

IMPACT OF ESG SCORES ON FINANCIAL PERFORMANCE IN INDIAN NSE (ESG) LISTED COMPANIES

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ABSTRACT

The modern global environment is characterized by problems such as the reduction of biological diversity, climate change, and social inequalities in income, which makes governments and organizations pay attention to the concept of sustainable development. This research investigates the ESG score's impact on companies' financial performance over a period of ten years between 2013 and 2023 which are the companies enlisted in ESG Index of the National Stock Exchange (NSE) India. Using data from LSEG for ESG scores and from PROWESS for financial data, this study applies quantitative techniques of analysis involving, ANOVA, post hoc tests, and panel data regression analysis to test this relationship. The research analysis shows huge disparities in ESG scores relative to the industry, where information technology industry had the highest score while the automobile industry had the lowest score. Regression analysis has suggested that ESG scores have insignificant effects on key accounting-based figures such as PAT, RONW, ROCE, and ROA but significantly affect TSR in a negative manner. The rise in social scores has a positive impact on the performance measures while the Environmental and Governance scores have a negative impact. Other factors namely age, leverage, and size of the company also act as important control variables. The research also suggests that understanding the role of ESG considerations is essential; however, they are not equal in terms of financial implications, which in turn emphasizes the significance of approaching the integration of sustainability into corporate management with caution.

Keywords: *ESG Scores, NSE, Regression Analysis, Financial Performance, Sustainability.*

Introduction:

Modern society faces a vast array of challenges which are changes in climate, natural environment degradation, a decrease in the diversity of species, and socio-economic inequality. As a result of these challenges, several governments have considered the attainment of sustainable development an overall objective. These challenges were recognized and international organizations began to address them. UN Global Compact and other sustainability concerns include Principles for Responsible Investment (UN PRI), the Carbon Disclosure Project (CDP), the Sustainability Accounting Standards Board (SASB), and the Global Reporting Initiative (GRI). (Clark and others, 2015).

Another important characteristic of financial markets is sustainability which has become a popular topic of socially responsible investment (SRI) and the attention of corporate management to ESG problems (Chatzitheodorou et al. , 2019). They anticipate that business managers should make rational capital investment decisions taking into account ESG factors which go a notch higher than CSR to embrace social aspects as noted by Gillan et al., (2021).

It has become a critical issue of discussion and implementation regarding how to incorporate ESG factors for investors, regulators, governments, enterprises and non-governmental organizations (Lee et al. , 2016). Many sustainability accounting frameworks had been created to improve ESG reporting in response to investor demand for nonfinancial information by the companies (Bose, 2020). Practically, value assessment now considers financial along with the non-financial performance (Kluza et al., 2021). The advantages of including sustainability criteria in the investment process and their effect on returns are thus up for discussion.

Research investigating the association among ESG scores as well as financial success yielded conflicting results. According to Ray (2022), there is a direct association among the share value in Indian companies and the disclosure of ESG information. This implies that ESG scores can serve as indicators of future financial performance. However, Strekalina (2023) finds no statistically major association among ESG & ROA in the BRICS countries, and Balatbat (2012) shows a somewhat weak positive connection between ESG scores & financial performance in Australian enterprises. Some studies argue that ESG practices can enhance financial performance (FP), as demonstrated by research conducted by Rodriguez-Fernandez (2016), Fatemi et al., 2017; Garcia et al., 2017 and Crifo et al., 2019. Conversely, other research have identified ESG investment adverse effects on CFP, as highlighted by Lee et al. (2016). Moreover, variations in the definitions, assessment approaches, and geographical focus of ESG and CFP have yielded diverse outcomes and magnitudes of impact (Gillan et al., 2021).

Previous studies in India are either focused on individual ESG factors or used different methodologies such as small samples and short time periods, leading to inconclusive evidence. This study thus points to a gap in the body of knowledge about a thorough examination of how score of ESG impacts financial performance in the Indian context.

The National Stock Exchange (NSE) has taken a noteworthy step by launching an ESG index in India. Very little research work has been undertaken in this area, and this research is to fill this gap.

Research Objectives

1. To find out whether there are any significant differences in ESG scores across industries.
2. To analyze the ESG score impact on the financial performance of National Stock Exchange (NSE) ESG-listed companies in India.

By examining data from 2013 to 2023, this study aims to capture long-term trends and assess how ESG considerations have evolved and impacted financial performance over time in the Indian corporate landscape.

Overcoming subjectivity biases, the study uses the combined and individual performance of ESG to examine the association among ESG along with the performance of the firm. The findings show that ESG scores differ significantly for different industries. The ESG score has no substantial impact on the dependent variables PAT, RONW, ROCE, or ROA, which are performance measurements based on accounting. In market-based performance metrics, ESG significantly reduces only TSR (Total Shareholder Return) but has no discernible effect on MC (Market Capitalization) or Tobin's Q.

The rest of the paper has been organized to explain the relevant literature review, methodology, results and discussion, conclusion and also proposes the future research.

Literature review

Theories

ESG practices are explained by various theories, including Agency Theory, Legitimacy Theory, Signaling Theory, Stakeholder Theory, Resource-Based View (RBV), Institutional Theory and Stewardship Theory. The goal of agency theory is to reduce agency costs and align interests among managers as well as shareholders. ESG initiatives can help companies build trust and reputation, align operations with societal expectations, and maintain legitimacy. Legitimacy theory suggests companies operate within societal norms and values to gain legitimacy and social acceptance. According to the signaling theory, businesses communicate their intentions and quality to the market by sending signals. ESG disclosures draw in socially conscious investors by demonstrating to stakeholders and investors the company's dedication to sustainable practices. Stakeholder theory emphasizes managing relationships with all stakeholders, focusing on inclusive approaches, value creation, stakeholder engagement, and competitive advantage. Institutional theory examines how institutions influence organizational behavior, focusing on normative pressures, mimicking practices, and regulatory compliance. Stewardship theory suggests managers act in the best interests of the company along with its stakeholders, ensuring long-term sustainability and success. Understanding these theories helps companies appreciate the multifaceted motivations and benefits of ESG initiatives.

Regulatory status

In the past two decades, the regulatory landscape in India has experienced numerous substantial policy alterations and initiatives. India's CSR and ESG reporting landscape has evolved over the past decade, shifting from voluntary disclosures to mandatory, detailed, and comprehensive reporting focusing on transparency, accountability, and sustainability.

Table 1: Initiatives by various Indian statutory authorities for CSR/ESG reporting

Year	Authority	Particulars
2007	Reserve Bank of India	Advisory of commercial banks on Corporate Social Responsibility, Sustainable Development, and Non-financial reporting.

2008		S&P ESG India Index, launched by CRISIL and KLD Research & Analytics, is India's first investable index for companies committed to environmental, social, and governance standards.
2009	Ministry of Corporate Affairs	Corporate Social Responsibility Voluntary Guidelines 2009.
2010	Department of Public Enterprises	Detailed guidelines on CSR for Central public enterprises
2011	Ministry of Corporate Affairs	National Voluntary Guidelines on Social, Environmental, and Economic Responsibilities of Business (NVGs), 2011: The guidelines introduced principles for responsible business conduct, including governance, ethics, transparency, and sustainability, and encouraged businesses to adopt and report on these principles voluntarily.
2012	Securities and Exchange Board of India (SEBI)	The Business Responsibility Reporting (BRR) Framework mandates companies to disclose their performance against nine principles of the NVGs, and is included in the annual report for the top 100 listed entities which was in 2015 extended to 500 companies.
2012	the Bombay Stock Exchange (BSE)	In 2012, BSE introduced BSE Greenex and BSE Carbonex, indices assessing companies' environmental performance and carbon emissions.
2013	Morgan Stanley Capital International	The MSCI India ESG Leaders Index was launched on Jul 12, 2013.
2014	Companies Act 2013	Mandated specified companies to allocate 2% of their past three average net profit for CSR.
2019	Ministry of corporate affairs	National Guidelines on Responsible Business Conduct (NGRBC), 2019
2021	SEBI	Business Responsibility and Sustainability Reporting (BRSR), 2021 replaced BRR and is implemented in phases. Initially voluntary and mandatory from 2022-23.
Present situation		Companies are adopting integrated reporting frameworks, aligning ESG reporting with global standards and meeting

		increased regulatory expectations for comprehensive and transparent reporting.
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Previous studies and Hypothesis development

ESG scores in different sectors

Research on ESG scores across industries has yielded mixed results. Matakanye et al., (2021) and Gupta et al., (2022) both found significant differences in certain ESG ratings across industries, with Matakanye identifying differences in Human Rights and Supply Chain, Community Development and Philanthropy, and Compensation and Benefits, and Shikha Gupta highlighting variations in ESG dimensions. According to their study the information technology and financial sectors leading in ESG performance, while sectors like cement, metals & mining, and chemicals lag behind due to their environmental impact. Wu et al. (2022) and Torpey (2022) discovered that industry-specific variations exist in the effects of regulatory oversight on ESG ratings and the ESG score's impacts on firm performance. ESG disclosure scores for larger-cap companies are substantially higher than those of mid-cap companies (Tamimi & Sebastianelli, 2017).

These findings suggest that while there may be some differences in ESG scores across industries, the nature and extent of these differences are complex and multifaceted.

ESG and Financial performance

ESG performance has garnered attention in recent years due to its potential effect on financial and overall performance. This literature review summarizes the relationship among corporate ESG performance as well as overall and financial performance.

Environmental Performance

The actions and strategies that a firm undertakes in its environmental engagement such as reduction of the emission of carbon, reduction of waste, and promotion of renewable energy are called environmental effectiveness. In their study, Grewal & Serafeim, 2020 established that there has been a positive correlation among financial & environmental performance. They argue that it is often observed that companies that are environmentally sensitive to their operations post superior and healthier economic returns such as higher revenues and lower costs. Moreover, shareholders often prefer companies that have good environmental records and this translates to high stock market returns and cheap capital.

Social Performance

Social performance pertains to the manner by which companies address their employees; the engagement of the companies to society; and the compliance with standard ethical practices in employment. Itoannou and Serafeim in their study conducted in 2015 have identified a positive association among financial and social performance. As per their findings, the companies that have established high levels of social responsibility are those that also have improved economic performance rates including greater asset profitability and improved organizational productivity. Furthermore, Ioannou and Serafeim (2017) found that more socially responsible firms also have better employee turnover rates and tend to attract and retain better talents for their companies.

Governance Performance

Governance performance has to do with ways in which firms are managed, what decisions are made and how they are made, and whether or not the process followed is ethical. A research study that was conducted by Flammer (2015) showed that performance in corporate governance is a factor which leads to greater performance in the financial aspect. Research has shown that the best-governed firms enjoy greater returns on equity, higher market capitalization, and lower litigation and reputation costs. Further, good governance entails high levels of credibility from investors and stakeholders which can favor a firm in terms of access to capital and investment.

Integrated Impact of ESG Performance

There has been broad research done on how ESG performance influences corporate performance as a whole. In their study, Eccles and Serafeim (2013) indicated that firms that show commitment to ESG issues enhance risk management and sustainability opportunities to create value for shareholders in the long run. Khan et al. (2020) also states that there is a positive association among the integration of ESG factors as well as financial performance, which implies that companies that factor ESG considerations into their operations tend to be more lucrative compared to their counterparts.

Sector-Specific Analysis

Similar studies have also been conducted at the sector level to determine the effect of the ESG performance. In their work conducted in 2013, Durand & Paoella used the banking industry and established that the banks with higher ESG ratings have better financial health and lower credit risk. Similarly, Busch and Friede's (2018) study on the association among ESG as well as financial performance in the sector of energy also painted a positive picture of the relationship between the two variables.

The studies establish a significant positive relationship among ESG performance, financial performance and even overall corporate performance. Various studies have also shown that companies which have been giving ESG factors a premium score are likely to record superior operational performance such as higher profit margins, lower cost of capital, and better overall value for shareholders (Derwall et al., 2015). Furthermore, the findings of this sectoral breakdown show that the results are consistent across sectors, which provides general evidence of the efficacy of ESG factors in promoting the performance of firms.

Based on the literature review and based on the research objectives following hypotheses are made.

H1: There is no significant difference in ESG scores across industries.

H2: There is no significant impact of ESG score on the financial performance of the companies.

Methodology

Sample and Data Collection

To assess the ESG score's impact on a company's financial performance, we analyze the data from 2013 to 2023. The sample chosen is the NSE ESG 100 list of companies. The financial information

has been gathered from the PROWESS database which has been maintained by the Centre for Monitoring the Economy (CMIE) in India.

ESG scores are collected from the LSEG database. LSEG is a prominent provider of financial infrastructure and data for worldwide companies. This falls under the group of the London Stock Exchange. Transparent, data-driven evaluations of a business's ESG performance, dedication, and efficacy across ten major themes comprise the LSEG ESG scores. They comprise more than 630 company-level ESG metrics and are based on data which had been made public. Based on publicly available data, the scores are divided into ten categories to create 3 pillar scores along with the final ESG score, that represents the company's ESG effectiveness, performance, and commitment (LSEG, 2024).

The screening and processing of the sample was done to eliminate companies without ESG scores in the LSEG database and samples with missing data have been excluded, ensuring that the sample has been a balanced panel. Though the sample consists of 100 companies in NSE ESG listed companies, the final dataset consisted of 45 companies. When necessary, the continuous variables had been then winsorized at the 5% & 95% levels to exclude the impact of extreme values.

Table 2: Industry-wise sample distribution

Industry	No of companies	Percent
Automobile	6	13%
Finance and banking	7	16%
Healthcare	5	11%
Information Technology	5	11%
Infra and construction	11	24%
Oil & Gas	3	7%
Others	8	18%
Total	45	100%

Measurement of Variables

Independent Variable: ESG Score

Sustainability assessment methodologies, like third-party accreditation, external audit, content analysis, and survey-based approaches, use both quantitative and qualitative methods to measure a company's ESG performance. There's no consensus on which indicators to select, but sustainability ratings and stock market indices are considered appropriate instruments for measuring the sustainability performance of the company. (Alshehhi *et al.*, 2018)

ESG scores are collected from the LSEG database. The LSEG database offers a comprehensive ESG score for a company, which is the aggregate value of its “environmental (E score), social (S

score), and governance (G score)” performance. The environmental dimension which focuses on efficient utilization of resources, minimizing emissions, and promoting product innovation. The social dimension encompasses aspects such as human rights, workforce development, societal and community impact, and responsibility for product. The governance factor is an integral part of management, CSR strategy, and shareholder relations. The ESG score is adjusted to account for notable ESG controversies, and an overall ESG combined score is supplied. The value spans from 0 to 100. The ESG score increases proportionally with the total value of ESG.

Dependent Variable: Financial performance

Our methodology is founded on the concept of progressing financial performance indicators from fundamental accounting measures which include Return on Assets (ROA), Profit after Tax (PAT), Return on net worth (RONW) etc., to market indicators such as Total Stock Return (TSR), Market capitalization (MC) and Tobin’s Q. According to the literature review mentioned earlier, there are studies that concentrate on accounting measures of financial performance from a company perspective, as well as papers that focus on market measures of financial performance from an investor's point of view. This study evaluates companies' financial performance using accounting and market measures to accurately capture past and future performance. Dependent variables affect results. We examined several financial performance indicators to determine how ESG scores affect different categories of financial indicators.

The dependent variable financial performance has been calculated by accounting and market indicators. Data collected directly from PROWESS. But Tobin's Q is calculated by the authors. To calculate Tobin's Q value, we replace asset replacement costs with asset book values following Chung and Pruitt (1994). Market value is also computed by subtracting net worth from the book value of all assets, adding market capitalization to the total asset book value, and dividing by the book value.

Control variables

This research examines the association among ESG scores and financial performance by utilizing age, leverage, and size of the company as control variables. Age is calculated from the company's incorporation date till end of the year under consideration. The age of the firm is used to take into consideration how a company's lifecycle affects its financial performance. Due to heightened scrutiny from financial institutions, leverage is included and is calculated as total assets divided by net worth (Ghosh 2013). Size is considered due to economies of scale, skilled managers, and formalized procedures that would improve financial performance (Naik 2014). The study employs the total assets’ natural logarithm as a substitute for measuring size. Data on total assets, leverage, and date of incorporation are obtained from the Prowess database.

The variables, their definitions, sources, and literature support are given in Table 3.

Table 3: Variables considered for the study

Variable	Particulars	Source	Previous literature
Dependent Variables			
PAT	Profit after Tax	Prowess	

ROA	Return on Assets	Prowess	Shobhwani et al., (2023); Aboud & Diab (2018)
ROCE	Return on Capital Employed	Prowess	
RONW	Return on Net worth	Prowess	
TSR	Total stock returns	Prowess	Giannopoulos et al.,(2022)
MCap	Market Capitalisation	Prowess	Narayan et al. (2011), Ewing and Thompson (2016)
Tobin's Q	(Total assets+ market capitalization – networth)/Total Assets	Computed	Followed by Chung K H and Pruitt S W (1994) for computation; Shobhwani et al., (2023);Aboud & Diab (2018)
Independent Variables			
ESG Score	ESG combined score	LSEG database	Atan et al., (2018),Balasubramnaian & Amrita (2019), Shobhwani et al., (2023)
E Score	Environment Score	LSEG data base	Atan et al., (2018),Balasubramnaian & Amrita (2019), Shobhwani et al., (2023)
S Score	Social Score	LSEG data base	Atan et al., (2018),Balasubramnaian & Amrita (2019), Shobhwani et al., (2023)
G Score	Governance Score	LSEG data base	Atan et al., (2018),Balasubramnaian & Amrita (2019), Shobhwani et al., (2023)”
Control Variables			
Leverage	Debt equity ratio	Prowess	Shobhwani et al., (2023); Aboud & Diab (2018)
Size	Natural logarithms (base 10) of Total assets.	Computed	Shobhwani et al., (2023); Aboud & Diab (2018)
Age	Number of years since the date of incorporation	Computed	Shobhwani et al., (2023)

Research Method

The numerical connection among two or more variables is typically examined in quantitative research (Saunders et al., 2019; Elmarzouky et al., 2022). Given that this research examines the correlation among variables that are quantitatively stated, quantitative approach is the suitable selection. Therefore, quantitative research methodology is used to examine the objectives of this study.

Empirical framework

The data analysis process involves utilizing a set of essential methodologies and tests, which are outlined below:

Anova test

An inter-industry comparison was conducted, and hypothesis testing was performed using ANOVA. Once it has been determined that the data are normal, the parametric hypothesis testing technique known as ANOVA is utilized.

Post hoc test

A post hoc test, in the context of statistical analysis, is used to explore significant differences between groups after an initial statistical test such as ANOVA has indicated that there is a major variation somewhere among the groups but it doesn't specify which specific groups differ from each other. Post hoc tests help pinpoint exactly where the differences lie which is crucial for understanding the nature of the effect observed. Post hoc is usually used to test the mean differences though it can be used for frequencies and proportions.

Variance Inflation factor (VIF)

Multicollinearity occurs when independent variables in a multiple regression model correlate. The results of the regression may suffer. The amount that multicollinearity inflates a regression coefficient's variance has been calculated by the variance inflation factor. The VIF has a minimum value of one. Modestly correlated variables are those whose VIF falls between 1 and 5. A number exceeding ten may suggest the presence of multicollinearity issues in the regression model. VIF test is done on the independent variables chosen.

Panel data regression analysis

Panel data is longitudinal data that measure variables for multiple entities over time. Pooled Ordinary Least Squares may not work well for panel data. A constant or stochastic variable can represent temporal and spatial fluctuations, creating panel data regression models like random & fixed effects.

Panel data regression has been utilized to assess the relationship among ESG scores as well as financial performance because the dataset for the study is panel data, comprising information for 45 companies observed over a 10-year period from 2013-2014 to 2022-2023. The data for firm size has been calculated using the natural logarithm of total assets. The regression models utilized in this investigation are derived and adjusted from previous studies conducted by Naik (2014) Atan et al. (2018) and Dalal & Thakker (2019).

The statistical tool SAS (9.4) is used for analysis and all the outputs are from the same tool.

Empirical Model

The independent variables are the ESG score, E score, S Score, and G Score. The control variables are Age, Size, and leverage. The dependent variable is Corporate financial performance (CFP) As mentioned earlier there are seven proxies used for measuring the FP. Accounting based are PAT, ROA, ROCE, RONW, and market-related are TSR, MCap, and Tobin’s Q. As dependent variables are seven there are seven regression equations and the generalized panel regression equation is formulated

$$CFP_{it} = \beta_0 + \beta_1 \text{ ESG score}_{it} + \beta_2 \text{ Env score}_{it} + \beta_3 \text{ Soc score}_{it} + \beta_4 \text{ Gov score}_{it} + \beta_5 \text{ Age}_{it} + \beta_6 \text{ Size}_{it} + \beta_7 \text{ DE}_{it} + e$$

Where CFP_{it} denotes the dependent variable for company i and for the year t . As CFP is measured in seven different ways seven equations are tested individually with PAT, ROA, ROCE, RONW, TSR, MCap, and Tobin’s Q as dependent variable CFP. All the seven equations are uniform. ESG score_{it} denotes the independent variable ESG score for company i and for the year t . Env score_{it} denotes the independent variable Environment Score for the company i and for the year t . Soc score_{it} denotes the independent variable Social Score for the company i and for the year t . Gov score_{it} denotes the independent variable Governance Score for the company i and for the year t . Age_{it} , Size_{it} Size_{it} and DE_{it} are control variables Age, Size and Debt to Equity for the company i and the year t respectively. β_0 is the intercept. β_1 to β_7 are different coefficients and s is the error term.

Results and Discussion

Descriptive statistics

Table 4: Average ESG Scores Across Industries (2013-2023)

Industry	ESG Score	Env Score	Soc Score	Gov Score
Automobile	49.84	52.34	57.50	51.83
Finance & banking	51.97	48.72	59.07	59.53
Healthcare	52.38	44.32	58.48	66.79
Information Technology	74.84	67.14	86.27	76.93
Infra and Construction	53.93	59.91	64.98	45.69
Oil & gas	56.53	65.08	74.48	47.66
Others	55.45	52.18	65.65	53.02

Table 4 summarizes the average ESG score and also the independent Env, Soc, and Gov scores of each industry. The information technology industry (IT) has the highest ESG score (74.84) and the Automobile has the lowest ESG score (49.84). Under Env score again IT is the highest with 67.14

and health care is the lowest with 44.32. Soc score also IT has the highest with 86.27 and Automobile the lowest with 57.50. Under Gov score again IT has the highest with 76.93 and Infra and construction has the least with 45.69.

Table 5: Descriptive Statistics of Analysis Variables (N=494)

Variable	Mean	Std Dev	Minimum	Maximum
PAT	13.05	8.68	-8.54	34.88
Return on net worth	18.03	13.60	-6.55	73.35
ROCE	14.72	13.99	-3.78	72.75
ROA	9.56	8.75	-2.72	32.66
TSR	0.68	1.95	-3.25	8.85
Tobin Q	3.34	2.86	0.73	11.99
MC	1471670.90	1562820.58	116343.41	8981432.98
ESG Score	55.71	15.57	22.38	85.13
Env Score	55.51	22.58	3.89	91.55
Soc Score	65.78	18.75	19.55	94.29
Gov score	55.95	23.42	15.20	94.92
DE	0.56	0.66	0.00	2.33
Size	5.79	0.61	4.64	7.20
Age	45.05	21.79	16.00	91.00

The descriptive statistics for our variables, which include the independent, dependent, and control variables, are summarized in Table 5. The percentages PAT, RONW, ROCE, and ROA are the CFP proxies. TSR and Tobin Q are ratios and the market cap is in million rupees. In the control variables, DE is a ratio, Size is the natural log of total assets and Age is in relation to the year of incorporation. It's also essential to note that all of the variables' standard deviations fall within the expected range.

Anova and Posthoc Turkey results

Table 6. ESG Scores Across Industries-ANOVA

Variable	Mean	Industry Effect #	Industry Comparison	Mean Difference ##
ESG Score	55.71	<.0001	Information Technology - Automobile	22.00*
			Information Technology - Finance & banking	20.70*
			Information Technology - Healthcare	20.47*

Variable	Mean	Industry Effect #	Industry Comparison	Mean Difference ##
Env Score	55.51	<.0001	Information Technology - Infra and Construction	18.81*
			Information Technology - Oil & gas	16.24*
			Information Technology - Others	16.78*
			Information Technology - Automobile	14.18*
			Information Technology - Finance & banking	16.52*
			Information Technology - Healthcare	22.65*
			Information Technology - Others	14.81*
			Infra and construction - Healthcare	14.93*
			Oil & gas - Finance & banking	14.46*
			Oil & gas - Healthcare	20.59*
Soc Score	65.78	<.0001	Information Technology - Automobile	26.21*
			Information Technology - Finance & banking	26.79*
			Information Technology - Healthcare	27.53*
			Information Technology - Infra and Construction	21.14*
			Information Technology - Oil & gas	11.56*
			Information Technology - Others	20.29*
			Oil & gas - Automobile	14.65*
			Oil & gas - Finance & banking	15.23*
			Oil & gas - Healthcare	15.97*
			Gov score	55.95
Information Technology - Finance & banking	16.74*			
Information Technology - Infra and Construction	30.34*			
Information Technology - Oil & gas	28.59*			
Information Technology - Others	23.16*			
Infra and construction - Finance & banking	-13.60*			

Variable	Mean	Industry Effect #	Industry Comparison	Mean Difference ##
			Infra and construction - Healthcare	-20.42*
			Oil & gas - Healthcare	-18.67*
			Others - Healthcare	-13.24*

pValue from ANOVA, ## Post hoc Tukey Test, * pvalue is significant at 0.05 level

An ANOVA test has been conducted to test the null hypothesis—which states that there have been no variations in ESG scores across industries—to determine the industry impact on ESG scores. ANOVA outcomes are displayed in Table 5. The values of the ESG, E, S, and G scores are less than 0.0001, indicating a 5% significance level. Hence the null hypothesis “There is no difference in ESG score across industries” is rejected. This is in line with and supports the outcomes by Shobhwani et al., (2023) & Gupta et al., (2022).

As the ANOVA test concluded that there are differences in ESG scores between industries, the Post hoc Turkey test is conducted by testing mean differences to pinpoint the differences between which groups are significant. The outcomes are summarized in Table 5. It is found that ESG score, E, S, and G scores are different in all the groups with a significance level of 5%. This reconfirms that the ESG scores, E, S, and G scores are different across industries.

Table 7: Pearson Correlation Analysis of Variables

Label	PAT	Return on net worth	ROCE	ROA	TSR	Tobin q	MC	ESG Score	Env score	Soc score	Gov score	DE	Size	Age
PAT														
Return on net worth	0.53**													
ROCE	0.47**	0.96**												
ROA	0.53**	0.89**	0.95**											
TSR	-0.07	0.01	0	-0.02										
Tobin Q	0.21**	0.71**	0.76**	0.74**	-0.06									
MC	0.21**	0.14**	0.15**	0.15**	-0.08	0.20**								
ESG Score	0.03	0.02	0.07	0.10*	-0.03	0.04	0.23**							
Env Score	-0.05	-0.10*	-0.06	-0.03	0.01	-0.14**	0.26**	0.73**						
Soc Score	0.04	0.09*	0.13**	0.15**	0.06	0.05	0.34**	0.74**	0.73**					
Gov score	0.04	-0.04	0.01	0.05	-0.02	0.06	0.19**	0.53**	0.26**	0.24**				
DE	-0.15**	-0.41**	-0.57**	-0.62**	0.02	-0.48**	-0.08	-0.24**	-0.13**	-0.21**	-0.21**			
Size	-0.02	-0.40**	-0.48**	-0.51**	-0.04	-0.56**	0.48**	0.08	0.29**	0.22**	-0.05	0.55**		
Age	-0.20**	0.05	0.11*	0.11*	0.06	0.14**	0.01	0.34**	0.47**	0.36**	0.06	-0.23**	-0.10*	

* pValue is significant at 0.05 level, ** pValue is significant at 0.01 level

Table 8. Fixed Effects Panel Regression analysis

	PAT		Return on net worth		ROCE		ROA		TSR		Tobin Q		MC	
Parameter Measured	Estimate	Vif	Estimate	Vif	Estimate	Vif	Estimate	Vif	Estimate	Vif	Estimate	Vif	Estimate	Vif
Intercept	9.31*	0	53.67**	0	50.34**	0	33.46**	0	2.24*	0	13.72**	0	-10106463*	0
ESG Score	0.03	3.78	0	3.78	-0.01	3.78	-0.01	3.78	-0.02*	3.78	0	3.78	-4152.65	3.78
Env Score	-0.04	3.3	-0.14*	3.3	-0.13*	3.3	-0.07*	3.3	0	3.3	-0.04*	3.3	-14150.60*	3.3
Soc Score	0.04	2.97	0.23**	2.97	0.21**	2.97	0.13**	2.97	0.02*	2.97	0.05**	2.97	18387.96*	2.97
Gov score	-0.01	1.53	-0.07*	1.53	-0.06*	1.53	-0.03*	1.53	0	1.53	0	1.53	10664.41**	1.53
Size	1.4	1.99	-6.02**	1.99	-5.73**	1.99	-3.90*	1.99	-0.4	1.99	-1.93*	1.99	1970159.9**	1.99
Age	-0.10**	1.43	-0.02	1.43	-0.01	1.43	-0.01	1.43	0	1.43	0.01*	1.43	-2.93	1.43
DE	-3.35**	1.79	-5.30**	1.79	-9.07**	1.79	-6.24*	1.79	0.32	1.79	-0.94*	1.79	-1098225*	1.79

* p-value is significant at 0.05 level, **p value is significant at 0.01 level

Person Correlation analysis results are presented in Table 7. Based on a statistically major association at the 0.01 level between ESG score, ROA, and MC, incorporating ESG considerations into corporate strategy as well as operations might enhance financial performance, market

perception, and long-term sustainability. This correlation reflects broader trends where ESG factors are increasingly recognized as integral to corporate success and value creation.

Further, it can also be observed that the CFP proxies such as PAT, ROA, ROCE, RONW, and Tobin Q are statistically correlated at 0.01 level but not TSR. Thus, they may increase together, maybe because some of them are based on the same financial information. However, this is not going to pose a problem because of the use of different regression models. It also shows strong internal financial performance and investor confidence. The lack of correlation with stock returns suggests that investors are valuing these companies based on their financial metrics rather than short-term market movements, highlighting a focus on long-term value creation along with financial stability.

Size is not statistically correlated with ESG score. This contradicts the previous research by Atan et al., 2018 and Giannopoulos 2022 who argued bigger the company, the higher the ESG score.

No multicollinearity issues were detected during the VIF multicollinearity check and the results are given in Table 8.

Regression Results

Table 8 represents a regression results summary. The existence of multicollinearity between the variables was evaluated before hypothesis testing. The VIF maximum value is 3.78 which is far lower than the permissible threshold of 10. Thus, it can be said that multicollinearity is not a major issue for our research (Hair et al., 2010).

It can be concluded from the table that the ESG score does not significantly affect the dependent variables PAT, RONW, ROCE, or ROA which are accounting-based performance metrics. Even in market-based performance metrics also ESG negatively significantly affects only TSR and does not have any significant effect on MC and Tobin's Q. This is in contradiction to existing literature. ESG scores boost ROA and Tobin's Q, according to Dalal & Thaker (2019). Giannopoulos et al. (2022) found that ESG lowers ROA but raises Tobin's Q. Kumar & Firoz's 2022 study found that ESG boosts ROA and ROCE.

However, Age significantly affects positively PAT and negatively Tobin's Q.

Env Score, Soc Score, Gov Score, and Size significantly affect ROA, RONW, and ROCE. Soc score has a positive effect whereas env Score, Gov score, and Size have a negative affect. In the case of TSR, only the Soc score has a significant positive effect. Soc Score positively influences Tobin's Q while Env Score and size have negative impacts. Age has a positive impact but is small on Tobin's Q. When we observe MC, Env score has a negative impact while Soc score, Gov score, and Size have positive impacts.

In all the cases except TSR, DE has a significant negative impact. These metrics indicate that the financial structure of organizations has an impact on their CFP.

The results highlight the significance of the Social Score in positively impacting multiple performance metrics, suggesting that companies with greater social scores tend to perform better in contexts of Return on Net Worth, ROCE, ROA, Tobin Q, and Market Capitalization. Environmental and Governance scores generally show negative relationships with performance metrics, indicating potential areas of concern or cost implications associated with environmental and governance issues.

CONCLUSION

The research assesses the impact of ESG scores on the companies' financial performance listed on the NSE, ESG in India from 2013 to 2023. The research aims to fill the research gap by analyzing the association among ESG scores and financial performance across 45 companies. The study uses multiple financial performance metrics from accounting and market-related metrics. Since the study is quantitative, it relies on panel data regression analysis to analyze the relationship between ESG scores and financial performance.

This research indicates that within Information Technology industry, companies have the highest average ESG scores, while the Automobile industry has the lowest scores. One-way ANOVA tests show that H_0 can be rejected, meaning that there is a difference in industries' ESG scores. In sum, while ESG scores have no bearing on accounting-based financial performance metrics, they are negatively associated with Total Stock Return. There is evidence that social scores have a positive impact on several performance metrics, meaning social performance benchmarks reflect better financial performance. In most cases, they have inverse correlations with the performance indicators.

The work done also implies that ESG integration is important but has different effects on financial performance, where social factors are more positively associated with performance. This explains why it is important for firms to find a balance in their ESG activities to ensure they address social issues to boost performance.

IMPLICATIONS

In this study, the range of ESG influences on financial outcomes is discussed, which reaffirms the importance of a comprehensive and reasonable strategy for ESG implementation. These include investors, the companies that need to adopt the best practices, the regulators who should enforce the practices, and other parties of interest. Key stakeholders like investors can therefore apply ESG scores to make better decisions, mitigate risks, and therefore allocate resources differently across industries. Measures should be taken to support social activities, follow the middle way, and enhance the quality of disclosure. Adopting various measures in the legal sphere can be currently considered the key to the successful integration of ESG factors. On the national level, ESG reports can be used by regulators to formulate policies that foster moderation when implementing ESG, provide guidelines on how to report ESG data, and encourage social activities. It also provides ideas for strategies related to ESG integration, which may vary depending on the sector.

Limitations and Future Research

One of the study's main limitations is the sample small size. However, the study covers a decade (2013-2023) and also evaluates more financial performance metrics which include accounting and market-related. Another limitation is the exclusion of external factors like macroeconomic conditions and political stability. More research work is required to be performed in these areas to generalize the findings.

Future research must expand the geographical scope to raise the sample size to enhance reliability, incorporate dynamic ESG assessments, use qualitative analysis, conduct sector-specific studies, explore the impact on other stakeholders, differentiate between shorter-term and longer-term impacts, and investigate technological and innovation factors to give a more comprehensive understanding of ESG-financial performance relationships. In the end, this will enhance their comprehension of the intricate association among ESG practices as well as financial performance and, ultimately, corporate sustainability. It will assist businesses and investors in striking a balance between their short- and long-term objectives.

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