

DOES ENVIRONMENTAL, SOCIAL, AND GOVERNANCE STRATEGY LEAD TO BETTER FIRM PERFORMANCE: ANALYSIS OF NIFTY 500 COMPANIES

Priyanka Oza *, Ameya Patekar **

* Corresponding author, IES's Management College and Research Centre; University of Mumbai, Mumbai, India
Contact details: IES's Management College and Research Centre, 791, S.K. Marg, HIG Colony, Nityanand Nagar, ONGC Colony, Bandra West, Mumbai, Maharashtra 400050, India

** Xavier Institute of Management and Research, Mumbai, India



Abstract

How to cite this paper:

Oza, P., & Patekar, A. (2024). Does environmental, social, and governance strategy lead to better firm performance: Analysis of NIFTY 500 companies. *Corporate Governance and Sustainability Review*, 8(2), 24–36. <https://doi.org/10.22495/cgsrv8i2p2>

Copyright © 2024 The Authors

This work is licensed under a Creative Commons Attribution 4.0 International License (CC BY 4.0). <https://creativecommons.org/licenses/by/4.0/>

ISSN Online: 2519-898X

ISSN Print: 2519-8971

Received: 09.03.2024

Accepted: 12.08.2024

JEL Classification: G3, G34

DOI: 10.22495/cgsrv8i2p2

This research examines the correlation between environmental, social, and governance (ESG) score and a firm's market performance, financial performance, operational performance, and profitability, as well as the influence of control variables such as firm size, leverage, growth, and liquidity. The study focuses on companies listed in the NIFTY 500 index during the years 2021 and 2022, categorized into services and manufacturing groups. Multiple linear regression was employed to analyze the study's hypotheses. The findings revealed that the ESG score significantly and positively impacts the financial parameters — return on equity (ROE), return on assets (ROA), and earnings per share (EPS) of the services group. However, for the manufacturing group, the ESG score and individual E, S, and G scores did not significantly impact financial performance in most cases, and in some cases, had a negative impact. There is a need for further exploration into how the ESG score and individual parameter scores influence financial performance, which could aid companies in evaluating and improving their ESG initiatives.

Keywords: ESG, Corporate Governance, Firm Performance, Socially Responsible Investing

Authors' individual contribution: Conceptualization — P.O. and A.P.; Methodology — A.P.; Formal Analysis — P.O.; Investigation — P.O. and A.P.; Writing — P.O. and A.P.; Visualization — P.O. and A.P.

Declaration of conflicting interests: The Authors declare that there is no conflict of interest.

1. INTRODUCTION

Environmental, social, and governance (ESG) investing, also known as sustainable investing, constitutes a broad category of investments guided by companies committed to ethical practices while pursuing profitability. Investors adhering to sustainable principles avoid investing in stocks of companies that fall short of ESG standards. This approach reflects a growing emphasis on sustainable investing, where investors assess the long-term viability of businesses through rigorous ESG analysis, directing their capital towards enterprises that prioritize sustainable business practices. There has also been a tremendous focus on impact

investing wherein investments are made in the organizations to generate measurable social and environmental impacts alongside a financial return (Global Impact Investing Network). Studies have observed that there should be value creation in impact investing through the financial and non-financial dimensions of the organizations (Viviani & Maurel, 2019). The incorporation of environmental, social, and governance criteria into investment decisions has gained profound significance in the current era. Research examining the correlation between stock returns and socially responsible dimensions consistently indicates that socially responsible firms tend to exhibit a lower cost of equity (El Ghoul et al., 2011; Girerd-Potin et al., 2014).

This phenomenon arises because investors typically demand an additional risk premium when investing in non-socially responsible stocks (Girerd-Potin et al., 2014). Furthermore, empirical observations reveal that firms with higher corporate social responsibility (CSR) scores tend to benefit from more cost-effective equity financing (El Ghoual et al., 2011).

ESG investing encompasses diverse branches, including sustainable finance, which has seen earlier adoption of frameworks by countries such as the United States and the United Kingdom, compared to others. Notably, there exists a dearth of research in nations like Japan, Africa, Australia, and India on this subject (Kumar et al., 2022).

The evolution of ESG investing traces back to the 1950s, marked by a pivotal shift in the discourse surrounding CSR (Carroll, 2009). This era witnessed a growing recognition of the imperative for large organizations to reconsider their decision-making processes, acknowledging the profound societal ramifications of their actions (Bowen, 2013). Bowen (2013) articulated the concept of social responsibilities for business executives, delineating them as the obligations of businessmen to pursue policies, make decisions, or undertake actions that align with the objectives and values of our society.

Despite its recent surge in popularity, the roots of ESG investing trace back to the early 1970s when investors began steering clear of companies involved in the tobacco industry or associated with the South African apartheid regime (MSCI, n.d.). While ESG investing is a relatively nascent concept in the Indian context, globally there are approximately 3,000 ESG schemes available for investment.

Concerning ESG, the term “environment” encompasses an organization’s environmental disclosure, impact, and efforts to mitigate pollution or carbon emissions. The social aspect delves into employee relations, diversity, working conditions, health, and safety, as well as any community philanthropy or contributions to the local community. Governance criteria scrutinize how an organization governs itself about shareholder rights, executive remuneration, corruption, bribery, board diversity, and other key factors.

Organizations are increasingly weaving sustainability and ESG considerations into the fabric of their corporate strategies, operational frameworks, and management incentive structures. This significant transformation arises from a multitude of factors, including regulatory requirements (Benlemlih & Girerd-Potin, 2017; Brammer et al., 2012; Shahrour, 2022), shifting consumer perspectives (Lantos, 2001; Lee et al., 2012; Park et al., 2014), competitive forces (Matten & Moon, 2008), the desire to establish themselves as desirable employers (Chih et al., 2010; Rodgers et al., 2013), and having an insurance-like protection (Godfrey et al., 2009; Kim & Park, 2020; Shahrour et al., 2021).

Despite these strides, there persists a prevailing notion that investments tied to ESG initiatives represent a financial burden, primarily associated with risk mitigation and compliance, rather than a catalyst for value creation. In this article, we challenge this perception, delving into the question of whether companies boasting higher ESG scores stand to gain an “ESG-driven value premium”. This potential premium manifests in

the guise of an augmented enterprise value/earnings before interest, depreciation, tax, and amortization trading multiple (Heinzer & Mezzanzanica, 2022), prompting a closer examination of the relationship between corporate sustainability endeavors and their financial rewards.

Evaluation of similar studies in this area has given us certain research gaps. Most of the research analyzed the impact of ESG on financial performance either for certain sectors or for overall organizations. Most of the research papers either focus on entire indices or one particular sector only. There is hardly any research on the link between ESG focus and firm performance with regard to manufacturing and service sector breakup. Hence, this paper is novel with regard to the unique methodology of splitting the NIFTY 500 companies into two broad categories. Also, the ESG scores for this analysis have been fetched from CRISIL ESG ratings which is the Securities and Exchange Board of India (SEBI) approved ratings agency (CRISIL Ratings, 2024). This research paper delves into the critical analysis of whether ESG focus within NIFTY 500 companies correlates with improved firm performance. It addresses the escalating interest among investors in sustainable investing and endeavors to offer insights into how ESG practices impact financial outcomes. By scrutinizing data from NIFTY 500 companies, the study assesses the degree to which ESG performance influences various facets of firm performance. The findings contribute to the broader body of literature concerning ESG and firm performance, offering valuable implications for investors, policymakers, and corporate entities alike elaborated in detail in the conclusion. Through a systematic exploration of research gaps and empirical analysis, this paper also helps in understanding strategic decision-making in the territory of sustainable investing and corporate sustainability.

The structure of this paper is as follows. Section 2 provides a comprehensive review of the pertinent literature and the theoretical framework that serves as the foundation for this study. Section 3 delves into the methodology employed to empirically investigate the relationship between ESG focus and the financial performance of NIFTY 500 companies. Section 4 presents the results derived from the regression analysis conducted on the selected sample size. Section 5 elaborates on the analysis of the results. Section 6 offers concluding remarks, emphasizing the implications of the study, acknowledging its limitations, and proposing avenues for future research.

2. CONCEPTUAL FRAMEWORK

2.1. Literature review

The concept of “socially responsible investing” has developed into what is now commonly known as ESG investing. However, the widespread adoption of ESG investing was initially slow, primarily because it was traditionally linked with exclusionary investing (i.e., negative screens) rather than with positive or best-in-class investing (Caplan et al., 2013). Many studies have demonstrated a connection between corporate financial performance and corporate social performance, using ESG ratings as the basis

for comparison. For example, Erfle and Fratantuono (1992) classified 49 companies as high, medium, or low environmental performers based on reputation indices from the Council of Economic Priorities (CEP). They found a significant correlation between the environmental and financial performance of these firms. Most research indicates a positive relationship between ESG practices and firm value, aiding investors in making informed investment decisions (Hartzmark & Sussman, 2019), providing strong evidence that investors value sustainability, suggesting that sustainability can lead to better future performance. They collected experimental evidence that sustainability warrants better future performance (Wong et al., 2021) analyzed the impact of ESG certification on Malaysian firms, and found that it reduces a firm's cost of capital, indicating that stakeholders benefit when firms adopt ESG practices.

Numerous commercial entities have pioneered the development of ESG scoring methodologies, offering routine evaluations of listed companies' ESG performance. Esteemed providers such as Bloomberg, S&P, MSCI, Sustainalytics, and Refinitiv stand at the forefront of this landscape. Moody's ESG, S&P Global, MSCI, and Sustainalytics typically evaluate companies based on three dimensions: environmental (E), social (S), and governance (G). In contrast, Refinitiv assesses companies across four dimensions, while KLD employs a broader framework with seven dimensions (Berg et al., 2019). In our analysis, we leverage CRISIL Rating as our ESG scoring foundation, as CRISIL is an ESG rating agency approved by SEBI (Bhattacharya & Sharma, 2019; Narula et al., 2024).

In the Indian context, as of now, only entities certified by the SEBI are authorized to offer ESG rating services. This regulatory measure underscores the importance placed on ensuring the credibility and reliability of ESG assessments within the financial landscape. By confining ESG rating services to SEBI-certified entities, the regulatory framework aims to enhance transparency, accountability, and the overall quality of ESG-related information available to investors and stakeholders. This move aligns with the broader global trend of fostering responsible business practices and promoting sustainable investment decisions. Within the scope of this study, both the overall ESG scores and the individual scores about environmental, social, and governance aspects have been sourced from CRISIL Ratings. This strategic selection of CRISIL Ratings as the data provider ensures a robust and reputable foundation for the analysis, leveraging their expertise in evaluating companies across diverse ESG criteria. By relying on CRISIL's assessments, the study benefits from a comprehensive and nuanced understanding of the ESG performance of the entities under scrutiny. This approach underscores the commitment to utilizing high-quality data from a trusted source to derive meaningful insights.

There have been several studies that have proved that by integrating ESG into a company's valuation aspect, there has been progress in non-financial parameters of the firm like consumer satisfaction, market acceptance, lower weighted average cost of capital (WACC), etc. This can ultimately lead to an organization gaining a competitive advantage over the year (Schoenmaker

& Schramade, 2019). It was also observed that the firm's equity premium also significantly increased once the ESG factors were integrated into the firm's valuation. Concerning financial parameters, a study conducted by the NYU Stern Centre for Sustainable Business (Whelan et al., 2020), it was observed that strong corporate management of ESG leads to improved financial performance which is demonstrated by growth in return on equity (ROE), return on assets (ROA), stock price, operational efficiency, and risk management. The European Union (EU) has also been stressing the focus on ESG with a double-sided approach wherein organizations have to consider the impact of external factors on their internal financial performance as well as the impact of internal operations on the planet and society at large.

A high ESG rating has emerged as a strategic advantage for organizations, as recent research shows. Wang et al. (2024) illuminate how the stock market reacts more positively to negative earnings news from firms boasting higher ESG ratings. These firms also attract long-term institutional investors, who exhibit less inclination to react hastily to short-term earnings fluctuations. Similarly, DeLisle et al. (2021) contribute to this narrative by demonstrating how firms with robust ESG investments experience reduced information asymmetry, enhancing market transparency. Furthermore, these high-ESG-rated firms tend to offer more reliable information, enabling market participants to anticipate earnings news more accurately.

In a parallel investigation, Bahadır and Akarsu (2024) shed light on the nuanced relationship between ESG performance and profitability. Contrary to expectations, they found that while the growth in ESG performance correlates positively with profitability, the levels of ESG performance exhibit differing effects. Remarkably, this positive relationship is emphasized in companies operating within a robust information environment, underscoring the importance of transparency and reliable data in assessing ESG impacts on financial outcomes.

There has been an extensive focus on analyzing the impact of ESG factors as well as individual E, S, and G factors on a firm's performance worldwide but there have been limited efforts to evaluate the ESG performance of Indian companies despite their high global competitiveness (Sharma et al., 2020). The regulatory bodies in India such as the Ministry of Corporate Affairs (MCA) have contributed quite a bit in promoting ESG practices like issuing National Guidelines on Responsible Business Conduct to encourage companies to align their strategies with sustainable development goals and incorporate ESG considerations into decision-making (Agarwal, 2003). These guidelines extend beyond mere reporting, offering a comprehensive framework for the integration of ESG considerations. They play a pivotal role in not only shaping transparent reporting practices but also in encouraging companies to weave ESG principles seamlessly into the fabric of their day-to-day business operations. By doing so, these guidelines contribute to a more holistic and sustainable approach to corporate practices, fostering a greater alignment with ESG principles throughout the operational spectrum of companies. SEBI has undertaken significant initiatives to advance ESG

reporting and compliance among publicly listed companies. Notably, for the fiscal year 2022–2023, concluding on March 31, 2023, SEBI has mandated that India's top 1,000 listed companies, determined by market capitalization, must submit a Business Responsibility and Sustainability Report (BRSR). This directive compels these companies to incorporate a comprehensive BRSR within their annual reports. This report serves as a detailed document outlining the companies' ESG performance and initiatives, underlining SEBI's commitment to promoting transparency and sustainable business practices in the Indian financial landscape.

Some studies have noted that ESG investing might not necessarily result in superior portfolio performance. Auer and Schuhmacher (2016) analyzed the performance of socially (ir)responsible investments across different regions, including the Asia-Pacific region, the United States, and Europe. Their research indicated that in the Asia-Pacific region and the United States, investors who prioritize ethical considerations in their portfolio choices can adopt an ESG-based investment strategy and still only achieve performance levels similar to the broader market. However, the scenario is different in Europe, where investors often incur a cost for socially responsible investing, contingent on the specific ESG criteria they select. This suggests that the impact of ESG investing on financial returns can vary significantly based on regional factors and the specific metrics used. A further illustration of this perspective is provided by Kiplinger's Domini National Public Opinion Poll (Kiplinger, 2021). The poll highlights that a significant majority of investors base their investment decisions on an organization's adherence to ESG principles. Notably, more than half of the respondents in the survey expressed a willingness to sacrifice a portion of their investment performance to achieve ESG-related goals. This highlights a growing trend where the value placed on ethical and sustainable practices by investors is seen as outweighing the potential for higher financial returns. Published in 2007 in the *Journal of Banking & Finance* (Ter Horst et al., 2007), their research concludes that investors are prepared to accept lower financial returns in exchange for investing in socially responsible factors. This finding reflects a broader willingness among investors to prioritize ethical considerations and sustainability over maximum profitability. It suggests a shift in investment paradigms where long-term social and environmental impacts are increasingly being factored into investment decisions.

Overall, while ESG investing is often associated with positive financial and ethical outcomes, these studies indicate that the relationship between ESG criteria and financial performance can be complex and region-specific. Investors' growing interest in ESG principles, even at the expense of higher returns, highlights a significant shift towards valuing sustainability and ethical considerations in investment choices.

H1: ESG, E, S, and G scores do not affect the financial performance of manufacturing companies.

Embracing ESG principles has become a pivotal trend in the service sector, and its transformative impact is evident, particularly in financial services. In the current business landscape, organizations recognize the imperative of generating enduring

value for diverse stakeholders. Globally, a growing number of investors are incorporating ESG considerations into their decision-making processes. Notably, service sector companies, with their increasing commitment to ESG, have been experiencing noteworthy benefits.

The financial sector, acting as a vital link in the economic chain, finds itself significantly influenced by ESG challenges, particularly the pervasive issue of climate change. As financial intermediaries and capital-raising agents, banks play a crucial role, making their alignment with ESG principles integral (Erffle & Fratantuono, 1992). An insightful study examining the correlation between ESG performance and financial results across sectors unveiled a lower beta coefficient, a key measure of shareholder risk, in companies exhibiting robust ESG performance (Heinzer & Mezzanzanica, 2022). Strikingly, a majority of these high-performing companies hailed from the service sector.

In the aviation industry, a focused study delving into the impact of ESG on financial performance revealed compelling insights. Firms actively contributing to governance initiatives demonstrated an enhanced market-to-book ratio, while those engaging in social and environmental activities received tangible rewards in the form of heightened financial efficiency (Abdi et al., 2020). It was also observed that active engagement in social and environmental initiatives by firms yields noteworthy dividends in financial efficiency and firm size plays a pivotal role as a moderator, particularly in the context of the air transport industry (Abdi et al., 2022). Despite these valuable findings, research on the influence of ESG on financial performance in service-oriented companies, especially in the Indian context, remains scarce. Thus, our third hypothesis is centered around service-oriented companies, aiming to bridge the gap in existing knowledge and shed light on this critical aspect.

H2: ESG, E, S, and G scores do not affect the financial performance of service companies.

2.2. Theoretical framework

The existing corporate financial models developed by Cornell and Damodaran (2020) help us to develop a fundamental understanding of how ESG characteristics affect a corporation's financial profile.

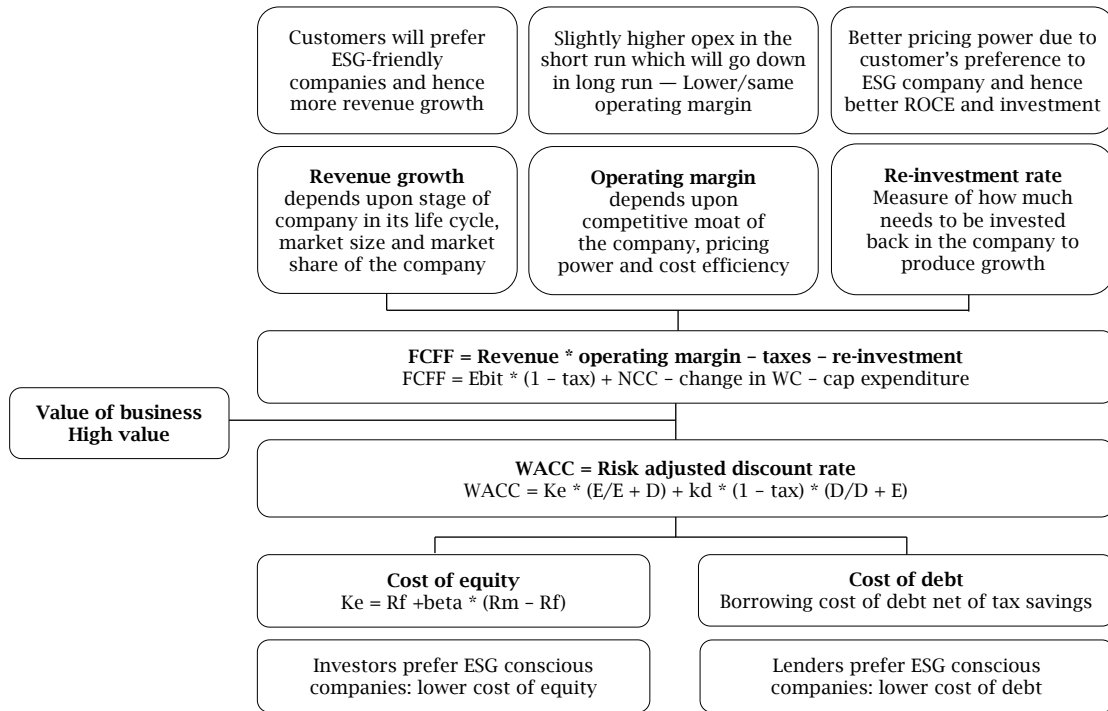
The below figure shows that companies that behave ethically and sustainably benefit in many ways.

1) Customers favor its products over the competitors to gain market share and grow the top line.

2) The company's cost structure adjusts quickly to new norms allowing unchanged/higher operating margins. This increases the efficiency and the free cash flow.

3) As regards the investors and lenders, they prefer to give money to an ESG-friendly company and hence the average cost of capital for the company is reduced. All these factors increase the company's valuation and at the same time decrease the risk too.

Figure 1. Valuation model: How ESG affects positively the model to yield higher valuation in all aspects



Source: Cornell and Damodaran (2020).

Companies with strong ESG profiles have more competitive advantages than their peers. This may be due to better allocation of resources, better human capital development, and more research and

development. These competitive advantages benefit the companies in the long run to generate abnormal profits. This leads to high EPS, high ROA, ROE, and Tobin Q too.

Figure 2. ESG score and earnings per share link



Source: Giese et al. (2019).

Figure 3. ESG score and profitability link



Source: Giese et al. (2019).

3. RESEARCH METHODOLOGY

3.1. Study sample

This study sample includes companies in the NIFTY 500 index. NIFTY 500 includes the top 500 companies with respect to full market capitalization in India. NIFTY 500 index companies amount to 92.1% of the total market cap in India as of March 2024 (National Stock Exchange of India [NSE], n.d.). This significant proportion highlights the index's comprehensive nature and its role as a benchmark for the broader market performance (Dsouza et al., 2020). By covering such a large percentage of the market, the index provides a reliable gauge for investors looking to assess the overall health and trends of the stock market.

We filtered these 500 companies based on the availability of ESG scores, sourced from CRISIL

Ratings. This process led to the final curation of a sample size comprising 273 companies for the years 2021 and 2022 for our study. CRISIL is the largest rating agency in India and has SEBI approval for ESG ratings (CRISIL Ratings, 2024). The outliers have been removed with a standard deviation greater than +/- 3 to attain statistical robustness. For the filtered 273 companies, all pertinent financial data is sourced from the Bloomberg database. This data, spanning diverse financial metrics allows us to draw meaningful insights into the interplay between ESG performance and financial outcomes within this select group of companies.

We have further split the 273 companies into two broad categories — the service category which are asset-light companies and the manufacturing category which are capital-intensive companies. The services group includes banking, financial

services, information technology (IT), fast-moving consumer goods, media and healthcare. The manufacturing group includes auto, power, metal and mining, chemicals, pharma, transport and infrastructure. This broad bifurcation is made to segregate sectors that require very high capital expenditures (CapEx) and are asset-intensive rather than asset-light services groups. The sectors are sourced from the NIFTY 500 index methodology

from the NSE website (<http://www.nseindia.com/>). The ESG criteria and the investment required for these two categories are significantly different. Out of the 273 shortlisted companies, the service group has 117 companies while the manufacturing group has 156 companies. We have not done a sectoral analysis in this paper but analyzed mentioned two categories at the start. A deeper sectoral analysis can be conducted as an augmentation for this study.

Table 1. NIFTY 500 companies considered for study

Sector	No. of companies	Group
Automobile and auto components	21	Manufacturing – 156 (Capital intensive)
Capital goods and chemicals	55	
Construction and construction materials	17	
Consumer durables	18	
Diversified, metals and mining, oil and gas	25	
Power, realty, telecom and textiles	20	
Consumer services, fast-moving consumer goods	27	
Financial services and healthcare	58	Service – 117 (Asset light)
Information technology and media	32	
Total	273	

3.2. Study variables

To assess the correlation between ESG focus and firm performance, we have strategically chosen four key parameters to gauge the financial health of the selected companies. These parameters, aligned with crucial dimensions of a firm, include return on assets (ROA) for operational performance, return on equity (ROE) for financial performance, *Tobin's Q* for market performance, and earnings per share (EPS) for shareholders' value creation (Kalia & Aggarwal, 2023). These parameters serve as dependent variables in a regression model to study the intricate relationship between our variables.

The independent variables in this study are derived from the comprehensive ESG scores. We not only consider the aggregate ESG score but also the individual environmental (E), social (S), and governance (G) scores of the companies. The nuanced impact of each dimension allows us to dissect and understand the distinct contributions of environmental responsibility, social initiatives, and governance practices on financial performance (Brammer et al., 2009; Margolis et al., 2009). The potential offsetting effects of one dimension

against another underscore the importance of evaluating individual scores.

In our study, we incorporated four essential control variables to bolster the robustness of our regression analysis. The inclusion of control variables is pivotal as it serves to address potential confounding variables, enhances precision, and elevates the overall reliability of our regression model. Specifically, we accounted for firm size (indicated by the total assets of the firm), leverage (expressed as the total debt of the firm), market capitalization (calculated as the product of share price and outstanding shares), and liquidity (measured by the average bid-ask spread over the year). These variables, namely *firm size*, *leverage*, *market capitalization (Mktcap)*, and *share liquidity*, have been identified as crucial factors influencing the relationship under investigation. By incorporating them into our model, we aim to find the relationship between ESG and financial performance and not any other variable. The rationale behind selecting these control variables stems from their recognized significance in previous research, particularly in studies examining the impact of ESG scores on financial performance (refer to Table 3 for details).

Table 2. Rationale for independent and dependent variables

Type	Definition	Description	Reference
Independent	Overall ESG score, E score, S score, G score	CRISIL ESG disclosure score for the firm	Patel and Aditya (2024), Singhania and Saini (2022).
Dependent	Equity value	$Tobin's Q = \frac{\text{current liabilities plus the market value of the share capital}}{\text{divided by the total assets of the firm}}$	Alareeni and Hamdan (2020), Atan et al. (2016), Buallay (2019)
Dependent	Return on equity	$ROE = \frac{\text{Net income}}{\text{divided by the book value of the equity}}$	Cai and He (2014), López-González et al. (2019)
Dependent	Return on assets	$ROA = \frac{\text{Net operating profit after tax (NOPAT)}}{\text{divided by total assets}}$	Giese et al. (2019)
Dependent	Earnings per share	$EPS = \frac{\text{Net income}}{\text{divided by total outstanding shares}}$	Colak et al. (2022)

Table 3. Rationale for control variables

Type	Definition	Description	Reference
Control	Firm size	Value of total assets for the firm	Arayssi et al. (2020)
Control	Leverage	Debt to total assets	Chen (2022)
Control	Market capitalization	Share price * shares outstanding	Esposito De Falco et al. (2021)
Control	Share liquidity	Average bid-ask spread over the year	Chen et al. (2021), Chen (2022)

$$\text{Firm performance} = \alpha + \beta_1 * \text{ESG score} + \beta_2 * \text{Log}_{10}\text{Size} + \beta_3 * \text{Leverage} + \beta_4 * \text{Log}_{10}\text{Growth} + \beta_5 * \text{Liquidity} + \varepsilon \quad (1)$$

$$\text{Firm performance} = \alpha + \beta_1 * \text{E score} + \beta_2 * \text{Log}_{10}\text{Size} + \beta_3 * \text{Leverage} + \beta_4 * \text{Log}_{10}\text{Growth} + \beta_5 * \text{Liquidity} + \varepsilon \quad (2)$$

$$\text{Firm performance} = \alpha + \beta_1 * \text{S score} + \beta_2 * \text{Log}_{10}\text{Size} + \beta_3 * \text{Leverage} + \beta_4 * \text{Log}_{10}\text{Growth} + \beta_5 * \text{Liquidity} + \varepsilon \quad (3)$$

$$\text{Firm performance} = \alpha + \beta_1 * \text{G score} + \beta_2 * \text{Log}_{10}\text{Size} + \beta_3 * \text{Leverage} + \beta_4 * \text{Log}_{10}\text{Growth} + \beta_5 * \text{Liquidity} + \varepsilon \quad (4)$$

As discussed above the firm performance is accessed in four aspects: Market performance measured in the form of Tobin's Q, financial performance measured in the form of ROE, operational performance measured in the form of ROA, and profitability measured as EPS. Thus, the above four equations are regressed with four dependent variables making it 16 unique equations. These 16 equations are regressed for 1) service companies — 117 companies, 2) manufacturing companies — 156 companies.

An alternate method of conducting the research could have been doing sector-wise analysis and doing a panel regression analysis using time series data. These methods can be used as an addition to the current paper and are mentioned in the limitation of this paper.

4. RESULTS

Many papers have been written on ESG scores and the financial performance of companies but many of

them do not do rigorous data testing before doing regression analysis (Mohammad & Wasiuzzaman, 2021; Petersen, 2009). Many papers are also data-focused which results in an overfitting model and the results are not prevalent for out-of-the-sample data (Giese et al., 2019; Harvey et al., 2016). To overcome these limitations, we have done a robust regression analysis assumption check as 1) autocorrelation check with Durbin Watson, 2) homoscedasticity of residuals using a scatter plot, 3) multi-collinearity of independent variables using variable inflation factor (VIF), and 4) normality of dependent variables using normality plot. Also, we have done the regression analysis for two years of data for 2021 and 2022 to get robust results due to more repeat tests.

Table 4 and Table 5 present the descriptive statistics for the companies in the services and manufacturing sectors, respectively, for the years 2022 and 2021. The correlation matrices for services and manufacturing groups are mentioned in Table 6.

Table 4. Descriptive statistics for services group

Parameter	2022				2021				N
	Mean	Std. Dev.	Skewness	Kurtosis	Mean	Std. Dev.	Skewness	Kurtosis	
Tobin's Q	4.7	4.1	1.918	5.523	4.2	3.7	1.455	1.724	117
ROE	20.2	13.1	1.229	3.726	17.1	12.4	-0.368	0.950	117
ROA	13.2	8.1	0.673	0.426	12.5	8.3	0.248	0.080	117
EPS	50.5	74.1	3.814	18.371	38.9	52.5	3.325	14.737	117
ESG score	53.3	7.3	0.144	-0.644	59.5	6.6	0.166	-0.190	117
E score	47.0	12.8	0.312	-0.150	51.2	11.9	0.457	-0.074	117
S score	52.8	9.4	-0.008	-0.531	54.2	7.4	-0.330	-0.441	117
G score	69.9	5.2	-0.266	-0.181	70.1	5.9	-0.985	1.471	117
Log_Mktcap	5.4	0.5	0.945	0.720	5.3	0.5	0.781	0.573	117
Liquidity	1.5	6.2	9.426	94.989	0.9	1.6	5.356	37.064	117
Log_size	5.1	0.7	0.644	-0.281	5.0	0.7	0.582	-0.336	117
Leverage	24.1	25.9	1.011	-0.279	24.5	26.0	0.989	-0.306	117

Note: Data for 2021-2022.

Table 5. Descriptive statistics for manufacturing group

Parameter	2022				2021				N
	Mean	Std. Dev.	Skewness	Kurtosis	Mean	Std. Dev.	Skewness	Kurtosis	
Tobin's Q	3.7	5.1	6.972	64.825	3.6	3.9	4.118	25.186	156
ROE	16.7	12.4	-0.578	5.683	14.3	11.5	-0.324	2.277	156
ROA	10.6	6.7	.868	1.579	9.6	6.8	0.509	1.980	156
EPS	45.3	80.3	4.728	27.781	37.1	72.1	5.072	34.226	156
ESG score	52.2	7.3	0.383	-0.079	53.9	5.9	-0.075	0.090	156
E score	33.8	9.9	0.418	-0.388	41.7	10.2	0.388	-0.536	156
S score	45.1	9.0	0.410	-0.940	49.8	7.1	0.467	0.025	156
Gscore	65.6	4.9	-0.106	-0.599	67.0	6.0	-0.753	0.595	156
Log_Mktcap	5.3	0.5	0.440	0.448	5.2	0.6	0.132	0.208	156
Liquidity	1.4	4.2	5.955	40.903	2.0	7.0	6.170	40.736	156
Log_size	5.1	0.7	0.782	0.037	5.0	0.7	0.782	0.032	156
Leverage	16.5	16.4	1.044	0.662	17.0	16.3	0.843	-0.163	156

Note: Data for 2021-2022.

Table 6. Correlation matrix for services group

	ESG score	E score	S score	G score	ROE	Tobin's Q	EPS	ROA	Log_Mktcap	Liq	Log_size	Leverage
ESG score		0.104	0.172	0.238**	0.035	0.117	0.054	0.097	0.047	0.109	-0.007	-0.028
E score	0.104		0.691**	0.360**	0.126	-0.025	0.03	0.164	0.415**	-0.009	0.369**	-0.023
S score	0.172	0.691**		0.328**	0.129	0.048	0.06	0.184*	0.380**	0.045	0.261**	-0.033
G score	0.238**	0.360**	0.328**		0.232*	0.249**	0.054	0.299**	0.15	0.095	-0.136	-0.156
ROE	0.035	0.126	0.129	0.232*		0.510**	0.190*	0.682**	0.184*	0.071	-0.244**	-0.282**
Tobin's Q	0.117	-0.025	0.048	0.249**	0.510**		0.155	0.662**	0.320**	0.218*	-0.447**	-0.427**
EPS	0.054	0.03	0.06	0.054	0.190*	0.155		0.206*	0.177	0.750**	0.012	-0.146
ROA	0.097	0.164	0.184*	0.299**	0.682**	0.662**	0.206*		0.295**	0.094	-0.327**	-0.455**
Log_Mktcap	0.047	0.415**	0.380**	0.15	0.184*	0.320**	0.177	0.295**		0.041	0.500**	-0.141
Liquidity	0.109	-0.009	0.045	0.095	0.071	0.218*	0.750**	0.094	0.041		-0.127	-0.123
Log_size	-0.007	0.369**	0.261**	-0.136	-0.244**	-0.447**	0.012	-0.327**	0.500**	-0.127		0.519**
Leverage	-0.028	-0.023	-0.033	-0.156	-0.282**	-0.427**	-0.146	-0.455**	-0.141	-0.123	0.519**	

Note: * Correlation is significant at the 5% level; ** Correlation is significant at the 1% level.

Table 7. Correlation matrix for manufacturing group

	ESG score	E score	S score	G score	ROE	Tobin's Q	EPS	ROA	Log_Mktcap	Liq	Log_size	Leverage
ESG score		0.148	0.159*	0.068	-0.106	-0.018	0.018	-0.193*	0.087	-0.018	0.095	0.092
E score	0.148		0.688**	0.213**	-0.014	0.181*	0.117	-0.045	0.393**	0.058	0.235**	0.048
S score	0.159*	0.688**		0.099	0.139	0.102	0.047	0.008	0.375**	-0.004	0.347**	0.107
G score	0.068	0.213**	0.099		0.175*	0.186*	0.101	0.296**	0.156	-0.022	-0.135	-0.085
ROE	-0.106	-0.014	0.139	0.175*		0.227**	0.229**	0.713**	0.147	0.043	-0.084	-0.183*
Tobin's Q	-0.018	0.181*	0.102	0.186*	0.227**		0.15	0.363**	0.197*	0.216**	-0.339**	-0.192*
EPS	0.018	0.117	0.047	0.101	0.229**	0.15		0.234**	0.237**	0.540**	0.039	-0.215**
ROA	-0.193*	-0.045	0.008	0.296**	0.713**	0.363**	0.234**		0.146	0.111	-0.254**	-0.313**
Log_Mktcap	0.087	0.393**	0.375**	0.156	0.147	0.197*	0.237**	0.146		0.052	0.693**	0.156
Liquidity	-0.018	0.058	-0.004	-0.022	0.043	0.216**	0.540**	0.111	0.052		-0.128	-0.173*
Log_size	0.095	0.235**	0.347**	-0.135	-0.084	-0.339**	0.039	-0.254**	0.693**	-0.128		0.507**
Leverage	0.092	0.048	0.107	-0.085	-0.183*	-0.192*	-0.215**	-0.313**	0.156	-0.173*	0.507**	

Note: * Correlation is significant at the 5% level; ** Correlation is significant at the 1% level.

The correlation matrices above indicate there are some variables with positive correlation 1) *firm size* and *market capitalization*, 2) *ROE* and *ROA*, and 3) *liquidity* and *EPS*. The *market capitalization* variable is used in this study as a proxy for growth. Both *market capitalization* and *size* have been used in similar studies and hence we have included both them as control variables. *ROE* and *ROA* are used as dependent variables in separate equations. *Liquidity* is used as a control variable while *EPS* is

an independent variable. Overall, Table 7 suggests an absence of strong multicollinearity. This conclusion is further supported by statistical tests. We used the Durbin-Watson test to assess serial autocorrelation and the VIF to test for multicollinearity. The results confirmed that there is neither multicollinearity nor autocorrelation among the variables in any of the regression equations.

Table 8 and Table 9 provide the regression coefficient for the services category.

Table 8. Summary of results for service group: *Tobin Q* and *ROE*

	Dependent variable: <i>Tobin's Q</i>								Dependent variable: <i>ROE</i>							
	Independent variables: Regression coefficients															
	2021	2022	2021	2022	2021	2022	2021	2022	2021	2022	2021	2022	2021	2022	2021	2022
α	0.88	-3.43	0.10	-1.55	0.40	-1.39	0.12	-2.59	-16.10	7.95	-3.92	11.53	-15.56	7.11	-34.85	-10.38
ESG score	-0.02	0.04	-	-	-	-	-	-	0.38**	0.02	-	-	-	-	-	-
E score	-	-	-0.02	-0.005	-	-	-	-	-	-	0.08	0.16*	-	-	-	-
S score	-	-	-	-	-0.01	-0.01	-	-	-	-	-	-	0.46**	0.15	-	-
G score	-	-	-	-	-	-	0.00	0.02	-	-	-	-	-	-	0.47**	0.30
Growth	6.09**	6.42**	6.07**	6.47**	6.05**	6.48**	6.00**	6.39**	8.07**	10.56**	9.20**	9.72**	7.56**	9.78**	7.84*	9.61**
Liquidity	0.20	0.05	0.20	0.06	0.20	0.06	0.19	0.06	0.87**	-0.01	0.93	-0.01	0.81	-0.02	0.96	-0.02
Size	-5.66**	-5.81**	-5.60**	-5.79**	-5.69**	-5.81**	-5.70**	-5.78**	-6.42	-9.13**	-6.33*	-10.2**	-6.30*	-9.47**	-4.65*	-8.37**
Leverage	0.02*	0.02*	0.029**	0.02*	0.029**	0.028*	0.028**	0.028*	-0.05	0.01	-0.04	0.02	-0.07	0.01	-0.03	0.00
R ²	0.68	0.62	0.68	0.62	0.68	0.62	0.68	0.62	0.23	0.18	0.20	0.20	0.26	0.19	0.25	0.20
Adj R ²	0.66	0.61	0.66	0.60	0.66	0.60	0.66	0.60	0.20	0.15	0.17	0.17	0.28	0.16	0.21	0.16
F stat	46.72**	36.78**	46.84**	36.08**	46.48**	36.08**	46.40**	36.12**	6.77**	5.01**	5.67**	5.68**	7.79**	5.34**	7.25**	5.45**
DW stat	2.22	2.15	2.22	2.16	2.22	2.16	2.14	2.17	2.05	2.09	2.08	2.04	2.04	2.08	2.07	2.05

Note: * Correlation is significant at the 10% level; ** Correlation is significant at the 5% level.

Table 9. Summary of results for service group: ROA and EPS

	Dependent variable: ROA								Dependent variable: EPS							
	Independent variables: Regression coefficients								Independent variables: Regression coefficients							
	2021	2022	2021	2022	2021	2022	2021	2022	2021	2022	2021	2022	2021	2022	2021	2022
α	-9.64	-2.66	0.60	2.63	-7.33	-0.58	-18.34	-12.70	-113	-63	-90	-85	-115	-76	-149	-54
ESG score	0.32**	0.07	-	-	-	-	-	-	0.74	-0.34	-	-	-	-	-	-
E score	-	-	0.11*	0.11*	-	-	-	-	-	-	0.11	-0.32	-	-	-	-
S score	-	-	-	-	0.31**	0.11*	-	-	-	-	-	-	0.99*	-0.34	-	-
G score	-	-	-	-	-	-	0.29**	0.21*	-	-	-	-	-	-	0.92	-0.40
Growth	5.74**	8.90**	6.46*	8.38**	5.63**	8.34**	5.93**	8.28**	-15.08	9.04	-12.73	10.44	-16.4*	10.59	-15.49*	10.07
Liquidity	0.62	-0.02	0.65	-0.02	0.59	-0.02	0.68*	-0.02	23.88**	9.02**	23.99**	8.98**	23.72**	9.00**	24.03**	9.00**
Size	-5.26*	-7.01**	-5.50**	-7.80**	-5.09**	-7.29**	-4.07**	-6.49**	36.35**	15.40	36.74**	17.68	36.49**	16.27	39.74**	14.46
Leverage	-0.06	-0.02	-0.05*	-0.01	-0.07**	-0.02	-0.05	-0.03	-0.61**	-0.33	-0.59**	-0.36	-0.66**	-0.34	-0.59**	-0.33
R ²	0.38	0.40	0.35	0.42	0.39	0.41	0.37	0.41	0.55	0.59	0.54	0.60	0.56	0.59	0.55	0.59
Adj R ²	0.35	0.37	0.32	0.39	0.36	0.38	0.34	0.38	0.53	0.58	0.52	0.58	0.54	0.58	0.53	0.58
F stat	13.63**	14.49**	11.87**	15.73**	14.07**	15.20**	12.79**	15.28**	27.02**	32.41**	26.30**	32.57**	27.93**	32.47**	27.28**	32.36**
DW stat	2.14	2.07	2.15	2.07	2.15	2.06	2.15	2.07	2.08	2.08	2.08	2.09	2.06	2.08	2.15	2.09

Note: * Correlation is significant at the 10% level; ** Correlation is significant at the 5% level.

For the services group of companies, the analysis reveals the following insights. All four scores — E score, S score, G score, and ESG score — are significant independent variables for the dependent variables ROA and ROE. This signifies that ESG factors, as well as the overall ESG performance, play crucial roles in determining the financial performance of service companies. The significant influence of these scores indicates

that service companies benefit from integrating ESG principles into their operations. The positive relationship suggests that service companies with better ESG performance are more efficient in their operations and generate higher returns on assets and equity.

A similar exercise for the manufacturing group leads result is tabulated below.

Table 10. Summary of results for manufacturing group: Tobin's Q and ROE

	Dependent variable: Tobin's Q								Dependent variable: ROE							
	Independent variables: Regression coefficients								Independent variables: Regression coefficients							
	2021	2022	2021	2022	2021	2022	2021	2022	2021	2022	2021	2022	2021	2022	2021	2022
α	1.62	-0.88	2.03	-1.22	1.98	-2.08	0.99	4.26	7.37	8.04	0.66	-0.29	1.81	-1.55	2.56	-12.58
ESG score	0.02	-0.01	-	-	-	-	-	-	-0.21	-0.17	-	-	-	-	-	-
E score	-	-	0.00	0.040	-	-	-	-	-	-	-0.21**	-0.120	-	-	-	-
S Score	-	-	-	-	0.01	0.07**	-	-	-	-	-	-	0.12	0.19	-	-
G score	-	-	-	-	-	-	0.020	-0.09	-	-	-	-	-	-	0.000	0.21
Growth	5.89**	8.43**	5.99**	8.09**	5.95**	8.09**	5.93**	8.88**	8.89**	8.92**	9.59**	9.68**	7.12**	7.84**	7.64**	7.58**
Liquidity	0.04	-0.09	0.04	0.09	0.04	0.09	0.04	0.08	-0.17	-0.09	-0.17	-0.08	-0.16	-0.09	-0.16	-0.06
Size	-6.05**	-8.06**	-6.06**	8.01**	-6.1**	-8.24**	-6.00**	-8.47**	-5.07**	-5.64**	-4.99**	-5.73**	-5.62**	-6.04**	-5.06**	-4.66*
Leverage	0.03*	0.07**	0.031*	0.07**	0.03*	0.07**	0.03*	0.07**	-0.14**	-0.06	-0.13**	-0.07	-0.13**	-0.07	-0.14**	-0.08
R ²	0.56	0.52	0.56	0.52	0.56	0.53	0.56	0.52	0.15	0.11	0.17	0.11	0.15	0.11	0.15	0.10
Adj R ²	0.54	0.50	0.54	0.50	0.54	0.51	0.54	0.51	0.12	0.08	0.14	0.08	0.12	0.08	0.12	0.07
F stat	37.62**	31.90**	37.55**	32.50	37.58**	33.75	37.64**	32.75**	5.37**	3.62**	6.13**	3.55**	5.16**	3.82**	5.03**	3.46**
DW stat	2.09	2.09	2.11	2.10	2.10	2.15	2.09	2.17	1.76	1.91	1.74	1.93	1.75	1.87	1.75	1.87

Note: * Correlation is significant at the 10% level; ** Correlation is significant at the 5% level.

Table 11. Summary of results for Manufacturing group: ROA and EPS

	Dependent variable: ROA								Dependent variable: EPS							
	Independent variables: Regression coefficients								Independent variables: Regression coefficients							
	2021	2022	2021	2022	2021	2022	2021	2022	2021	2022	2021	2022	2021	2022	2021	2022
α	5.97	11.37	2.66	3.44	3.43	3.76	3.58	-7.14	-128	-157	-112	-147	-117	-145	-100	-235
ESG score	-0.11	-0.17**	-	-	-	-	-	-	0.54	0.21	-	-	-	-	-	-
E score	-	-	-0.09	-0.10**	-	-	-	-	-	-	0.43	0.050	-	-	-	-
S Score	-	-	-	-	-0.01	0.01	-	-	-	-	-	-	0.46	-0.29	-	-
G score	-	-	-	-	-	-	0.000	0.18*	-	-	-	-	-	-	0.025	1.45
Growth	7.54**	7.45**	7.72**	8.02**	6.93**	7.16**	6.9**	6.27**	26.14*	27.59*	25.45*	27.5*	27.44**	29.16**	30.41**	20.54
Liquidity	-0.08	-0.02	-0.09	-0.01	-0.08	-0.02	-0.08	0.00	5.16**	9.81**	5.16**	9.80**	5.16**	9.81**	5.13**	9.99**
Size	-5.8**	-6.14**	-5.76**	-6.20**	-5.74**	-6.11**	-5.79**	-5.29**	0.18	9.05	-0.02	9.04	-2.11	9.69	-0.79	15.29
Leverage	-0.04	-0.03	-0.04	-0.04	-0.04	-0.04	-0.04	-0.05	-0.69*	-0.97	-0.69*	-0.96**	-0.07*	-0.97**	-0.68**	-1.01**
R ²	0.25	0.30	0.26	0.29	0.25	0.27	0.25	0.28	0.37	0.36	0.37	0.36	0.37	0.36	0.37	0.37
Adj R ²	0.23	0.28	0.24	0.27	0.22	0.25	0.22	0.26	0.35	0.34	0.35	0.34	0.35	0.34	0.35	0.35
F stat	10.1**	12.99**	1049**	12.15**	9.77**	11.04**	9.77**	11.93**	17.45**	17.07**	17.55**	17.05**	17.44**	17.11*	17.38**	17.53**
DW stat	1.79	1.93	1.79	1.88	1.79	1.90	1.79	1.87	2.24	2.13	2.25	2.13	2.25	2.13	2.26	2.16

Note: * Correlation is significant at the 10% level; ** Correlation is significant at the 5% level.

In the case of the manufacturing group of companies, the analysis reveals the following. Although the environmental score exhibits significance in relation to ROA and Tobin's Q, other ESG variables do not show notable significance. While the G score and S score are statistically

significant, their impact remains relatively modest. This suggests that within the manufacturing group, the ESG score displays initial signs of a positive correlation with financial performance, yet it falls short of the robust association observed within the services group. Consequently, the influence of

ESG scores on financial outcomes appears more pronounced for service companies compared to their manufacturing counterparts at this stage.

5. DISCUSSION

5.1. For services group

For the dependent variable ROE, the G score has the highest positive coefficient among the ESG scores at 0.47, followed by the S score with a coefficient of 0.46. This indicates that governance factors are the most influential in enhancing the return on equity for service companies. The significant S score underscores the importance of social responsibility initiatives in driving profitability. For ROA, the overall ESG score has the highest positive coefficient at 0.32, followed by the S score with a coefficient of 0.31. This highlights the importance of an integrated ESG approach in improving the efficiency of asset utilization in service companies.

For EPS, the S score was significant, but only in the year 2021. This suggests that social factors had a notable impact on earnings per share in that specific year, possibly due to heightened attention to social issues such as employee health and safety, customer relations, and community support during that period. However, the lack of significance in other years indicates that the impact of social factors on EPS may vary depending on specific circumstances and external events.

For the services sector, a higher ESG score is associated with enhanced financial performance, substantiating the positive impact of ESG considerations on the bottom line. The findings of this analysis reveal a generally robust overall model, evidenced by R^2 values consistently hovering around 40% across all equations, except the ROE equation. It is important to highlight the relative underperformance of the ROE model, which exhibits a modest R^2 of only 20%. A key insight drawn from the results is the lack of evidence supporting the idea that ESG scores lead to financial outperformance for the companies under scrutiny.

5.2. For manufacturing group

The S score is significant for Tobin's Q with a coefficient of 0.07. This indicates that social factors have a positive impact on the market valuation of manufacturing companies. While the coefficient is relatively small, it suggests that stakeholders value social responsibility, even if its immediate financial impact is modest. The G score is significant for ROA with a coefficient of 0.18. This implies that governance factors play a crucial role in enhancing the operational efficiency and asset utilization of manufacturing firms. Effective governance practices can lead to better decision-making and resource management, thereby improving ROA.

The positive coefficients for the manufacturing group are smaller in magnitude compared to those in the services group. This difference could be attributed to the inherent operational and financial dynamics of manufacturing companies. Consequently, the impact of ESG factors, while positive, may be less pronounced in the short term

as these firms work through higher initial expenditures and longer investment cycles.

The E score shows significant negative coefficients for both ROA (-0.10) and ROE (-0.21). This suggests that environmental initiatives, such as reducing emissions, improving energy efficiency, and sustainable resource management, entail substantial upfront costs for manufacturing companies.

Manufacturing companies typically operate with large-scale production facilities and machinery that require significant capital investments. The expenses related to upgrading or retrofitting these facilities to meet environmental standards can be substantial. This results in increased operating costs in the initial years as companies invest in greener technologies and processes. Despite the initial negative impact on profitability, the long-term benefits of environmental initiatives can outweigh the costs. Improved energy efficiency, waste reduction, and sustainable practices can lead to cost savings, enhanced brand reputation, and compliance with regulatory requirements, which may eventually result in improved financial performance.

6. CONCLUSION

Our research aims to find a correlation between the CRISIL ESG score and the financial performance of NIFTY 500 companies. Two hundred and seventy-three companies were selected which had CRISIL ESG scores. These 273 companies were divided into two categories — services group (117 companies) and manufacturing group (156 companies) based on NSE classification. The services group included asset-light sectors like banking and IT, whereas the manufacturing group included capital-intensive sectors like oil and gas, metals, mining, etc. Financial data for two years 2021 and 2022 have been considered. To analyze financial performance four parameters have been considered — Tobin's Q, ROE, ROA, and EPS.

In a sample comprising 117 service companies, both the overall ESG score and the independent E, S, and G scores emerged as significant variables for ROA and ROE across the years 2021 and 2022. This underscores a clear positive correlation between ESG scores and financial performance within the service sector. Conversely, among manufacturing companies, only the social and governance scores showed significance, specifically within the 2022 dataset. Notably, the Environmental score exhibited a negative significance for both ROA and ROE in this group. The ESG score did not demonstrate positive significance across any of the four performance metrics — Tobin's Q, ROE, ROA, and EPS.

This research on the impact of ESG focus on firm performance is crucial for future researchers as it addresses the evolving priorities of stakeholders and the long-term sustainability of businesses. Understanding how ESG initiatives contribute to improved firm performance helps companies align their strategies with societal expectations, regulatory requirements, and investor demands. Regarding the services group, it demonstrates a positive correlation between ESG scores and financial performance. This suggests that companies in this asset-light services group would benefit from

a heightened focus on improving their ESG scores, potentially leading to even better financial outcomes. On the other hand, the manufacturing group exhibits a slightly significant negative association between E score and profitability, although social scores and governance scores show positive significance in some cases. This divergence might be attributed to the substantial investments required by manufacturing companies to enhance their ESG scores, implying a longer gestation period before translating into improved financial performance.

Considering an investor's perspective, the study underscores the importance of scrutinizing ESG scores before making investment decisions. With a proven positive association between ESG and financial performance observed in the service companies in India, heightened investor demand for better ESG scores could incentivize corporations to prioritize sustainability initiatives. This, in turn, might lead to a reduction in the cost of capital for companies with strong ESG practices.

From a regulatory standpoint, SEBI has introduced several reforms, including the recent BRSR and BRSR core. The requirement for SEBI approval for ESG rating providers before disclosing ESG scores has led to some companies withdrawing their scores, resulting in reduced data availability. This is a cautionary note about potential over-regulation, as excessively stringent measures could have unintended consequences detrimental to society and the environment. The suggestion is to maintain the current regulatory framework for

an adequate period and assess material impacts before considering further actions.

We understand that capital-intensive firms require a lot more resources and time to improve ESG scores and hence a longer gestation period for the scores to get reflected in financial performance too. But overall from an investor's point of view, ESG score is becoming a more and more important criterion for investing. The companies will take some time to assimilate and report as per new regulations and hence more time is required to stabilize the ESG score as per new criteria laid out by SEBI.

This study can be made more elaborate by expanding the universe and including NIFTY 1000 companies. Also, data can be taken for more years rather than only two as two years is a relatively short period to assess the long-term impact of ESG initiatives, which often require more time to manifest in financial performance and operational outcomes. While the NIFTY 500 includes a diverse set of companies, it is still confined to the Indian market. The findings may not be generalizable to companies in other regions with different regulatory environments and market dynamics. With regards to the control variables, there may be other confounding variables that affect firm performance which are not controlled for in the analysis. A deep dive can be made on a sectoral basis rather than two categories as done in this study. The period can also be extended from 2 years to 4-5 years for a robust study. We plan to incorporate these changes into our next study.

REFERENCES

- Abdi, Y., Li, X., & Càmara-Turull, X. (2020). Impact of sustainability on firm value and financial performance in the air transport industry. *Sustainability*, *12*(23), Article 9957. <https://doi.org/10.3390/su12239957>
- Abdi, Y., Li, X., & Càmara-Turull, X. (2022). Exploring the impact of sustainability (ESG) disclosure on firm value and financial performance (FP) in airline industry: The moderating role of size and age. *Environment, Development and Sustainability*, *24*(4), 5052-5079. <https://doi.org/10.1007/s10668-021-01649-w>
- Agarwal, V. (2003). From tradition to transformation: ESG initiatives in Indian corporate landscape. *Chartered Secretary, October 2023*, 81-87. <https://www.icsi.edu/media/webmodules/CSJ/October/12.pdf>
- Alareeni, B. A., & Hamdan, A. (2020). ESG impact on performance of US S&P 500-listed firms. *Corporate Governance*, *20*(7), 1409-1428. <https://doi.org/10.1108/CG-06-2020-0258>
- Arayssi, M., Jizi, M., & Tabaja, H. H. (2020). The impact of board composition on the level of ESG disclosures in GCC countries. *Sustainability Accounting, Management and Policy Journal*, *11*(1), 137-161. <https://doi.org/10.1108/SAMPJ-05-2018-0136>
- Atan, R., Razali, F. A., Said, J., & Zainun, S. (2016). Environmental, social and governance (ESG) disclosure and its effect on firm's performance: A comparative study. *International Journal of Economics and Management*, *10*(S2), 355-375. [http://www.ijem.upm.edu.my/vol10_noS2/\(8\)-Paper%2010-IJEM%20S2%202016%20-%20Ruhaya%20\(355-375\).pdf](http://www.ijem.upm.edu.my/vol10_noS2/(8)-Paper%2010-IJEM%20S2%202016%20-%20Ruhaya%20(355-375).pdf)
- Auer, B. R., & Schuhmacher, F. (2016). Do socially (ir)responsible investments pay? New evidence from international ESG data. *The Quarterly Review of Economics and Finance*, *59*, 51-62. <https://doi.org/10.1016/j.qref.2015.07.002>
- Bahadır, O., & Akarsu, S. (2024). Does company information environment affect ESG-financial performance relationship? Evidence from European markets. *Sustainability*, *16*(7), Article 2701. <https://doi.org/10.3390/su16072701>
- Benlemlih, M., & Girerd-Potin, I. (2017). Corporate social responsibility and firm financial risk reduction: On the moderating role of the legal environment. *Journal of Business Finance & Accounting*, *44*(7-8), 1137-1166. <https://doi.org/10.1111/jbfa.12251>
- Berg, F., Kölbl, J. F., & Rigobon, R. (2019). *Aggregate confusion: The divergence of ESG ratings*. <https://doi.org/10.2139/ssrn.3438533>
- Bhattacharya, S., & Sharma, D. (2019). Do environment, social and governance performance impact credit ratings: A study from India. *International Journal of Ethics and Systems*, *35*(3), 466-484. <https://doi.org/10.1108/IJOES-09-2018-0130>
- Bowen, H. R. (2013). *Social responsibilities of the businessman*. University of Iowa Press. <https://doi.org/10.2307/j.ctt20q1w8f>
- Brammer, S., Brooks, C., & Pavelin, S. (2009). The stock performance of America's 100 best corporate citizens. *The Quarterly Review of Economics and Finance*, *49*(3), 1065-1080. <https://doi.org/10.1016/j.qref.2009.04.001>

- Brammer, S., Jackson, G., & Matten, D. (2012). Corporate social responsibility and institutional theory: New perspectives on private governance. *Socio-Economic Review*, 10(1), 3-28. <https://doi.org/10.1093/ser/mwr030>
- Buallay, A. (2019). Is sustainability reporting (ESG) associated with performance? Evidence from the European banking sector. *Management of Environmental Quality: An International Journal*, 30(1), 98-115. <https://doi.org/10.1108/MEQ-12-2017-0149>
- Cai, L., & He, C. (2014). Corporate environmental responsibility and equity prices. *Journal of Business Ethics*, 125(4), 617-635. <https://doi.org/10.1007/s10551-013-1935-4>
- Caplan, L., Griswold, J., & Jarvis, W. (2013). *From SRI to ESG: The Changing world of responsible investing*. Common Fund Institute. <https://files.eric.ed.gov/fulltext/ED559300.pdf>
- Carroll, A. B. (2009). A history of corporate social responsibility: Concepts and practices. In A. Crane, D. Matten, A. McWilliams, J. Moon, & D. S. Siegel (Eds.), *The Oxford handbook of corporate social responsibility* (pp. 19-46). Oxford University Press. <https://doi.org/10.1093/oxfordhb/9780199211593.003.0002>
- Chaitanya, K. (2020). *Risk, returns and resilience: Integrating ESG in the financial sector*. EY. https://assets.ey.com/content/dam/ey-sites/ey-com/en_in/news/2020/12/risk-returns-and-resilience.pdf
- Chen, M., von Behren, R., & Mussalli, G. (2021). The unreasonable attractiveness of more ESG data. *The Journal of Portfolio Management*, 48(1), 147-162. <https://doi.org/10.3905/jpm.2021.1.281>
- Chen, Q. (2022). Relationship between financial asset allocation, leverage ratio, and risk-taking of small- and medium-sized enterprises in China: Taking environment-related industries as an example. *Journal of Environmental and Public Health*, 2022, 1-10. <https://doi.org/10.1155/2022/2431428>
- Chih, H.-L., Chih, H.-H., & Chen, T.-Y. (2010). On the determinants of corporate social responsibility: International evidence on the financial industry. *Journal of Business Ethics*, 93(1), 115-135. <https://doi.org/10.1007/s10551-009-0186-x>
- Colak, G., Hickman, K., Korkeamäki, T., & Meyer, N. O. (2022). ESG issues and career prospects of directors: Evidence from the international director labor market. *Financial Markets, Institutions & Instruments*, 31(4), 147-203. <https://doi.org/10.1111/fmii.12168>
- Cornell, B., & Damodaran, A. (2020). *Valuing ESG: Doing good or sounding good?* NYU Stern School of Business. <https://doi.org/10.2139/ssrn.3557432>
- CRISIL Ratings. (2024, April 25). *CRISIL ESG Ratings & Analytics Ltd gets SEBI nod to offer ESG ratings*. <https://www.crisilratings.com/en/home/newsroom/press-releases/2024/04/crisil-esg-ratings-and-analytics-limited-gets-sebi-nod-to-offer-esg-ratings.html>
- DeLisle, R. J., Grant, A., & Mao, R. (2021). *Does ESG decrease information asymmetry? Evidence from earnings conference call tones and subsequent returns*. https://www.efmaefm.org/OEFMAMEETINGS/EFMA%20ANNUAL%20MEETINGS/2021-Leeds/papers/EFMA%202021_stage-2049_question-Full%20Paper_id-330.pdf
- Dsouza, S., Bhatia, D., & Dey, P. (2020). NIFTY 500 analysis with EPS yardstick. *Journal of Commerce & Accounting Research*, 9(4), 55-62. https://www.researchgate.net/publication/362468291_NIFTY_500_ANALYSIS_WITH_EPS_YARDSTICK
- El Ghoul, S., Guedhami, O., Kwok, C. C. Y., & Mishra, D. R. (2011). Does corporate social responsibility affect the cost of capital? *Journal of Banking & Finance*, 35(9), 2388-2406. <https://doi.org/10.1016/j.jbankfin.2011.02.007>
- Erfle, S. E., & Fratantuono, M. J. (1992). Interrelations among corporate social performance, social disclosure and financial performance: an empirical investigation. In *The Proceedings of the Alternative Perspectives in Finance Conference* (pp. 181-218).
- Esposito De Falco, S., Scandurra, G., & Thomas, A. (2021). How stakeholders affect the pursuit of the environmental, social, and governance. Evidence from innovative small and medium enterprises. *Corporate Social Responsibility and Environmental Management*, 28(5), 1528-1539. <https://doi.org/10.1002/csr.2183>
- Giese, G., Lee, L.-E., Melas, D., Nagy, Z., & Nishikawa, L. (2019). Foundations of ESG investing: How ESG affects equity valuation, risk, and performance. *The Journal of Portfolio Management*, 45(5), 69-83. <https://doi.org/10.3905/jpm.2019.45.5.069>
- Girerd-Potin, I., Jimenez-Garcès, S., & Louvet, P. (2014). Which dimensions of social responsibility concern financial investors. *Journal of Business Ethics*, 121(4), 559-576. <https://doi.org/10.1007/s10551-013-1731-1>
- Godfrey, P. C., Merrill, C. B., & Hansen, J. M. (2009). The relationship between corporate social responsibility and shareholder value: An empirical test of the risk management hypothesis. *Strategic Management Journal*, 30(4), 425-445. <https://doi.org/10.1002/smj.750>
- Hartzmark, S. M., & Sussman, A. B. (2019). Do investors value sustainability? A natural experiment examining ranking and fund flows. *The Journal of Finance*, 74(6), 2789-2837. <https://doi.org/10.1111/jofi.12841>
- Harvey, C. R., Liu, Y., & Zhu, H. (2016). ... and the cross-section of expected returns. *Review of Financial Studies*, 29(1), 5-68. <https://doi.org/10.1093/rfs/hhv059>
- Heinzer, I., & Mezzanzanica, A. (2022). *Does a company's ESG score have a measurable impact on its market value?* Deloitte. <https://www2.deloitte.com/content/dam/Deloitte/ch/Documents/financial-advisory/deloitte-ch-company-ESG-score-impact-on-market-value.pdf>
- Kalia, D., & Aggarwal, D. (2023). Examining impact of ESG score on financial performance of healthcare companies. *Journal of Global Responsibility*, 14(1), 155-176. <https://doi.org/10.1108/JGR-05-2022-0045>
- Kim, J., & Park, T. (2020). How corporate social responsibility (CSR) saves a company: The role of gratitude in buffering vindictive consumer behavior from product failures. *Journal of Business Research*, 117, 461-472. <https://doi.org/10.1016/j.jbusres.2020.06.024>
- Kiplinger. (2021, October 12). *Kiplinger — Domini Poll: ESG investing is gaining traction*. <https://www.kiplinger.com/investing/esg/603503/esg-investing-is-gaining-traction>
- Kumar, S., Sharma, D., Rao, S., Lim, W. M., & Mangla, S. K. (2022). Past, present, and future of sustainable finance: Insights from big data analytics through machine learning of scholarly research. *Annals of Operations Research*. <https://doi.org/10.1007/s10479-021-04410-8>
- Lantos, G. P. (2001). The boundaries of strategic corporate social responsibility. *Journal of Consumer Marketing*, 18(7), 595-632. <https://doi.org/10.1108/07363760110410281>

- Lee, E. M., Park, S.-Y., Rapert, M. I., & Newman, C. L. (2012). Does perceived consumer fit matter in corporate social responsibility issues? *Journal of Business Research*, 65(11), 1558-1564. <https://doi.org/10.1016/j.jbusres.2011.02.040>
- López-González, E., Martínez-Ferrero, J., & García-Meca, E. (2019). Corporate social responsibility in family firms: A contingency approach. *Journal of Cleaner Production*, 211, 1044-1064. <https://doi.org/10.1016/j.jclepro.2018.11.251>
- Margolis, J. D., Elfenbein, H. A., & Walsh, J. P. (2009). *Does it pay to be good ... and does it matter? A meta-analysis of the relationship between corporate social and financial performance*. <https://doi.org/10.2139/ssrn.1866371>
- Matten, D., & Moon, J. (2008). "Implicit" and "explicit" CSR: A conceptual framework for a comparative understanding of corporate social responsibility. *Academy of Management Review*, 33(2), 404-424. <https://doi.org/10.5465/amr.2008.31193458>
- Mohammad, W. M. W., & Wasizzaman, S. (2021). Environmental, social and governance (ESG) disclosure, competitive advantage and performance of firms in Malaysia. *Cleaner Environmental Systems*, 2, Article 100015. <https://doi.org/10.1016/j.cesys.2021.100015>
- MSCI. (n.d.). *The evolution of ESG investing*. <https://www.msci.com/esg-101-what-is-esg/evolution-of-esg-investing>
- Narula, R., Rao, P., Kumar, S., & Matta, R. (2024). ESG scores and firm performance- evidence from emerging market. *International Review of Economics & Finance*, 89(Part A), 1170-1184. <https://doi.org/10.1016/j.iref.2023.08.024>
- National Stock Exchange of India (NSE). (n.d.). *Nifty 500 Index*. <https://www.niftyindices.com/indices/equity/broad-based-indices/nifty-500>
- Park, J., Lee, H., & Kim, C. (2014). Corporate social responsibilities, consumer trust and corporate reputation: South Korean consumers' perspectives. *Journal of Business Research*, 67(3), 295-302. <https://doi.org/10.1016/j.jbusres.2013.05.016>
- Patel, V., & Aditya, K. (2024). ESG and its impact on performance: A study of metal industry in India. *Business Review*, 3(1), 1-10. <https://www.opju.ac.in/opjubr/documents/volume3/1.pdf>
- Singhania, M., & Saini, N. (2022). Systems approach to environment, social and governance (ESG): Case of reliance industries. *Sustainable Operations and Computers*, 3, 103-117. <https://doi.org/10.1016/j.susoc.2021.11.003>
- Petersen, M. A. (2009). Estimating standard errors in finance panel data sets: Comparing approaches. *The Review of Financial Studies*, 22(1), 435-480. <https://doi.org/10.1093/rfs/hhn053>
- Rodgers, W., Choy, H. L., & Guiral, A. (2013). Do investors value a firm's commitment to social activities? *Journal of Business Ethics*, 114(4), 607-623. <https://doi.org/10.1007/s10551-013-1707-1>
- Schoenmaker, D., & Schramade, W. (2019). *Principles of sustainable finance*. Oxford University Press.
- Shahrour, M. H. (2022). Measuring the financial and social performance of French mutual funds: A data envelopment analysis approach. *Business Ethics, the Environment & Responsibility*, 31(2), 398-418. <https://doi.org/10.1111/beer.12424>
- Shahrour, M. H., Girerd-Potin, I., & Taramasco, O. (2021). Corporate social responsibility and firm default risk in the Eurozone: A market-based approach. *Managerial Finance*, 47(7), 975-997. <https://doi.org/10.1108/MF-02-2020-0063>
- Sharma, P., Panday, P., & Dangwal, R. C. (2020). Determinants of environmental, social and corporate governance (ESG) disclosure: A study of Indian companies. *International Journal of Disclosure and Governance*, 17(4), 208-217. <https://doi.org/10.1057/s41310-020-00085-y>
- Ter Horst, J. R., Zhang, C., & Renneboog, L. (2007). *Socially responsible investments: Methodology, risk exposure and performance* (ECGI Finance Working Paper No. 175/2007). European Corporate Governance Institute. <https://doi.org/10.2139/ssrn.985267>
- Viviani, J.-L., & Maurel, C. (2019). Performance of impact investing: A value creation approach. *Research in International Business and Finance*, 47, 31-39. <https://doi.org/10.1016/j.ribaf.2018.01.001>
- Wang, R., Wang, X., & Yan, Z. (2024). Sustainable success: How high ESG ratings affect stock market responses to earnings surprises. *Finance Research Letters*, 62(Part A), Article 105131. <https://doi.org/10.1016/j.frl.2024.105131>
- Whelan, T., Atz, U., & Clark, C. (2020). *ESG and financial performance: Uncovering the relationship by aggregating evidence from 1,000 plus studies published between 2015-2020*. NYU Stern Center for Sustainable Business and Rockefeller Asset Management. <https://www.icgn.org/sites/default/files/2021-08/ESG%20and%20Financial%20Performance%20Uncovering%20the%20Relationship%20NYU%20Stern.pdf>
- Wong, W. C., Batten, J. A., Ahmad, A. H., Mohamed-Arshad, S. B., Nordin, S., & Adzis, A. A. (2021). Does ESG certification add firm value? *Finance Research Letters*, 39, Article 101593. <https://doi.org/10.1016/j.frl.2020.101593>