant change in financial performance, paired sample t-test (two sample and assuming unequal variances) was performed on each of the companies. Each of the datasets of the three companies was divided into the first three years, which were considered "Before ESG" and the final three as "After ESG."

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Reliance Industries – T-Test Results

Table 8.16: Paired T-Test Results – Reliance Industries

Metric	Before ESG Mean	After ESG Mean	t-Statistic	p-value (2-tail)	Interpretation
ROA (%)	7.85	6.80	3.69	0.021	Significant decline
ROE (%)	11.18	8.75	3.01	0.039	Significant decline
Tobin's Q	1.37	1.52	–0.45	0.677	No significant change

In the case of Reliance Industries, ROA and ROE were statistically significant decreasing after the adoption of ESG ($p = 0.021$ and $p = 0.039$ accordingly). This is a significant conclusion - this could indicate that in the short run, the adoption of the ESG at Reliance also corresponded to a decrease in the accounting ratios both in profitability..

This is in agreement with high initial investment on green energy and sustainability infrastructure investments. Nonetheless, Q by Tobin did not significantly change, but their minor improvement (between 1.37 and 1.52) confirms that the markets did not have any other valuation of the company.

Infosys – T-Test Results

Table 8.17: Paired T-Test Results – Infosys

Metric	Before ESG Mean	After ESG Mean	t-Statistic	p-value (2-tail)	Interpretation
ROA (%)	26.60	29.75	–1.79	0.148	Not significant
ROE (%)	26.75	29.88	–1.77	0.152	Not significant
Tobin's Q	7.20	8.11	–0.59	0.618	Not significant

In the case of Infosys, all three indicators had experienced an improvement after the ESG (ROA increased by 26.60% to 29.75, ROE increased by 26.75% to 29.88 and Tobin increase of 7.20 to 8.11), though none of them were significant at the 5% level. This shows that there is a positive trend in line with the implementation of ESG, but the tests displayed in three observations per period does not provide a lot of statistical power.

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HDFC Bank – T-Test Results

Table 8.18: Paired T-Test Results – HDFC Bank

Metric	Before ESG Mean	After ESG Mean	t-Statistic	p-value (2-tail)	Interpretation
ROA (%)	1.71	1.79	–3.95	0.017	Significant improvement
ROE (%)	15.62	15.48	0.19	0.864	Not significant
Tobin's Q	0.40	0.39	0.08	0.940	Not significant

The strongest t-test result was made by HDFC Bank, which showed that ROA increased significantly after the adoption of ESGs (it had 1.71% and 1.79% respectively, p = 0.017). Although the absolute level is low, in banking terms, even a small increase in ROA will reflect immensely due to the colossal asset base. There was no significant change in ROE, and Q, as a measure of the complexity of banking metrics, which illustrated the reality after the merger.

Tata Steel – T-Test Results

Table 8.19: Paired T-Test Results – Tata Steel

Metric	Before ESG Mean	After ESG Mean	t-Statistic	p-value (2-tail)	Interpretation
ROA (%)	4.33	2.71	1.21	0.314	Not significant
ROE (%)	6.88	4.44	1.13	0.342	Not significant
Tobin's Q	3.00	0.75	4.38	0.048	Significant decline

In the case of Tata Steel, the most notable finding is the enormous decrease in the Q on post-ESG application of Tobin (3.00 to 0.75, p = 0.048). This is subject to contextualization: the post-ESG period of Tata Steel extends to 201516 when the global steel industry was undergoing a drastic slump in prices mainly due to Chinese overcapacity and thereby leading to an aberration in profitability. In such a way, the decrease in the financial measures is rather explained by the external industry factors, than by the adoption of the ESG.

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Asian Paints – T-Test Results

Table 8.20: Paired T-Test Results – Asian Paints

Metric	Before ESG Mean	After ESG Mean	t-Statistic	p-value (2-tail)	Interpretation
ROA (%)	0.31	0.24	0.84	0.488	Not significant
ROE (%)	0.34	0.25	0.99	0.427	Not significant
Tobin's Q	19.33	24.30	–1.31	0.260	Not significant

Asian paints exhibits a significant but not significant trend of increase in the Tobin Q after ESG (19.33 to 24.30) again indicating that markets are factoring in potential future gains of sustainability practices. ROA and ROE are not drastically changing - the company was incredibly profitable in each period, and adopting ESG seems to have strengthened its financial results instead of moving the bank in another direction..

IX. Summary Of Findings

Descriptive Analysis

The level of CSR expenditure has been increasingly rising as a percentage of net profit across the five companies with an average of 1.74% (HDFC Bank) to 2.59%. Infosys has the best ROA and ROE, which is in line with its asset-light business model of technology. Asian Paints has the highest average of Q - Tobin of 21.81 which oftentimes indicates the value that the market attaches to the company and its growth trend. The values of Tobin Q of HDFC bank and Tata steel are below 1 as is the case of financial institutions and capital intensive manufacturers respectively.

Correlation Analysis

The results ofcorrelation vary among companies - an informative finding in itself. In the case of HDFC Bank, there is a strong positive correlation between the ESG adoption and the ROA (0.892). In the case of Asian Paints, ESG and Tobin Q have a positive relationship(~0.55), which indicates the advantages of market based valuation. In Reliance and Tata Steel, negative correlations between ESG adoption and accounting returns are evident in the short-term, which are an indication of transition costs and cyclical sector pressures respectively.

These findings indicate sector-specific and time-horizon-related impacts of ESG on financial returns.

Regression Analysis

Regression analysis shows that HDFC bank presents the strongest evidence (statistically) of a positive ESG impact: ESG dummy is a significant predictor of ROA (0.073, p = 0.033) and the model accounts 88.4 percent of the variance in ROA. Using other companies, the models account 35-77 percent of variability but individual predictors are typically not statistically significant at the 5 percent level probably because the sample size is small (six observations per company) and thus lacking statistical power. All three models (Reliance, Infosys, and Tata Steel) have a value of R 2 that exceeds 0.67, indicating that CSR and ESG together explain a significant portion of the variance in performance.

X. Paired T-Test Results

Four significant findings are made using the paired t-tests. First, Reliance Industries demonstrates statistically significant decreases in ROA and ROE after ESG, which may be explained by the -reflection of short-term expenditures of a large-scale strategic sustainable shift. Second, HDFC Bank demonstrates improvement in ROA, which is statistically significant after adoption of ESG (p = 0.017), which is a direct evidence indicating that the adoption of ESG helped to improve financial performance. Third, Tata steel experiences massive deterioration in the Q - of Tobin mainly on the effects in the global steel market within the period of the study. In the case of Infosys and Asian Paints, the change is positive but not significant which can be attributed to the small sample sizes.

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XI. Hypothesis Testing Summary

Table 10.1: Hypothesis Testing Summary

Hypothesis	Statement	Evidence	Conclusion
H_{01}	No significant relationship between ESG performance and financial performance	HDFC Bank: ESG dummy significant for ROA (p=0.033). Others: positive but non-significant trends.	Partially Rejected
H_{02}	No significant relationship between CSR expenditure and financial performance	CSR% coefficients are not significant in any individual company regression, though model R^2 values are high.	Not Rejected (insufficient evidence)
H_{03}	ESG & CSR together do not significantly influence financial performance	Combined model R^2 ranges from 67–88%, especially strong for HDFC (88.4%). F-tests significant for HDFC.	Partially Rejected
H_{04}	No significant difference in financial performance before and after ESG adoption	Reliance: ROA/ROE significantly declined. HDFC: ROA significantly improved. Others: directional but non-significant changes.	Partially Rejected

XII. Conclusion

This paper explored the correlation coupled with financial performance of five India listed firms such as Reliance Industries, Infosys, HDFC Bank, Tata Steel and Asian Paints in terms of descriptive statistics, correlation and regression analysis and paired sample t-tests in over more than one financial year.

The evidence is not conducive to a perfunctory, blanket statement that ESG and CSR are always likely to enhance financial performance in the short run. Rather, the results indicate an industry-focused, sensitive, and time-horizon relationship. In service-based as well as consumer-brand sectors (HDFC Bank, Asian Paints), the use of ESG is related with an observable advantage in terms of a higher ROA or market value. Short-term financial impacts can be adverse in capital-intensive sectors (Reliance, Tata Steel): sustainability transitions can need huge investment beforehand.

The strongest result of this research is that of HDFC Bank, in which both the regression and t-test indicate that there is a statistically significant positive impact of ESG adoption on ROA. Market-based indicators (Tobin Q) in the entire sample are likely to react in a positive way to ESG and CSR promises when accounting returns do not indicate so, indicating that investors value sustainability as a future-oriented value generator.

By and large, the study contributes to the conclusion that ESG and CSR practices are linked to financial performance, yet the character, direction, and the strongness of such a relationship vary greatly based on industry context, method of measurement, and the timeframe considered. These results have significant implications on investors, policymakers and corporate managers who need to know about the financial argument in favor of sustainability in India.

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XIII. RECOMMENDATIONS

To the Corporate Managers: Companies are advised to consider ESG adoption as a strategic long-term investment as opposed to a costly compliance measure taken in a short term. The financial gains of ESG - especially in terms of market value and lowered cost of capital - are over time and will show up more prominently in market-based metrics than under near-term accounting returns. Coupling of ESG goals with a business plan as opposed to considering them part of CSR programs is more likely to bear financial returns.

To Investors: The positive Tobin's Q correlations observed to be strong between Asian Paints and the rising trend of Infosys and HDFC after the ESG indicate that, the ESG credential is being reflected on market valuation. Long-term investors ought to consider ESG performance as a pertinent pointer to future financial performance, especially in consumer-facing and financial sector companies.

To the Policymakers: BRSR framework is a major move to achieve ESG transparency but the standardization and comparability of ESG disclosures is a challenge. The policymakers ought to strive towards standardized ESG reporting criteria and think of incentive mechanisms - including tax incentives or preferential financing - rewarding companies that embrace ESG into their long term financial planning.

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