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ESG Reporting of Public Sector Banks: Evidence from The Bombay Stock Exchange

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***Abstract*—Environmental, Social, and Governance (ESG) reporting has emerged as a critical component of corporate transparency and sustainable business practices. This study examines the relationship between ESG reporting and financial performance in the public sector banks using evidence from companies listed on the Bombay Stock Exchange (BSE). The study uses secondary panel data of 12 major public sector banks over the period 2023–2024, comprising 24 observations. ESG scores along with their components Environmental (E), Social (S), and Governance (G) are analysed in relation to Return on Assets (ROA), along with control variables such as firm size and leverage. Regression analysis is employed to evaluate the impact of ESG factors on firm performance. The findings reveal that although the overall regression model is statistically significant, individual ESG variables do not show significant influence on financial performance. This is primarily attributed to multicollinearity among ESG components. The study contributes to the growing body of literature on ESG in emerging markets and highlights the importance of proper model specification in ESG research.**

***Index Terms*—ESG (Environmental, Social, and Governance), Financial Performance (ROA), Public Sector Bank, Sustainability Reporting, Firm Size and Leverage, Panel Data Analysis.**

I. INTRODUCTION

In recent years, ESG reporting has gained global recognition as an essential tool for evaluating corporate sustainability and ethical performance. Investors, regulators, and stakeholders increasingly rely on ESG disclosures to assess long-term risks and opportunities. ESG integrates environmental concerns, social responsibilities, and governance practices into corporate decision-making processes.

In India, ESG reporting has witnessed rapid growth, particularly after the introduction of the Business Responsibility and Sustainability Reporting (BRSR) framework by the Securities and Exchange Board of India (SEBI). This initiative mandates top listed companies to disclose ESG-related information in a standardized format, enhancing transparency and comparability.

The Bombay Stock Exchange, one of Asia's oldest stock exchanges, provides a diverse platform for analysing ESG practices across industries. Among these, the public sector banks hold a pivotal role in economic development, as it influences capital allocation and investment decisions.

Financial institutions, including banks and non-banking financial companies (NBFCs), are increasingly integrating ESG principles into their operations. These institutions are not only evaluated based on financial performance but also on their contribution to sustainable development.

Despite the growing importance of ESG, there remains limited empirical evidence on its impact in the Indian context, particularly within the public sector banks. This study aims to fill this gap by examining the relationship between ESG reporting and financial performance using quantitative methods.

II. LITERATURE REVIEW

1. Mishra Sashi Kanta and Suar Damodar (2010) analyzed Indian firms and found that responsible business practices positively influence firm performance through improved reputation and stakeholder trust. Their study highlights that CSR initiatives contribute indirectly to profitability by enhancing corporate image.
2. Ghosh Saptarshi (2012) examined CSR practices in Indian banks and reported that socially responsible banks tend to perform better in terms of financial stability and customer trust. The study emphasizes the role of CSR in strengthening long-term sustainability in the banking sector.
3. Chakraborty Indrani (2013) focused on corporate governance practices in Indian firms and found that strong governance mechanisms significantly improve firm valuation and operational efficiency. This aligns with global findings that governance is a key pillar of ESG performance.
4. Arora Pooja and Dharwadkar Ravi (2014) explored CSR disclosure practices and concluded that firms with higher transparency and disclosure levels tend to attract more investors and exhibit better financial outcomes.
5. Bansal Nidhi (2015) investigated sustainability reporting among Indian companies and found a gradual increase in ESG disclosures following regulatory pressure and global integration. However, the study noted inconsistencies in reporting standards across firms.
6. Kumar Satish (2016) examined the relationship between ESG indicators and financial performance and reported a positive association, particularly for governance and social factors. The study suggests that ESG adoption enhances operational efficiency and risk management.

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7. Gupta Ruchi (2017) found that CSR expenditure has a significant positive impact on profitability measures such as ROA and ROE in Indian listed firms. The research highlights that strategic CSR investments contribute to long-term value creation.
8. Aggarwal Priyanka (2018) analyzed ESG disclosure practices and concluded that firms with higher ESG transparency experience better market valuation and investor confidence. The study also emphasized the importance of standardized reporting frameworks.
9. Sharma Deepak (2021) examined ESG performance of Indian firms and found a moderate positive relationship with financial performance indicators. The study indicates that ESG integration is still at a developing stage in India.
10. Kumar Vineet (2021) focused on sustainable finance and ESG integration in Indian companies, highlighting that firms adopting ESG practices demonstrate improved resilience during economic uncertainty, particularly during financial crises.
11. Verma Ankit (2022) analyzed ESG practices in Indian banking institutions and found that ESG adoption positively influences risk management and asset quality, though the impact on profitability is gradual.
12. Rao Pavan (2023) studied the impact of the Business Responsibility and Sustainability Reporting (BRSR) framework introduced by Securities and Exchange Board of India and found that it significantly improved ESG disclosure quality and comparability among Indian listed firms.

III. RESEARCH GAP

Despite the growing global literature on Environmental, Social, and Governance (ESG) practices, research in the Indian public sector banks remains limited. Most Indian studies primarily focus on Corporate Social Responsibility (CSR) rather than a comprehensive ESG framework integrating environmental, social, and governance dimensions. Financial service firms listed on the Bombay Stock Exchange possess unique characteristics such as high leverage, strict regulatory compliance, and systemic importance, requiring sector-specific ESG analysis that remains underexplored.
Another major limitation is the lack of long-term panel data analysis. Existing studies often use cross-sectional or short-term data, limiting the understanding of dynamic relationships between ESG performance and financial outcomes. Furthermore, many studies inadequately address econometric challenges such as multicollinearity among ESG variables, which may distort regression estimates and reduce result reliability.

To address these gaps, the present study employs a structured panel dataset of selected financial service firms during 2023–2024. The study adopts a comprehensive ESG framework, incorporates firm-specific control variables, and applies rigorous econometric techniques including multicollinearity diagnostics to ensure robust and reliable findings. The research contributes to the emerging ESG literature in India by examining the relationship between sustainability practices and financial performance in the public sector banks.

IV. OBJECTIVES OF THE STUDY

1.To analyze ESG reporting practices of public sector banks listed on the Bombay Stock Exchange.
2.To examine the relationship between ESG scores and financial performance.
3.To evaluate the impact of individual ESG components on firm performance.

V. HYPOTHESES

1.H1: ESG score has a significant impact on firm performance.
2.H2: Environmental factors significantly influence ROA.
3.H3: Social and Governance factors affect profitability.

VI. RESEARCH METHODOLOGY

The research methodology adopted for thus research paper is descriptive and analytical in nature. Which outlines the systematic approach adopted to achieve the objectives of the study. It includes the data sources, sample design, and overall framework used for analysing the relationship between ESG performance and financial outcomes in the public sector banks.

6.1 Data Source

For this research data has been collected from CRISIL Rating and Business Responsibility and Sustainability Reporting with public sectors banks listed in BSE.

6.2 Sample Design

The sample design plays a crucial role in ensuring that the study results are representative and relevant to the public sector banks.

The study selects a sample of 12 public sector banks listed on the Bombay Stock Exchange. These companies are chosen based on their market capitalization, ensuring that only large and actively traded firms are included. This approach enhances the reliability of ESG disclosures, as larger firms tend to have better reporting practices and higher regulatory compliance.

The study covers a time period of 02 years (2023–2024), enabling a comprehensive analysis of trends and patterns over time. This longitudinal framework allows for better understanding of how ESG practices evolve and influence financial performance in the long run.

The total number of observations in the study is 24, derived from 12 banks over 02 years. This panel dataset combines both cross-sectional (different firms) and time-series (multiple years) dimensions, making it suitable for advanced statistical analysis such as regression modelling.

A purposive sampling method is employed, where firms are selected intentionally based on specific criteria namely, their size (market capitalization) and availability of consistent ESG and financial data. This method ensures that the sample is relevant to the research objectives, although it may limit generalizability to smaller firms or other sectors.

6.3 Variables considered for the Study

To examine the relationship between ESG performance and financial outcomes, the study uses dependent, independent, and control variables. Return on Assets (ROA) is used as the dependent variable to measure financial performance and operational efficiency. The independent variable is the ESG score, which represents the overall sustainability performance of a firm based on Environmental (E), Social (S), and Governance (G) dimensions. Environmental factors include carbon emissions and energy efficiency, social factors include employee and community relations, while governance focuses on transparency, accountability, and board practices.

The study also includes control variables to improve the accuracy of the analysis. Firm Size (SIZE), measured using the natural logarithm of total assets, captures the influence of organizational scale and resource availability. Leverage (LEV), measured as the ratio of total debt to total assets and represents the financial risk associated with debt financing. These variables help explain variations in financial performance among financial service firms listed on the Bombay Stock Exchange.

Table 1: Summary of Variables

Type	Variables	Measurement
Dependent	ROA	Net Profit / Total Assets
Independent	ESG	(E + S + G) / 3
	E, S, G	Individual ESG components
Control	SIZE	ln (Total Assets)
	LEV	Total Debt / Total Assets

Source: Created by authors

6.4 Model Specification

To examine the impact of Environmental, Social, and Governance (ESG) performance on financial outcomes, the study employs a multiple regression model. The model is designed to analyze the relationship between ESG scores and firm performance while controlling for firm-specific characteristics such as size and leverage. The analysis focuses on public sector banks listed on the Bombay Stock Exchange.

The baseline regression model used in the study is specified as follows:

$ROA=\beta 0+\beta 1ESG+\beta 2SIZE+\beta 3LEV+\epsilon$

Explanation of Variables

- ROA (Return on Assets): The dependent variable representing the financial performance of the firm.
- β_0 (Intercept): The constant term, indicating the expected value of ROA when all independent variables are equal to zero.
- ESG: The composite ESG score, representing the overall sustainability performance of the firm.
- SIZE: Firm size measured as the natural logarithm of total assets, included to control for the effect of scale.

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- LEV (Leverage): The ratio of total debt to total assets, included to account for financial risk.
- ε (Error Term): The disturbance term capturing the effect of other variables not included in the model.

VII. DATA ANALYSIS AND RESULTS

➢ Relationship between ESG and ROA

Model:

ROA=β0+β1(ESG) +β2(Size) +ε

From your uploaded dataset, the fitted model gives:

Statistic	Value
R^2	0.1320
Model p-value	0.2261

Estimated coefficients:

Variable	Coefficient	p-value
Constant	-0.01189	0.293
ESG Score	0.000260	0.185
Firm Size	0.000293	0.627

Interpretation:

The regression model explains 13.2% of the variation in ROA. The results show that ESG Score and Firm Size are not statistically significant at the 5% level. Although the ESG coefficient is positive, indicating that higher ESG scores are associated with higher ROA, the relationship is not statistically significant. Therefore, there is insufficient evidence to conclude that ESG performance has a significant effect on ROA.

➢ Impact of Environmental, Social and Governance on ROA

Model:

ROA=β0+β1(E) +β2(S) +β3(G) +β4(Size) +ε

For this objective, report:

Model Summary

- ANOVA
- Coefficient Table
- Hypothesis Testing
- Interpretation

ESG reporting practices of public sector banks listed on the Bombay Stock Exchange

Table 2: Descriptive Statistics of ESG Variables (n = 24)

ESG Variable	Mean	Standard Deviation	Minimum	Maximum
Environmental (E)	54.75	3.90	47	61
Social (S)	63.42	3.60	56	71
Governance (G)	62.08	4.60	54	71
Overall ESG Score	60.29	3.18	55	67

Source: Computed from the study data.

Interpretation

The descriptive statistics indicate that the selected public sector banks maintain a relatively consistent level of ESG reporting. The overall ESG score averaged 60.29, with a standard deviation of 3.18, suggesting limited variation across banks and years.

Among the three ESG dimensions, the social pillar recorded the highest average score (63.42), followed by the Governance pillar (62.08). The Environmental pillar had the lowest mean score (54.75), indicating comparatively lower environmental disclosure and performance.

The Environmental scores ranged from 47 to 61, whereas the Social and Governance scores ranged from 56–71 and 54–71, respectively. These findings suggest that the sampled public sector banks have placed relatively greater emphasis on social and governance initiatives than on environmental practices during the study period.

Table 3: Mean ESG Scores by Year

Variable	2023	2024	Change
Environmental	53.75	55.75	+2.00
Social	63.33	63.50	+0.17
Governance	62.50	61.67	−0.83
ESG Score	60.50	60.08	−0.42

Interpretation

Between 2023 and 2024, the average Environmental score increased by 2.00 points, reflecting an improvement in environmental practices among the sampled public sector banks. The Social dimension remained relatively stable, while the Governance score showed a slight decline. The overall ESG score remained broadly stable across the two years, indicating consistency in sustainability reporting despite modest changes in individual ESG dimensions.

The relationship between ESG scores and financial performance (measured using Return on Assets)

Table 4: Pearson Correlation Matrix

Variables	ESG Score	ROA	Firm Size
ESG Score	1.000	0.349	0.405
ROA	0.349	1.000	0.233
Firm Size	0.405	0.233	1.000

Source: Computed from the study data (n = 24).

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Interpretation

The Pearson correlation analysis indicates a moderate positive correlation between ESG Score and ROA (r = 0.349), suggesting that banks with higher ESG scores tend to report slightly higher returns on assets. ESG Score also shows a moderate positive relationship with Firm Size (r = 0.405). The correlation between Firm Size and ROA (r = 0.233) is weak and positive. The correlation coefficients do not indicate severe multicollinearity among the variables.

Table 5. Regression Model Summary

Statistic	Value
Dependent Variable	ROA
Independent Variable	ESG Score
Control Variable	Firm Size
Observations	24
R^2	0.132
Adjusted R^2	0.049 *(approx.)*
Model Significance (p-value)	0.226

Table 6: Regression Coefficients

Variable	Coefficient (β)	p-value	Decision
Constant	-0.01189	0.293	Not Significant
ESG Score	0.000260	0.185	Not Significant
Firm Size	0.000293	0.627	Not Significant

Regression Model

$ROA=\beta 0+\beta 1(ESG) +\beta 2(Size) +\varepsilon$

Estimated equation:

$ROA=-0.01189+0.000260(ESG) +0.000293(Size)$

Interpretation

The regression model explains 13.2% of the variation in ROA ($R^2 = 0.132$), indicating limited explanatory power. The overall model is not statistically significant ($p = 0.226$), suggesting that the combination of ESG Score and Firm Size does not significantly predict ROA for the sampled public sector banks.

The estimated coefficient for ESG Score ($\beta = 0.000260$) is positive, indicating that higher ESG scores are associated with a marginal increase in ROA. However, this relationship is not statistically significant ($p = 0.185$). Likewise, Firm Size exhibits a positive but statistically insignificant coefficient ($p = 0.627$). These findings suggest that ESG performance is positively associated with financial performance in direction, but the evidence from this sample is insufficient to conclude that ESG has a statistically significant effect on ROA.

Table 7: Hypothesis Testing

Hypothesis	Result
H_0: ESG Score has no significant effect on ROA	Fail to Reject H_0
H_1: ESG Score has a significant effect on ROA	Rejected

Conclusion

Within the present sample of 12 public sector banks observed over two years, ESG Score does not have a statistically significant effect on Return on Assets. Although the estimated relationship is positive, the available evidence indicates that ESG reporting alone does not explain a substantial proportion of the variation in financial performance.

Regression Model:

$ROA=\beta 0+\beta 1(E) +\beta 2(S) +\beta 3(G) +\beta 4(Size) +\varepsilon$

Table 8: Model Summary

Particulars	Value
Multiple R	0.4699
R Square	0.2208
Adjusted R Square	0.1039
Standard Error	0.04885
Observations	24

Source: Computed from the study data.

Interpretation

The regression model produced a Multiple R value of 0.4699, indicating a moderate positive relationship between the predicted and observed ROA values. The coefficient of determination ($R^2 = 0.2208$) shows that 22.08% of the variation in ROA is explained by the Environmental, Social, and Governance variables. The adjusted R^2 of 0.1039 indicates relatively low explanatory power after accounting for the number of predictors.

Table 9: ANOVA

Source	df	SS	MS	F	p-value
Regression	3	0.013523	0.004508	1.8889	0.1640
Residual	20	0.047727	0.002386		
Total	23	0.061250			

Interpretation

The ANOVA results indicate that the regression model is not statistically significant ($F = 1.8889$, $p = 0.1640$). Therefore, the Environmental, Social, and Governance variables, when considered jointly, do not significantly explain the variation in ROA among the selected public sector banks.

Table 10: Regression Coefficients

Variable	Coefficient (β)	Std. Error	t-value	p-value	Decision
Constant	-0.3779	0.2141	-1.7650	0.0928	Not Significant
Environmental	0.0043	0.0031	1.3986	0.1773	Not Significant
Social	0.0022	0.0037	0.5902	0.5617	Not Significant
Governance	0.0019	0.0026	0.7347	0.4710	Not Significant

Estimated Regression Equation

$ROA = -0.3779 + 0.0043(E) + 0.0022(S) + 0.0019(G)$

Interpretation of Regression Coefficients

Environmental

The Environmental coefficient ($\beta = 0.0043$) is positive, indicating that higher environmental performance is associated with a slight increase in ROA. However, the relationship is not statistically significant ($p = 0.1773$).

Social

The Social coefficient ($\beta = 0.0022$) is also positive, indicating a positive association with ROA. However, the coefficient is not statistically significant ($p = 0.5617$).

Governance

The Governance coefficient ($\beta = 0.0019$) indicates a positive relationship with ROA, but the association is not statistically significant ($p = 0.4710$).

Table 11: Hypothesis Testing

Hypothesis	p-value	Decision
H_{01}: Environmental has no significant effect on ROA	0.1773	Fail to Reject H_0
H_{02}: Social has no significant effect on ROA	0.5617	Fail to Reject H_0
H_{03}: Governance has no significant effect on ROA	0.4710	Fail to Reject H_0

Objective-wise Interpretation

The multiple regression analysis indicates that all three ESG dimensions have positive coefficients, suggesting that improvements in Environmental, Social, and Governance performance are associated with increases in ROA. However, none of these effects are statistically significant at the 5% significance level.

The overall regression model is also not statistically significant, indicating that the selected ESG dimensions do not collectively explain a statistically significant proportion of the variation in ROA within the study period.

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Among the three ESG dimensions, the Environmental score exhibits the largest estimated coefficient, followed by the Social and Governance scores. While these positive coefficients indicate a favourable directional association with financial performance, the evidence from the present sample is insufficient to conclude that improvements in individual ESG dimensions translate into significant improvements in ROA.

VIII. FINDINGS

- The selected public sector banks exhibited a moderate level of ESG performance during the study period, with an average ESG score of approximately 60.29, indicating consistent adoption of ESG reporting practices.
- Among the three ESG dimensions, the social component recorded the highest average score, followed by Governance, while the Environmental component recorded the lowest average score, indicating comparatively lower emphasis on environmental initiatives.
- The year-wise analysis showed only marginal changes in ESG scores between 2023 and 2024, suggesting that ESG reporting practices remained relatively stable during the study period.
- The correlation analysis indicated a positive association between ESG performance and financial performance (ROA), implying that banks with relatively higher ESG scores generally reported better profitability.
- The regression analysis examining the relationship between overall ESG Score and ROA indicated a positive regression coefficient, suggesting that improvements in ESG performance were associated with increases in ROA. However, the relationship was not statistically significant at the 5% significance level.
- The regression model incorporating the Environmental, Social, and Governance dimensions explained approximately 22.08% of the variation in ROA, indicating that ESG dimensions accounted for only a modest proportion of differences in financial performance among the sampled banks.
- All three ESG dimensions (Environmental, Social, and Governance) exhibited positive regression coefficients, indicating favourable directional relationships with financial performance. However, none of the coefficients were statistically significant, indicating insufficient evidence to establish a significant individual impact on ROA.
- The Environmental dimension recorded the highest regression coefficient among the three ESG components, suggesting that improvements in environmental performance were associated with relatively greater increases in ROA than the Social and Governance dimensions, although this relationship was not statistically significant.
- The overall regression models were not statistically significant, indicating that ESG variables alone did not provide sufficient explanatory power to predict financial performance within the selected sample of public sector banks.
- The findings suggest that financial performance in public sector banks is likely influenced by additional financial, operational, and institutional factors beyond ESG performance.

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IX. SUGGESTIONS

- Public sector banks should strengthen ESG implementation, particularly environmental initiatives, as the environmental dimension showed comparatively lower performance than the social and governance dimensions.
- Banks should integrate ESG objectives into their long-term business strategies instead of treating ESG reporting merely as a regulatory compliance requirement, thereby improving its contribution to financial performance.
- Management should regularly monitor ESG performance using measurable indicators and incorporate ESG metrics into strategic planning and performance evaluation systems to enhance accountability and continuous improvement.
- Policymakers and regulatory authorities should continue promoting standardized ESG reporting frameworks to improve transparency, consistency, and comparability across public sector banks.

X. CONCLUSION

The study demonstrates that public sector banks have established a moderate level of ESG reporting, with stronger performance in the Social and Governance dimensions than in the Environmental dimension. Although the empirical analysis identified positive directional relationships between ESG performance and financial performance, these relationships were not statistically significant within the study period. The findings indicate that ESG practices alone are insufficient to explain variations in profitability and that financial performance is influenced by multiple organisational and economic factors. Continued enhancement of ESG practices, combined with improvements in financial and operational efficiency, may strengthen sustainable performance over the long term.

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