NEXUS BETWEEN ESG REPORTING AND FINANCIAL PERFORMANCE IN THE BANKING SECTOR

Pranesh Debnath [*], Anil Kumar Bhuyan [**], Sukriti Das [***],
Bhaskar Saikia [****], Animesh Saha [*], Ekta Chakravarty [*****],
Hiranmayee Debi [*], Rishav Kanoo [******]

[*] Assam University, Silchar, India
[**] Birla Global University, Bhubaneswar, India
[***] Maniram Dewan School of Management, Krishna Kanta Handiqui State Open University, Guwahati, India
[****] Dibrugarh University, Dibrugarh, India
[*****] Department of Management, BMBB Commerce College, Guwahati, India
[******] *Corresponding author,* Department of Commerce, Assam University, Silchar, India
Contact details: Department of Commerce, Assam University, Silchar 788011, Assam, India

Abstract

The study evaluates the environmental, social, and governance (ESG) reporting performance of public sector banks (PSBs) and private sector banks (PvtBs) in India. Additionally, it seeks to investigate the impact of ESG performance on the financial performance (FP) of 32 companies during the 2022 financial year. Data on ESG performance were gathered from CRISIL (formerly Credit Rating Information Services of India Limited) reports, while FP data were obtained from the companies' annual reports. The assessment of FP utilized accounting and market-based measures, and empirical exploration was conducted using ordinary least square (OLS) regression. The Mann-Whitney U test and box plot were employed to evaluate significant variations in ESG performance between PSBs and PvtBs. The findings suggest that Indian banking companies prioritize governance and social aspects over environmental concerns (Kumar & Prakash, 2019) and highlight unequal ESG performance between PSBs and PvtBs. Furthermore, the study indicates that ESG performance significantly and positively impacts FP across accounting and market measures (Ersoy et al., 2022). The implications of these findings are pertinent to regulators and policymakers, emphasizing the importance of transparent and comprehensive ESG disclosure for informed decision-making and the fulfilment of societal responsibilities. The present study examining the nexus between ESG performance and FP is confined to selected banks for a single financial year due to limited access to reliable data.

Keywords: ESG Performance, Banking Sector, Financial Performance, Emerging Economy, CRISIL

Authors' individual contribution: Conceptualization — P.D., A.K.B., and R.K.; Methodology — P.D., S.D., A.S., H.D., and R.K.; Software — P.D., B.S., and R.K.; Formal Analysis — P.D., S.D., E.C., and R.K.; Writing — Original Draft — P.D., A.K.B., A.S., and H.D.; Writing — Review & Editing — P.D., B.S., H.D., and R.K.; Visualization — P.D., A.S., H.D., and R.K.; Supervision — P.D., E.C., H.D., and R.K.

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1. INTRODUCTION

The presence of a healthy society, a healthy environment and healthy governance is of utmost importance for the smooth functioning of every business because, without the presence of these elements, business would cease to exist. The present era has been witnessing severe environmental and social challenges across the world, thereby creating a sense of trepidation among the people of the society (Gupta et al., 2022; Rakshit & Paul, 2022). Considering the prevalence of environmental and social issues, investors and other stakeholders have also become more socially conscious and prefer to invest in the companies or to be associated with those companies that not only generate huge profits but also deliberate for the well-being of the society and the environment (Rakshit & Paul, 2022). So, apart from financial reports like profit and loss statements and balance sheets, investors and stakeholders are keenly interested in non-financial reporting (Adhikari & Ghosh, 2022). Moreover, environmental, social, and governance (ESG) performance is a clear indication of a company's commitment to long-term sustainable goals and business strategies (Grove et al., 2022; Tran & Nguyen, 2023; Kostyuk et al., 2016). Considering all these issues, the significance of ESG reporting, i.e., proper disclosure of ESG parameters as non-financial reporting, has been gaining momentum in the corporate landscape. ESG serves as a set of criteria for a company's conduct, and socially conscious investors rely on it to evaluate potential investments (Shekhawat, 2023). In terms of promoting sustainability, the Indian corporate landscape has experienced two significant turning points. The first came as a circular issued by the Ministry of Corporate Affairs (MCA), which made corporate social responsibility (CSR) reporting and spending mandatory under the Companies Act, 2013. The second milestone was set by the Securities and Exchange Board of India (SEBI), which has set guidelines aligned with the National Guidelines for Responsible Business Conduct (MCA, 2019) for disclosing the ESG performances in Business Responsibility and Sustainability Reporting (BRSR) to be followed by the top 1000 listed companies as indicated by the market capitalization (Debnath & Kanoo, 2022). However, for the unlisted companies, a lite version of BRSR has been released where they can disclose their ESG reporting (CRISIL, 2022). By mandating ESG reporting by Indian corporations, SEBI is making efforts to support the fulfilment of the Paris Climate Change Convention and the Sustainable Development Goals (SDGs) of the United Nations (UN) (Verma, 2022). Though CSR and ESG have been used interchangeably, specific differences exist, as ESG is viewed as having its roots in CSR. ESG would only exist with CSR because CSR strives to hold companies accountable, but ESG criteria make such efforts quantifiable (Shekhawat, 2023).

The integration of ESG considerations into business strategies has become increasingly important for financial institutions, particularly in emerging markets where sustainability challenges are more pronounced. As stakeholders' expectations shift towards responsible and sustainable banking practices, the relationship between ESG performance and financial performance (FP) has garnered significant attention. This study investigates the nexus between ESG performance and FP in the banking sector of emerging markets, seeking to provide empirical evidence on whether adopting ESG best practices contributes to improved financial outcomes. By analyzing a dataset of 33 private sector (PvtBs) and public sector (PSBs) banks, this research aims to contribute to the ongoing debate on the financial implications of ESG performance, inform strategic decision-making, and enhance our understanding of the role of sustainable banking in promoting long-term financial stability and resilience.

In the current business world, sustainability has become a vital aspect for all sectors. However, banks can acquire a competitive advantage by prioritizing their ESG performance. By aligning their financing streams with ESG principles, banks can expedite and promote sustainable business practices, thereby setting themselves apart from their competitors. Moreover, ESG performance is a clear indication of a company's commitment to long-term sustainable goals and business strategies. Therefore, banks that prioritize ESG performance will not only achieve a unique selling proposition but also contribute positively to the sustainable economy, making them a sustainable and responsible business partner. As a result, banks are increasingly integrating ESG factors into their core operations because FP is directly impacted by sustainability performance, and hence, ESG is no longer only an ethical issue but has also become an economic concern (Menicucci & Paolucci, 2022). It is widely accepted that financial institutions ought to be perceived as agents of sustainable development as well as creators of financial values (Menicucci & Paolucci, 2022). Every bank is accountable for maintaining robust governance, fostering a diverse society, and conserving the environment. Banks must prioritize investing in their infrastructure and processes to comply with ESG regulations, as ESG ratings are now used as a benchmark. By doing this, banks win over potential customers' trust and confidence by showcasing their dedication to upholding industry standards. For investors looking for alternatives that are sustainable and socially conscious, banks that exhibit a strong commitment to ESG principles stand out as viable investment options.

This investigation has the potential to enhance the existing literature in multiple aspects. Firstly, to the best of contemporary literature surveys from emerging economies it is the first study to assess the status and inequalities of ESG performance between PSBs and PvtBs operating in the emerging Indian economy. Secondly, this is the first investigation exclusively concentrating on the Indian banking industry. Thirdly, this study provides more robust and comprehensive results as it considers the impact of overall ESG practice and individual ESG aspects on FP. Fourthly, deviating from the prior literature which has mostly relied on the Bloomberg database for ESG score, the present study has taken into consideration the ESG score computed by an indigenously devised rating agency, i.e., CRISIL (formerly Credit Rating Information Services of India Limited). Finally, this study holds practical significance for investors, customers, researchers, policymakers, and regulators, aiding them in making informed decisions regarding the significant impact of ESG performance on FP.

The present paper is structured as follows. Section 2 contains a review of the relevant literature on ESG performance and FP, the formulation of hypotheses, and a summary of the objectives. Section 3 discusses data sources and research methods. Section 4 goes into the analysis and discussion of the results. Finally, Section 5 presents the conclusion, future implications, and limitations of the study.

2. LITERATURE REVIEW AND HYPOTHESES DEVELOPMENT

2.1. Overview

ESG reporting is a crucial aspect of evaluating a company's long-term sustainability and resilience. The three key focus areas are environmental impact, social responsibility, and corporate governance practices. Over the past couple of years, India has made significant progress in achieving its SDGs. According to the UN Sustainable Development Report[1], India ranks 121 out of 193 member countries. The Indian banking sector, which plays a critical role in the country's economic landscape, has yet to make significant progress in implementing ESG policies. It is imperative to explore the effect of ESG reporting on the FP of banking sector companies in India, given their significant influence on various stakeholders and the environment. There are numerous studies undertaken to study the relationship between sustainability practices and their influence on FP across the world, though only a very few literature entirely focused on the banking sector. Literature showed a mixed relationship between ESG performance and FP. There are various studies support that there is a positive association between ESG reporting and the FP of the banking industry (Ersoy et al., 2022; Rahi et al., 2022; Menicucci & Paolucci, 2023). Indicators of environmental consideration are mainly overlooked by the majority of Indian banks, according to research conducted by Kumar and Prakash (2019) on sustainability reporting in the Indian banking sector during the fiscal years 2015–2016 and 2016–2017. The study also found a sizable discrepancy between Indian PSBs and PvtBs in disclosing internal socio-environmental variables and environmental indicators. Likewise, Chelawat and Trivedi (2016) conducted a study to examine the effect of ESG performance on their FP using a panel regression model and they took both the measures, i.e., accounting-based measures — return on capital employed (ROCE), and market capitalization measures — Tobin's Q as FP indicators and found that good corporate ESG performance enhances the financial measures. Ersoy et al. (2022) employed both linear and non-linear panel regression models to examine the effects of ESG and ESG pillar scores on the market value of the United States (US) commercial banks between 2016 and 2020. The results showed that there was a U-shaped relationship between market value and environmental score (EPS) and an inverted U-shaped relationship between market value and ESG and social score (SPS). Laskar and Maji (2016), Laskar et al. (2017), and Laskar (2018) revealed that in the contexts of South Korea, Japan, and India,

corporate disclosure performance positively affects FP. Menicucci and Paolucci (2022) utilized panel data regression analysis to look at the relationship between the diversity of the board of directors and the ESG performance of 105 Italian banks from 2017 to 2021. The characteristics of the board included size, age, gender diversity, independence, and the presence of a CSR committee. They discovered no significant correlation between average board age and ESG performance, although board independence, size, and the existence of a CSR/sustainability committee all positively impact a bank's ESG performance. Feng and Wu (2023) analyzed how ESG disclosure is related to Real Estate Investment Trust (REIT) debt financing and firm value and it is evident from their study that REITs with greater ESG levels also had cheaper borrowing costs, better credit ratings, and a larger percentage of unsecured debt relative to overall debt. On the other hand, Abdi et al. (2022) made an attempt to examine the impact of ESG score on the value and FP of the airline industry and it is crystal clear from their study that the increased degree of financial efficiency greatly and favourably rewards businesses for their involvement in social and environmental initiatives.

In contrast, some other studies exhibit a negative relationship between ESG practices adopted by the bank and their impact on FP (Peng & Yang, 2014). Rahi et al. (2022) conducted a study on the financial industry of the Nordic region comprising countries like Sweden, Denmark, Finland, and Norway to understand whether sustainability practices influence FP using static and dynamic estimators. They have taken return on capital (ROC), return on equity (ROE), and EPS as the indicators of FP and found a negative relationship between ESG practices and FP. Ameer and Othman (2012) and López et al. (2007) found that Sustainability practices require a long-term investment that inversely affects FP. Menicucci and Paolucci (2022) investigated the impact of ESG on bank performance in the Italian banking sector by taking ROE, return on assets (ROA), Tobin's Q and stock market return as indicators of bank performance and their findings showed that ESG policies negatively affect the operational and marketing performance. Likewise, Buallay (2019) attempted to investigate the effect of ESG scores on bank performance by using ROA, ROE, and Tobin's Q as the indicators of bank performance. Their study exhibits a negative relationship between ESG and operational performance (ROA), FP (ROE), and market performance (Tobin's Q). Wahyuningtyas et al. (2022) noted the insignificant relationship between sustainable reporting and FP in the Indonesian context. La Torre et al. (2021) analyzed the link between ESG factors and financial benchmarks by considering different dimensions of FP, i.e., accounting measures (ROA and ROE) and market-based measures (capitalization to book value, Tobin's Q) and value-based metrics (economic value added [EVA] spread) was also explored in their study.

Though several studies have been undertaken worldwide in the banking sector to explore the relationship between ESG practices adopted by the financial institution and their impact on profitability, there is a dearth of studies in the Indian context. Ersoy et al. (2022) have conducted a study on the impact of ESG score on bank market value in the US banking Industry; Rahi

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[1] https://dashboards.sdgindex.org/rankings

et al. (2022) have conducted a study on the Nordic region (Sweden, Denmark, Finland, and Norway) to examine whether sustainability reporting is associated with performance; Birindelli et al. (2018) have examined the impact of ESG performance in the banking system and has taken a sample of 108 listed banks from Europe. Moreover, unlike the other studies which have obtained ESG score data from the Thompson Reuters Eikon or Refinitiv databases (Abdi et al., 2022; Ersoy et al., 2022; Menicucci & Paolucci, 2022; Rahi et al., 2022; Birindelli et al., 2018) and Bloomberg and ACE Analyzer database (Ray & Goel, 2023), MSCI ESG Stats Dataset (Kim & Li, 2021), S&P Global Market Intelligence database provided by Global Real Estate Sustainability Benchmark (GRESB) (Feng & Wu, 2023), Fortune 500 rankings, content analysis of CSR report (Chelawat & Trivedi, 2016), this is the only study to be conducted which have gathered ESG score data from CRISIL Rating Agency.

This paper has a significant contribution to the banking sector. Because existing literature mainly studied the relationship between ESG and FP in non-financial firms, citing a few of them, Abdi et al. (2022) studied the impact of ESG disclosure on FP in the airline industry. Furthermore, Agarwal et al. (2023) analyzed the impact of ESG activities on the FP of Indian health sector firms; Kumar et al. (2021) conducted a study on energy and mining companies in India. Debnath, Das, Bhuyan, et al. (2024) navigated the difference in sustainable reporting between public and private sector banks in India. Likewise, Sana and Basak (2022) made an effort to highlight the sustainability reporting practices of oil and gas companies operating in India. While this study exclusively focuses on the banking sector. So far, the literature reviews are concerned, the majority of researchers have found a positive association between ESG performance and FP both in the developed and emerging economies, though the results are inconclusive and very few researches have been conducted in the Indian banking sector. As such, taking into account the importance of ESG performance in the present era, we formulate the following research hypotheses for empirical testing in the context of the Indian banking sector:

H1: Return on asset is the same between public and private sector banks in India.

H2: Return on net worth (RONW) is the same between public and private sector banks in India.

H3: Tobin's Q performance is the same between public and private sector banks in India.

H4: Market capitalization is the same between public and private sector banks in India.

H5: Environmental performance is the same between public and private sector banks in India.

H6: Social performance is the same between public and private sector banks in India.

H7: Governance performance is the same between public and private sector banks in India.

H8: Overall ESG performance is the same between public and private sector banks in India.

2.2. Importance of ESG reporting in the Indian banking sector

ESG reporting is crucial in the Indian banking sector for various reasons. It involves disclosing a company's performance and practices related to environmental Sustainability, social responsibility, and corporate governance. Regulatory bodies, such as the SEBI and the Reserve Bank of India (RBI), increasingly emphasize the integration of ESG factors into business operations. They may mandate or encourage banks to report on their ESG practices and performance as part of their reporting requirements. ESG factors can significantly impact a bank's risk profile. Environmental risks, such as climate change and natural disasters, social risks, such as labour practices and community relations, and governance risks, such as board diversity and transparency, can influence a bank's financial stability and reputation. ESG reporting helps banks identify and manage these risks effectively. Presently, investors are increasingly considering ESG factors when making investment decisions. ESG reporting provides investors with insight into a bank's sustainability practices, ethical behaviour, and long-term viability. Banks that demonstrate strong ESG performance may attract a broader pool of socially responsible investors. Therefore, ESG reporting contributes to a bank's reputation and branding. Banks that demonstrate a commitment to environmental protection, social well-being, and ethical governance are more likely to build trust with customers, employees, and other stakeholders. Adopting strong ESG practices can provide a competitive advantage for banks. Consumers are becoming more conscious of the impact their choices have on the world, and they may prefer to do business with banks that align with their values. The banking sector's operations can influence society and the environment. By focusing on ESG practices, banks can contribute to the long-term Sustainability and well-being of the communities they serve. Moreover, banking institutions that perform well on ESG metrics may find it easier to access capital from investors and lenders who prioritize Sustainability and responsible business practices. In a nutshell, ESG reporting in the Indian banking sector is crucial for managing risks, meeting regulatory expectations, attracting investments, enhancing reputation, and contributing to a sustainable and responsible banking ecosystem.

3. DATA AND METHODOLOGY

3.1. Sample firms and data sources

As per the objective of our study, we have used secondary data to evaluate the inequalities between PSBs and PvtBs in terms of ESG and their sub-dimensional performance and also to assess the impact of ESG on the FP of these banks operating in India. So far as the data source is concerned, we have collected the ESG score data from ESG Compendium, published by CRISIL (2021), encompassing 997 companies operating in India, spreading over 63 sectors for 2022. CRISIL has computed these ESG and its dimensional score by considering the average ESG performance of the last four financial years from 2017–2018 to 2020–2021. To realize the objectives of our study, we have taken into consideration only 32 banking companies for which CRISIL has released ESG score data. Whereas, FP data was gathered from the National Stock Exchange of India (NSE) website and the annual reports of the concerned companies. To ensure comparability with the ESG score computed by CRISIL for 2022, we have compiled FP data from

the last four consecutive years, i.e., from 2017–2018 to 2020–2021, and calculated the average performance over this timeframe.

3.2. Measurement of variables

3.2.1. Financial performance (Dependent variable)

For robust measurement of *FP*, following the current literature (Maji & Lohia, 2023; Habib & Mourad, 2024), we determined *FP* in this study using both accounting and market-based measures. We considered *ROA* for accounting-based performance and *Tobin's Q* for market-based performance. While accounting-based performance reflects past performance (Chelawat & Trivedi, 2016), *Tobin's Q* is believed to be appropriate for market-based performance since it indicates an investor-to-business comprehensive evaluation of its potential for growth in the future (Chelawat & Trivedi, 2016; Gao et al., 2023). *Tobin's Q* index, based on market projections, is vital in measuring corporate financial performance since stock market value fluctuations are forward-looking and generally difficult to manipulate by management (Gao et al., 2023) and it is considered better than accounting-based performance (Ullmann, 1985).

Table 1. Operation definition of variables

Variables	Description of variables	Source	Supporting literature
ROA	(Net income / Total assets) * 100	Annual report	Farooq et al. (2022), Rahi et al. (2022), Kim and Li (2021)
RONW	(Net profit / Shareholders equity) * 100	Annual report	Rahi et al. (2022)
Tobin's Q	Market capitalization / Total assets at book value	Annual report	Farooq et al. (2022), Rahi et al. (2022)
MC	Current market price per share * Total no. of outstanding share	Annual report	Farooq et al. (2022), Rahi et al. (2022)
LnAge	Number of years from its establishment	Annual report	Maji and Lohia (2023), Habib and Mourad (2024)
LnTA	Natural log value of total asset	Annual report	Maji and Lohia (2023), Habib and Mourad (2024)
ESG	Overall ESG score computed by CRISIL	CRISIL	Maji and Lohia (2023), Jha and Rangarajan (2020)
ENV	Environmental score computed by CRISIL	CRISIL	Maji and Lohia (2023), Jha and Rangarajan (2020)
SOC	Social score computed by CRISIL	CRISIL	Maji and Lohia (2023), Jha and Rangarajan (2020)
GOV	Governance score computed by CRISIL	CRISIL	Maji and Lohia (2023), Jha and Rangarajan (2020)

Source: Authors' elaboration.

3.2.2. ESG scoring methodology adopted by CRISIL

The environmental component assesses an organization's environmental dedication and care, as well as its energy consumption, recycling methods, pollution control, and conservation of resources. The social aspect investigates how a company connects with its stakeholders, consumers, workers, and suppliers. The governance parameter considers the organization's management structure, executive compensation, control mechanisms, and investor rights. The CRISIL has calculated the *ESG* score based on three dimensions, assigning 35% weightage to the environment, 25% to the social dimension, and 40% to the governance dimension to reflect the relative importance of the dimension.

Figure 1. ESG assessment framework of CRISIL

Source: CRISIL (2021).

The highest weightage was given to the governance factor because it is believed that governance is what directs the company towards its goals while satisfying the interests of all stakeholders, including environmental and social dimensions. The final *ESG* score is calculated on a scale of 1–100, with 100 denoting best-in-class *ESG* performance. The businesses are categorized into several groups based on the determined total *ESG* score. Companies are categorized as "leadership" when their *ESG* score is 71 to 100. "Strong" signifies when the *ESG* score falls between 61 and 70, while "adequate" is considered when the overall score lies between 46 and 60. A firm is classed as "below average" if its score is between 31 to 45. While anything less than 31 is labelled as "weak".

Model 1: ESG and FP

$$ROA_i = \alpha + \beta_1 ESG_i + \beta_2 LnAge_i + \beta_3 LnTA_i + \mu_i \tag{1}$$

$$RONW_i = \alpha + \beta_1 ESG_i + \beta_2 LnAge_i + \beta_3 LnTA_i + \mu_i \tag{2}$$

$$LogTobin's\ Q_i = \alpha + \beta_1 ESG_i + \beta_2 LnAge_i + \beta_3 LnTA_i + \mu_i \tag{3}$$

$$LogMC_i = \alpha + \beta_1 ESG_i + \beta_2 LnAge_i + \beta_3 LnTA_i + \mu_i \tag{4}$$

Model 2: ESG components and FP

$$ROA_i = \alpha + \beta_1 ENV_i + \beta_2 SOC_i + \beta_3 GOV_i + \beta_4 LnAge_i + \beta_5 LnTA_i + \mu_i \tag{5}$$

$$RONW_i = \alpha + \beta_1 ENV_i + \beta_2 SOC_i + \beta_3 GOV_i + \beta_4 LnAge_i + \beta_5 LnTA_i + \mu_i \tag{6}$$

$$LogTobin's\ Q_i = \alpha + \beta_1 ENV_i + \beta_2 SOC_i + \beta_3 GOV_i + \beta_4 LnAge_i + \beta_5 LnTA_i + \mu_i \tag{7}$$

$$LogMC_i = \alpha + \beta_1 ENV_i + \beta_2 SOC_i + \beta_3 GOV_i + \beta_4 LnAge_i + \beta_5 LnTA_i + \mu_i \tag{8}$$

To use OLS regression, certain prerequisites must be met, including normality, constant variance, and the absence of multicollinearity. Failure to meet these assumptions can result in biased and inefficient estimates. To ensure these assumptions are met, we conducted a few diagnostic tests. We used skewness/kurtosis tests (SK test) to verify the normality of residuals. Additionally, we relied on the Cook-Weisberg test (Hettest) to ensure constant variance (White, 1980). Furthermore, we employed multiple correlations among predictor variables and the variance inflation factor (VIF) to check the degree of multicollinearity.

4. RESEARCH RESULTS AND DISCUSSION

4.1. Summary statistics

Table 2 demonstrates the averages of the *ESG* variable and its subcomponents are approximately 63, 60, 61, and 67, respectively. This shows that the *ESG* of the Indian banking sector is better than that of the US-based banking sector, as revealed by Ersoy et al. (2022). The mean value of the *ESG* score is found to be approximately 63 which exceeds the average *ESG* information required by CRISIL

3.2.3. Empirical models

Studies have shown that there is a strong link between ESG performance (*ESG*) and *FP*. However, when we conducted the Hausman specification test on our dataset, we found no such connection (Velte, 2017). As a result, we treated *FP* as the dependent variable and *ESG* as exploratory variables, similar to previous research. To examine the impact of *ESG* and its components on *FP* while controlling for firm size (measured by the logarithm of total assets — *LnTA*) and age (measured by the logarithm of the age of total market capitalization — *LnAge*), we used the ordinary least square (OLS) method.

To investigate the impact of *ESG* on *FP* we have formulated the following econometric models:

(Maji & Lohia, 2023). It is crystal clear from the table that the mean value of the governance parameter is highest, followed by social and environmental parameters, which reveal that selected banking companies are adhering to the governance issues; however, considerably less emphasis is given to environmental parameters. The range of all three dimensions of *ESG* lies between 81 to 60, which reveals that the majority of the banking companies are disclosing *ESG* information; however, the range *ROA* is very high, ranging from around 611 to 102, indicating that some banking companies are enjoying a very high return on their asset due to the compliance of the *ESG* disclosure and *vice versa*. Table 3 shows that the overall *ESG* score of PvtBs is higher than that of PSBs, indicating that PvtBs place much more emphasis on the compliance of *ESG* parameters than the PSBs. The *SOC* score of PSBs is higher than the PvtBs, indicating that PSBs emphasize maintaining a healthy society. In contrast, the *ENV* and *GOV* scores of PvtBs are higher than PSBs, indicating that PvtBs placed much emphasis on maintaining healthy governance, transparency, and accountability in the banks and also giving due emphasis on mitigating the environmental challenges.

Table 2. Summary statistics

| Variables	Mean	Median	Maximum	Minimum	Std. dev.	CV
Independent variables						
ENV	60	60	75	48	6.03	0.10
SOC	61	63	68	46	6.32	0.10
GOV	67	66.5	81	51	9.01	0.13
ESG	63	63	73	52	5.06	0.08
Dependent variables						
ROA	159.79	102.11	611.54	12.17	150.62	0.94
RONW	7.965	7.8	18.35	-0.59	4.4784	0.5623
Tobin's Q	12.28	5.26	81.04	1.57	16.18	1.32
MC [Cr($)]	9085348.946	1982769.9	81525796.21	31373	18399534	2.02

Note: CV — coefficient of variance.
Source: Authors' elaboration.

Table 3. Average *ESG* performance of private sector and public sector banks

Variables	PSBs	PvtBs
ENV	55	62
SOC	64	59
GOV	60	71
ESG	59	65
ROA	119	184
RONW	7.46	8.26
Tobin's Q	4.87	16.73
MC [Cr($)]	6036968.384	10914377.28

Source: Authors' elaboration.

Figure 2. Box plot of *ESG* performance for complete sample firms together
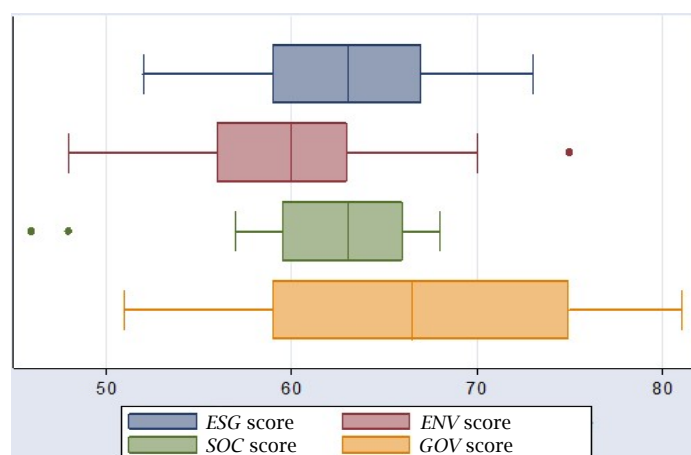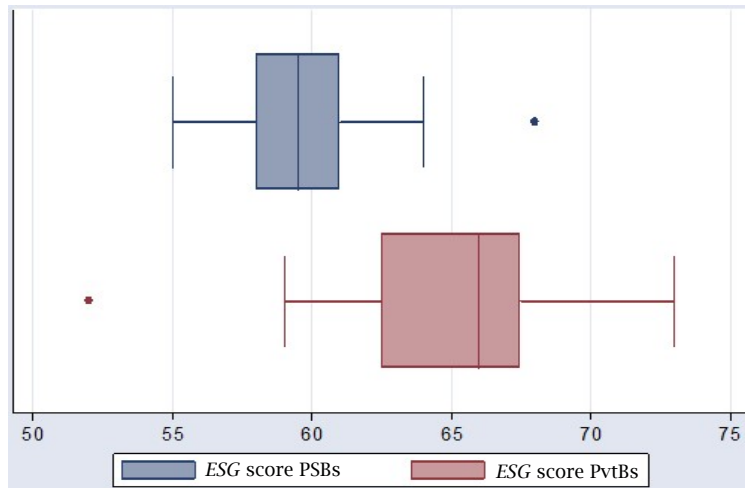

Source: Authors' output using Stata/MP 13.0.

To demonstrate the spread and pattern of the distribution of *ESG* performance and its sub-dimensions across banking sectors, we have presented it through boxplots. Figure 2 provides valuable insights into the distribution of *ESG* and its components for all firms under consideration. From the figure, we observe that the overall *ESG* performance and its sub-dimensions performance are symmetrically distributed, as evidenced by the median point. Likewise, the *ESG* performance also reflected symmetrical distribution with few outliers in the case of environmental and social parameters. It is worth noting that *GOV* scores are the highest among the sub-dimensions with the highest spread of values.

To provide a comprehensive overview of the *ESG* of PSBs and PvtBs, we have divided the data into two groups. Figure 3 displays the overall *ESG* of the two groups, and it shows that the spread of *ESG* is inconsistent, with certain outliers existing for PvtBs. The *ESG* varies significantly between PvtBs and PSBs. PvtBs have a higher *ESG* score than PSBs, as the lower quartile of *ESG* score for PvtBs is much higher than the upper quartile of PSBs. However, the distribution is symmetric for PSBs, whereas it is asymmetric for PvtBs, as shown by the median position within the box. In terms of *ENV* score, Figure 4 indicates that both PSBs and PvtBs have a consistent spread of *ENV* scores, with certain outliers existing for PvtBs. However, PvtBs have a higher *ENV* score than PSBs, as the lower quartile of environmental scores for PvtBs corresponds to the upper quartile of PSBs. The median position within the box shows that the distribution is symmetric for both PSBs and PvtBs. Overall, the boxplots reveal that PvtBs disclose more information on *ESG* than PSBs.

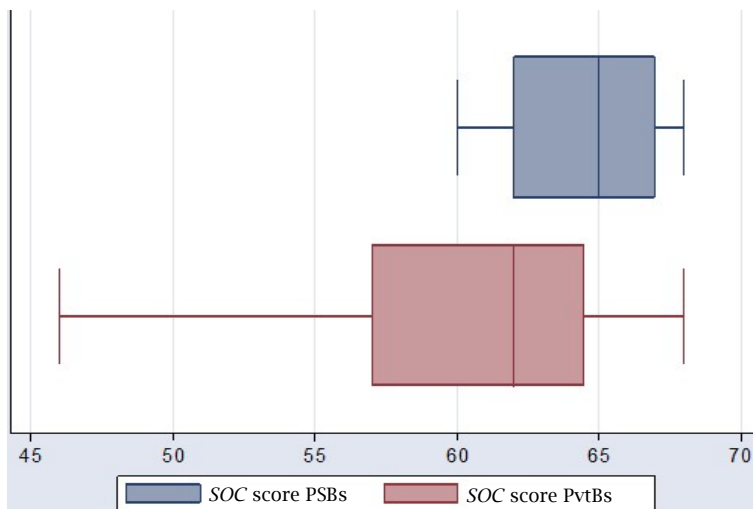**Figure 3.** Boxplot for *ESG* score between public and private sector banks

Figure 4. Boxplot for *ENV* score between public and private sector banks
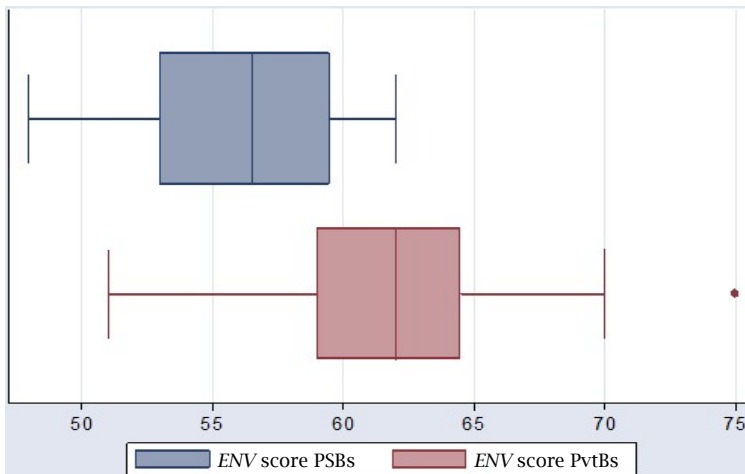
Figure 5. Boxplot for *SOC* score between public and private sector banks

The analysis of social performance (*SOC*) (as depicted in Figure 5) reveals that PSBs have a higher score than PvtBs. As for the *GOV* score (see Figure 6), the spread of scores is consistent for both PSBs and PvtBs, with no outliers in either sector. However, there is a difference in *GOV* scores between

the two groups, with the lower quartile of *ESG* score for PvtBs corresponding to the upper quartile of PSBs. This suggests that PvtBs have a higher governance score than PSBs. The median position within the box shows that the distribution is asymmetric for both PvtBs and PSBs.

Figure 6. Boxplot for *GOV* score between public and private sector banks
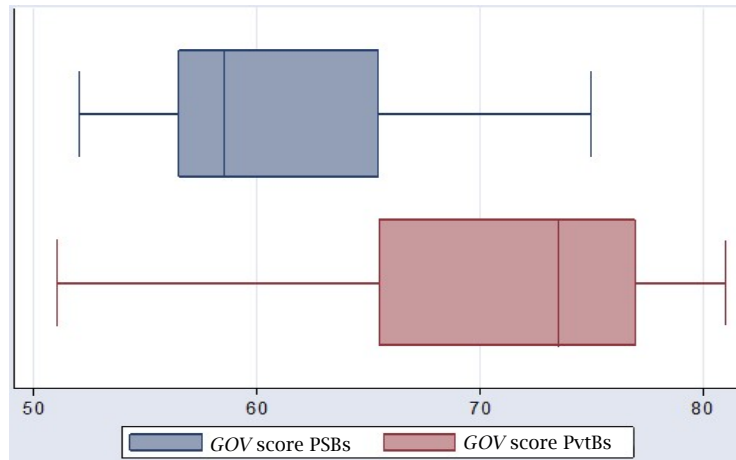
Source: Authors' output using Stata/MP 13.0.

Table 4 displays the results of the Mann-Whitney test, which was used to assess the proposed hypothesis that there are significant differences in *FP* and *ESG* between PSBs and PvtBs. However, Debnath, Das, Goel, et al. (2024) reported no difference in CSR disclosure between PvtBs and PSBs in India. The test results showed that there were no significant differences in *ESG* and its sub-dimensions between the two types of banks at a 0.01 and 0.05 significance level. Therefore, the hypotheses *H5, H6, H7*, and *H8* were not supported. However, for *FP* measures, accounting-based measures, and market-based measures, excluding *Tobin's Q*, the hypotheses were supported at a 0.10 significance level, indicating that the *FP* of both PSBs and PvtBs is the same. The test results for *Tobin's Q* showed that the hypotheses were not supported at a 0.10 significance level, indicating that *Tobin's Q* is significantly different between PSBs and PvtBs. As a result, hypotheses *H1*, *H2*, and *H4* were supported, but *H3* was not supported at a 0.10 significance level.

Table 4. Difference analysis using the Mann-Whitney U test

Response variables	Sector	Obs.	Rank sum	Z	Prob.	Hypothesis	Decision
ROA	Private	20	364	1.323	0.1857	H1	Accepted
	Public	12	164				
RONW	Private	20	346.5	0.642	0.5207	H2	Accepted
	Public	12	181.5				
Tobin's Q	Private	20	378	1.868	0.0617***	H3	Rejected
	Public	12	150				
LnMC	Private	20	308	-0.856	0.3918	H4	Accepted
	Public	12	220				
ENV	Private	20	407.5	3.023	0.0025*	H5	Rejected
	Public	12	120.5				
SOC	Private	20	277.5	-2.051	0.0402**	H6	Rejected
	Public	12	250.5				
GOV	Private	20	412.5	3.218	0.0013*	H7	Rejected
	Public	12	115.5				
ESG	Private	20	405.5	2.950	0.0032*	H8	Rejected
	Public	12	122.5				

*Note: * p < 0.01, ** p < 0.05, and *** p < 0.1 by two-tailed test.*
Source: Authors' elaboration.

Table 5. Correlation matrix, variance inflation factors, and tolerance values

Variables	ENV	SOC	GOV	ESG	LnAge	LnTA
ENV	1.0000					
SOC	-0.0766	1.0000				
GOV	0.4221*	0.0395	1.0000			
ESG	0.6746*	0.2849	0.8991*	1.0000		
LnAge	-0.4298*	-0.0149*	-0.3600*	-0.4264*	1.0000	
LnTA	-0.1488	0.6713*	-0.0432	0.0953	0.0124	1.0000
VIF	1.40	1.84	1.29	1.24	1.29	1.86
Tolerance	0.715744	0.544684	0.776995	0.808080	0.774155	0.538060

*Note: * p < 0.01, ** p < 0.05, and *** p < 0.1 by two-tailed test.*
Source: Authors' elaboration.

Table 5 displays the results of the bivariate correlation between all the explanatory variables utilized in our study to give us an idea of the likelihood of multicollinearity. The matrix analysis reveals that the *ESG* and its components have a strong positive association with one another. Moreover, it is pellucid from the analysis of the matrix that the age of the firm is significantly but negatively correlated with *ESG* and its sub-dimensions, indicating that firms with a lesser age or newly established firms have better *ESG* performance. In addition, the total asset of the firm is positively correlated with the *SOC* dimension and overall *ESG* performance (Maji & Lohia, 2023), indicating that large-size firms have more contribution towards *SOC* parameters and overall *ESG*. Despite the fact that substantial correlation coefficients are frequently reported, the strength of this correlation could be stronger, which can lead to serious multicollinearity issues. Nevertheless, we compute the VIF to examine the severity of multicollinearity, and the mean VIF values for each model are shown in the relevant tables. The data also show that multicollinearity is not a concern in the current situation, with the greatest VIF value being 1.86 and a tolerance value of 0.538060 (Maji & Lohia, 2023).

4.2. Results of the ordinary least square model

The regression results of Models 1 and 2 are presented in Tables 6 and 7, respectively. Table 6 presents the results of the impact of the sub-dimensions of *ESG* on *FP*, whereas Table 7 presents the impact of overall *ESG* on *FP*. In the present study, sub-dimensions of *ESG*, overall *ESG*, *LnAge*, and *LnTA* have been taken as independent variables to analyze the impact on various financial parameters that are both accounting-based and market-based financial measures. *ROA* and *RONW* were taken as accounting-based measures, whereas *Tobin's Q* and *LnMC* were taken as market-based measures. Table 6 displays the regression results of the impact of the *ESG* components on *FP* after adjusting the impacts of other explanatory factors. All metrics of profitability indicators show a positive correlation with the *ENV* score, although the relationship is only statistically significant for *Tobin's Q* and *LnMC*. According to this conclusion, the company that contributes more to environmental considerations will perform better financially. These results are consistent with the findings of Chelawat and Trivedi (2016), and Ray and Goel (2023) but in contrast to the findings of the following prior research (Maji & Lohia, 2023; Jyoti & Khanna, 2021). As a result, this is viewed as a chance for the decision-makers to concentrate on implementing and improving *ENV* practices to enhance *FP*. By contrast, the impact of *SOC* score on accounting-based measures, i.e., *ROA* and *RONW* is found to be insignificant and negative but it is positive for market-based measures, i.e., *Tobin's Q* and *LnMC*, thereby implying that contribution towards social dimension affects the market-based financial measures but independent of accounting based financial measures. This result

is in contrast with the following previous studies (Maji & Lohia, 2023; Habib & Mourad, 2024; Smith et al., 2007; Ho & Taylor, 2007). The coefficient for governance criteria is positive and statistically significant on all measures of *FP*, thereby indicating that the firm with better governance will have a positive impact on *FP*. This result is corroborated by the findings of previously conducted studies (Maji & Lohia, 2023; Habib & Mourad, 2024). Furthermore, the firm's age is significantly and negatively affecting the market-based measures (i.e., *Tobin's Q* and *LnMC*). In contrast, it has a positive impact on the accounting-based measures (i.e., *ROA* and *RONW*), thereby indicating that market-based measures are independent of the age of the firm. This is supported by a previous study (Maji & Lohia, 2023). Moreover, *LnTA* has a positive impact on all the measures of *FP*; however, it is only significant for *ROA* and *LnMC*, thereby implying that a firm having a higher amount of total assets will have a better *FP*. This result is inconsistent with the previous studies (Maji & Lohia, 2023; Habib & Mourad, 2024). The observed adjusted R^2 values show that the models have significant explanatory power, and the significant F-statistics also show that the models are well-fit (Maji & Lohia, 2023; Habib & Mourad, 2024).

Table 7 displays the impact of the overall *ESG* score on the performance of banking companies after controlling for other explanatory factors. For all indicators of *FP*, it is discovered that the predicted coefficient of overall *ESG* performance is significantly positive. This implies companies can improve their *FP* by providing more details about *ESG* factors. The result is corroborated by the findings of earlier research conducted in the context of emerging nations (Aboud & Diab, 2019; Bhaskaran et al., 2020; Ting et al., 2020; Naseem et al., 2020). Age is discovered to be statistically significant but negative for each measure of *FP* indicators, though it is only positive for *RONW*. This result is consistent with the findings of Habib and Mourad (2024); because they also provide evidence in the Indian context that age has a detrimental effect on profitability indicators. Furthermore, the total assets of the firm have a positive and significant impact on all the measures of *FP*, implying that firms with higher total assets will have better *FP*. This result is inconsistent with the findings of the previously conducted studies (Hasan et al., 2022; Maji & Lohia, 2023). In addition, the *ESG* score is also found to have a significant and positive impact on all the measures of *FP*, indicating that *ESG* performance has a direct and significant impact on firm *FP*, so the firm with a higher level of *ESG* contribution will have a better *FP*. This result corroborates with findings of the previously conducted studies (Ademi & Klungseth, 2022; AI Amosh et al., 2023; Carnini Pulino et al., 2022; Kalia & Aggarwal, 2023; Nguyen et al., 2022; Nurim et al., 2022). The observed adjusted R^2 values show that the models have significant explanatory power, and the significant F-statistics also show that the models are well-fit.

Table 6. Impact of the sub-dimensions of *ESG* on *FP*

Variables	ROA		RONW		Tobin's Q		LnMC	
	Coefficient	t- stat	Coefficient	t-stat	Coefficient	t-stat	Coefficient	t-stat
Constant	-1361.554*	-3.12	-26.95041***	-1.75	-96.14349**	-2.31	-4.038164***	-1.77
ENV	12.08936	2.85	0.1159876	0.78	1.023395*	2.53	0.0456766**	2.06
SOC	-5.035439	-1.09	-0.084279	-0.52	0.1510647	0.34	0.0563528**	2.32
GOV	3.761251	1.38	0.2137765**	2.23	0.463547***	1.79	0.0282473**	1.98
LnAge	16.46742	0.49	2.196391***	1.85	-6.5963**	-2.05	-0.5968805*	-3.39
LnTA	62.73307*	2.92	0.7632363	1.01	2.762089	1.35	1.033053*	9.17
Adjusted R²	0.3624		0.1049		0.4965		0.8881	
F-Stat	4.52*		1.73		7.11*		50.20*	
Hettest (Chi²)	2.5466		2.1123		1.4321		2.0531	
SK tests (Adj. Chi²)	0.8742		0.8734		0.4658		0.7835	
No. of observation	32		32		32		32	

Note: * p < 0.01, ** p < 0.05, and *** p < 0.1.
Source: Authors' elaboration.

Table 7. Impact of *ESG* on *FP*

Variables	ROA		RONW		Tobin's Q		LnMC	
	Coefficient	t- stat	Coefficient	t-stat	Coefficient	t-stat	Coefficient	t-stat
Constant	-1071.07**	-2.40	-29.73099**	-2.08	-81.04791**	-2.09	-3.549914	-1.65
ESG	13.03824*	2.52	0.4144521*	2.51	1.610572*	3.58	0.1003927*	4.02
LnAge	-3.282124	-0.09	2.083253***	1.83	-7.526088**	-2.43	-0.5973939*	-3.47
LnTA	33.69707***	1.95	0.2203956	0.40	1.867496	1.24	1.13432*	13.60
Adjusted R²	0.2442		0.1255		0.5056		0.8874	
F-Stat	4.34*		2.48***		11.57*		82.43*	
Hettest (Chi²)	1.9187		2.4642		1.5385		1.6342	
SK tests (Adj. Chi²)	0.6758		0.8719		0.6745		0.9871	
No. of observation	32		32		32		32	

Note: * p < 0.01, ** p < 0.05, and *** p < 0.1.
Source: Authors' elaboration.

5. CONCLUSION

In this study, an attempt has been made to establish the linkage between sustainability performance and FP of selected banks and also to identify significant variations in both FP and ESG performance between PSBs and PvtBs. Sustainability performance is measured with the help of ESG Score as disclosed by CRISIL whereas FP of the selected banks is measured with the help of annual reports. In contrast to earlier research, this study used an autochthonously devised ESG scoring mechanism to investigate the connection between ESG performance and the FP of the banking sector. In this study, both accounting-based performance measures, i.e., ROA and RONW, as well as Market-based performance measures, i.e., Tobin's Q and MC, were employed to explore the relationship as mentioned above. The significant findings of our study indicate that PvtBs are giving much more emphasis on ESG practices than PSBs. Furthermore, it has been pellucid from our study that ESG and its sub-dimensions performances are not the same between PSBs and PvtBs, which rejects the following formulated hypotheses *H5, H6, H7,* and *H8,* respectively, at a 0.01 and 0.05 significance level.

In contrast, the FP of both the PSBs and PvtBs are the same, which supports the formulated hypotheses. We also observed that overall ESG and its sub-dimensions performance has a positive and significant impact on all measures of FP. Our findings have significant policy ramifications. First, the decision-makers should concentrate on ESG performance to boost FP as it is evident from the study that the banks with a higher level of contribution towards ESG parameters have better FP because presently, investors are increasingly considering ESG factors when making investment decisions. ESG reporting provides investors insight into a bank's sustainability practices, ethical behaviour, and long-term viability. Banks demonstrating strong ESG performance may attract a broader pool of socially responsible investors. Therefore, ESG reporting contributes to a bank's reputation and branding. Banks that demonstrate a commitment to environmental protection, social well-being, and ethical governance are more likely to build trust with customers, employees, and other stakeholders. Second, ESG disclosure is a vital channel for informing stakeholders about a company's sustainable business practices. Nevertheless, it is still in its incipient phase in India. The results of this study will help policymakers and regulators to formulate brassbound ESG disclosure regulations. It is important to note that the top 1000 publicly traded companies are now required to prepare a BRSR that incorporates the same ESG indicators under the SEBI regulation from 2022–2023 (Debnath & Kanoo, 2022). Firms should strive to report information above and beyond what SEBI has prescribed (Maji & Lohia, 2023).

Despite being a novel endeavour, the current study has some shortcomings that could be used as research in the future. Firstly, this present study is based on cross-sectional data relating to 2022. Therefore, the impact of ESG on FP over time and with lags is not considered. There is potential for conducting longitudinal studies in the future. Secondly, this study is only confined to the banking sector so, future studies may be undertaken in different sectors to present a holistic picture of ESG and FP. Thirdly, this study highlights the results of only PvtBs and PSBs operating in India and excludes the regional rural banks. Thus, the results may not be representative of the entire banking sector in India. Fourthly, this study presents the results in the Indian context. So, findings may not be generalizable to other markets. Finally, in this study, reverse causality and endogeneity issues are not taken into account. Further studies may be undertaken to present a robust result.

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