



## ESG PERFORMANCE AND CORPORATE PROFITABILITY: EMPIRICAL EVIDENCE FROM INDIAN FIRMS

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### Abstract

This study examines the impact of Environmental, Social, and Governance (ESG) factors on corporate profitability using a logistic regression approach on a pooled panel dataset of 500 companies. By incorporating ESG scores, marketing costs, sales, and market capitalization, the research aims to determine how sustainability-oriented practices influence financial performance. The findings indicate that ESG scores and marketing costs are significant predictors of profitability. Companies with strong ESG scores tend to exhibit higher profitability, while firms with below-average ESG scores face challenges in achieving sustainable financial returns. The study highlights the growing relevance of ESG considerations in corporate decision-making and provides valuable insights for investors, policymakers, and business leaders interested in sustainable finance. The results contribute to the existing literature by reinforcing the positive association between ESG performance and corporate financial success, particularly in the Indian market.

**Keywords:** ESG, Corporate Profitability, Company Size, Sustainability in Finance

**JEL Classification:** G32, M14, Q56, C35

### 1. INTRODUCTION

In recent years, Environmental, Social, and Governance (ESG) factors have emerged as critical determinants of corporate sustainability and financial performance. ESG serves as an overarching framework that evaluates a company's ability to manage risks and opportunities related to environmental impact, social responsibility, and governance transparency. Investors and stakeholders increasingly rely on ESG metrics to assess corporate sustainability and resilience, leading to a shift in business strategies worldwide. According to the Global Sustainable Investment Review (2020), sustainable investing assets reached USD 35.3 trillion across key markets, reflecting the growing importance of ESG in financial decision-making. While prior research establishes a positive association between ESG practices and firm performance, the causal relationship remains complex and varies across industries and firm sizes. Some studies suggest that companies with strong ESG commitments experience enhanced profitability due to improved operational efficiency, better risk management, and stakeholder trust. Others argue that the financial benefits of ESG investment materialize only in the long term, while short-term costs may strain profitability, particularly for small and mid-cap firms with limited resources. Despite these debates, there is a consensus that integrating ESG factors into corporate strategy can drive value creation and long-term financial stability.

This study aims to empirically examine the relationship between ESG scores and corporate profitability within the Indian market, focusing on large-cap, mid-cap, and small-cap companies. Using a logistic regression approach on a pooled panel dataset of 500 firms, we analyze the impact of ESG scores, marketing costs, sales, and market capitalization on profitability. Given the Securities and Exchange Board of India's (SEBI) recent mandate for ESG disclosures among the top 1,000 listed firms, this research provides timely insights into

how sustainability practices influence financial outcomes in an emerging market context. By addressing the gap in literature concerning the profitability-ESG link in India—particularly for small-cap firms—this study contributes to the ongoing discourse on sustainable finance. The findings are expected to guide investors, policymakers, and business leaders in making informed decisions regarding ESG integration and its implications for corporate financial performance. According to a 2020 report by Global Sustainable Investment Review (GSIR), sustainable investing assets reached USD 35.3 trillion in five major markets – Europe, US, Japan, Canada, and New Zealand—reflecting a 15% (Woo and Tan, 2021) increase from 2018 to 2020. ESG factors are becoming increasingly prominent and central to the world of corporate valuation. Incorporating ESG facets within businesses often allows one to enhance productivity and talent recruitment; those who ignore these factors, however, may risk long-term sustainability. There are 5 primary ways in which robust ESG practices positively influence economic performance and valuation:

- 1) **Topline Growth:** By embedding ESG within organizations, companies are able to launch sustainable products and services which, due to ESG factors, often can be treated with premium pricing owing to increased transparency.
- 2) **Cost Reduction:** ESG practices contribute to energy efficiency, emissions reduction, and lower waste management costs.
- 3) **Reduced Regulatory and Legal Costs:** Transparency reduced regulatory scrutiny and, in some instances, even facilitated the acquisition of subsidies.
- 4) **Improved Labor Productivity:** ESG policies attract talent while improving workforce morale through effective human capital management.
- 5) **Better Capital Allocation and Asset Optimization:** ESG-driven investment opportunities yield long-term returns.

### **1.1 Integrating ESG Frameworks into Corporate Valuation**

The International Valuation Standards Council (IVSC) notes a common misconception that ESG disclosures are non-financial in nature, and therefore, do not have any monetary impact. While that may be true to an extent, ESG factors significantly influence corporate value creation over the long term. To incorporate ESG factors into corporate valuation, companies can adopt either the market or income approach, which are defined by (Woo and Tan, 2021) as follows:

#### *Market Approach:*

- Identify and assess ESG practices for comparable companies and industries.
- Assess the performance of the target company for such criteria.
- Calculate the market inputs for the target company.

A major setback to this approach is that ESG data and disclosures are underdeveloped and in their nascent stage as of now.

#### *Income Approach:*

This method talks about accounting the ESG factors impact on the discount rate or cash flows.

- **Beta:** Analyse comparable companies and incorporate relevant ESG factors at the screening stage.

- Alpha: Apply an incremental adjustment to the discount rate; companies with poor ESG performance relative to peers may face higher discount rates.

A major drawback of this approach is quantifying the precise magnitude of these adjustments, while also ensuring that all assumptions about the target’s growth rate, cash flows and value generated through ESG factors is accurate and based in utmost relevance.

### 1.3 Challenges in ESG and Corporate Valuation Integration

A key challenge in incorporating ESG into corporate valuation is the difficulty in quantifying ESG metrics, worsened by the lack of standardised measures. Additionally, the casual relationship between ESG and profitability is complex; it remains unclear whether companies are more profitable because of their ESG practices or if profitability enables higher ESG scores through increased investment. Despite these challenges, the relationship between ESG factors and corporate valuation is significant and cannot be overlooked.

### 1.4 India and ESG framework

In response to the growing relevance of ESG factors, India has taken significant steps towards greater transparency and accountability. (Securities and Exchange Board of India, 2021) has mandated that the top 1,000 companies by market capitalisation disclose ESG information through the Business Responsibility and Sustainability Reporting (BRSR) framework, starting in FY 2022-23. Additionally, SEBI, in collaboration with the Association of Mutual Funds in India (AMFI), requires ESG disclosures from mutual funds. The BRSR framework is expected to enhance investor confidence, align Indian companies with international ESG norms, and support India’s goal of achieving net-zero emissions by 2070 and deriving 50% (Securities and Exchange Board of India, 2021) of its electricity from renewable sources by 2030. An illustrative example of corporate ESG integration can further underscore how business incorporate these principles into their operations to enhance sustainability and long-term value:

**Exhibit 1.4.1: ESG integration by HUL (FMCG)**

Category	Highlights	Metrics
<b><u>ENVIRONMENT</u></b>		
<i>In Operations</i>	Reduction in Scope 1 and 2 emissions in operations (compared to 2008 baseline)	<b>98%</b>
	Reduction in the total water use (extraction + purchased) from factories	<b>58%</b>
	Reduction in total waste generated (per ton of production) from factories	<b>45%</b>
	Reduction in total CO2 emissions (per ton of production) from factories	<b>47%</b>
<i>Across Value Chains</i>	Sourcing of agricultural crops certified sustainably	<b>48%</b>
	Recyclable plastics in packaging use	<b>74%</b>
	Deforestation-free supply chain in palm oil, paper and board, tea, soy, and cocoa	<b>&gt;97%</b>
<b><u>SOCIAL</u></b>		
<i>Social Impact</i>	People reached through Project Suvidha	<b>&gt;4 lakh</b>
	People reached with safe drinking water since 2018	<b>&gt;10 million</b>
	Children educated on sanitation and hygiene practices since 2018	<b>5 million</b>
<i>ESG Recognition</i>	Rated as the top ESG FMCG company in India by various organizations	Listed by MSCI, S&P Global, CPPIB, etc

Source: HUL Annual Report FY 2023-24



## 2. LITERATURE REVIEW

Research done by (Kim and Li, 2021), indicates a generally positive association between ESG components and business financial performance, particularly regarding risk mitigation and profitability. The studies reviewed indicate that firms with strong ESG policies typically yield stronger financial results, citing corporate governance as a key factor. For instance, a 2015 compilation of over 2,200 studies found more than 90% showing nonnegative influence of ESG on financial performance, while eco-efficient enterprises are also shown to deliver better investment returns. According to the studies reviewed by the authors, corporate governance is the ESG factor that largely influences a firm's profitability and credit rating. However, there is not always a direct association between ESG and financial performance. Rather, the interlinkage between them is often found to be negative. For instance, credit ratings and environmental scores illustrate such a trend, while social and governance scores have honed a trend of a positive nature. Although there is a need for more studies to fill in the data gaps and methodological issues such as endogeneity, this body of literature highlights the increasingly important incorporation of ESG variables into investment decision-making.

(Tran Ngoc et al., 2021), in their paper, review some factors influencing ESG performance in organizations in relation to environmental, social and corporate governance (ESG). Research has shown that firm size has an influence on ESG performance and charitable endeavours whereby large and medium-sized firms give bigger donations than small-sized firms (Amato and Amato, 2007). Also, it turned out that institutional investors have a positive impact on ESG performance because they have started taking CSR disclosures into account in their investment decisions (Jo and Harjoto, 2012). Analytic coverage helps in narrowing the information asymmetry between the investors and the firm, presenting insights into a firm's financials and ESG conducts (Dhaliwal et al., 2012). Other factors affecting ESG performance include governmental ownership, board competition, and managerial ownership (Oh et al., 2011). Lastly, the business practice is exerted by managerial attitudes towards CSR, including CSR disclosures that lead to better social and financial outcomes (Leonidas et al., 2012).

Environmental, social, and governance-investing criteria are gaining in importance when making investment decisions as with the inclusion of concerns such as corporate governance, employee rights, and climate change into financial plans (Peiró-Signes et al., 2013). In this regard, much effort has gone into exploring ESG investment techniques, with various studies suggesting that the proactive management of ESG should be able to put in value over the long-term financial performance of a corporate house and competitiveness therein. The general perspective regarding the benefits that accrue to enterprises from these practices is debatable as larger companies, those endowed with extensive resources, are more equipped to utilize proactive environmental practices and reap the rewards thereof. With the U.S. companies rated high on governance, European companies generally fare better across the environmental and social fronts of the ESG benchmark. Certain evidence demonstrates the correlation between high ESG-ranked firms and productivity. Other pieces of research indicate that lower ESG-ranked firms generally do better at targeting particular financial indicators. This divergence illustrates the necessity for regional and industry-specific studies in order to get an entire grip on not just how ESG impacts business performance. The connection between business performance and sustainability reporting has received extensive coverage in academic literature (Oprean-Stan et al., 2020), there has been much discussion about the connection between business success and sustainability reporting. Sustainability reporting, which incorporates economic, social, and governance (ESG) considerations, can enhance business performance and provide long-term stakeholder value and shareholder wealth by decreasing

risk and increasing transparency, by some studies. Such an approach is consistent with the theory of value-creation, which maintains that the incorporation of sustainability into corporate governance reduces risk exposure and improves financial performance. The value-destruction theory propounded by other studies takes a counterpoint; the over-concentration on ESG by companies could diminish their profit focus, thereby damaging shareholder wealth. If that is the case, empirical results have shown mixed evidence on the effects of the topic, drawing differing manipulations. This study endeavours to fill these gaps using multi-factorial regression analysis to assess the relationship between sustainability metrics, ESG risk management, and corporate sustainable growth.

While claiming a valid argument about different aspects of governance influencing a company's ESG performance, the relationship between corporate governance variables and ESG ratings is extensively studied in recent literature by authors (Egorova and Chigireva, 2021). It is emphasized that the composition of the Board of Directors-dimensions like independence and diversity-play a significant role in corporate responsibility. The agency theory supports the notion that adding independent directors enhances oversight and has a positive impact on ESG results by showing that the presence of independent boards enhances transparency as well as CSR reporting (Naciti, 2019). Another important element associated with better ESG disclosure is gender diversity; multiple studies have shown that having more women on boards increases the quality of ESG reporting. Conversely, some research has shown that in-depth ESG disclosures are not necessarily related to gender diversity (Manita et al., 2018). Recent research on board membership age diversity propounds a shift toward a more flexible and forward-looking corporate governance approach, where younger board members could deploy grounding practices in building more sustainable corporate value (Ferrero-Ferrero et al., 2015). This literature advocates that further inquiry be conducted on how board characteristics drive sustainability performance across industries and geographic locations, emphasizing the rising significance of governance issues in ESG ratings.

The study by (Setiawati and Hidayat, 2023) showcases how the growing relevance of Environmental, Social, and Governance disclosure has reshaped the business and investment environment. ESG principles were formally introduced at the beginning of 2005 as part of the "Who Cares Wins" campaign, which has since developed into a pivotal reference for measuring business sustainability and good ethical behaviour through time. Numerous studies show the link between ESG characteristics and financial performance, leading many investors to consider non-financial information, such as ESG ratings, in their decision-making processes. Socially responsible investors, for instance, avoid "sin" investments, placing high demands on the ethical and sustainable posture of a corporation in an attempt to achieve some balance between financial returns and corporate social responsibility. This message is further endorsed within the real estate sector with "Responsible Property Investment" (RPI) underlining ESG considerations in investment decisions. Nonetheless, there are still some issues, such as ESG reporting requirements varying from industry to industry and that disclosures are generally voluntary. Nevertheless, regulatory bodies keep advocating for increased transparency and standardized reporting practices, further accepting that ESG considerations will influence corporate governance as well as financial market dynamics. The literature on the relationship of ESG on market value shows mixed and sometimes contradictory results (Ionescu et al., 2019). Several studies, such as those by (Margolis et al., 2009) point out that increasing consensus is growing that companies with superior ESG performance may be rewarded with higher market valuations, as good ESG practices often go hand-in-hand with management efficiency and engagement with stakeholders. However, contrary evidence exists, indicating either weak or no significant correlations, as noted by (McWilliams and Siegel, 2000). This

inconsistency hints that, although the long-term impacts of ESG initiatives can be significantly positive, investor perceptions in the short term are often dominated by financial impacts, particularly in some sectors like travel and tourism. Recent studies affirm the importance of extensive ESG reporting, candidly revealing the complexity of making a direct causal link between market value and ESG performance (Eccles et al., 2014).

The travel and tourism sector-exhibiting both a heavy toll on the environment and socio-economic contribution-demands targeted investigation as it pertains to the influence exerted by ESG factors on the market, given the regulations and varied stakeholder expectations that every region bears. All of these aspects have become entwined due to the increasing emphasis on integrating ESG factors into corporate governance, with companies increasingly seeking to conform their strategies to sustainability goals (Khan et al., 2019). Such governance structures are believed to be necessary for addressing rival dynamics relating to stakeholder structures and the institutional pressures arising from ESG issues (Aguilera et al., 2021). This kind of paradoxical governance enables organizations to fulfil their economic, social, and environmental aspirations while achieving long-term resilience and value (Kurznack et al., 2021). Yet, upon implementing the integrated ESG strategies, a couple of challenges arise since the Board of Directors still deals with issues of competing interests and resource-allocation processes, which might compromise coherent decision-making (Carmine and De Marchi, 2023). The literature studied by (Annesi et al., 2024) outlines a collaborative governance framework that must be put in place to bring together top management and key stakeholders in a spirit of transparency and alignment on sustainability initiatives. In conclusion, integration of ESG into corporate governance results in improved organizational performance and allows meeting greater demands from stakeholders for accountability and sustainable practices.

The systemization of the evaluation of ESG factors examined by (Kiehne, 2019) has been focused further on understanding corporate sustainability and integrity practices. Patents have been found to be an important marker for the context of the degree of firms' commitment to a sustainable environment and, business innovation practice within this context (Georg Kell, 2013). Research has shown patent data as providing insight into internal strategies and RandD objectives of a firm regarding such sustainable technologies, including renewable energies and efficiency improvements. In a comparative study for sustainable impacts, the following observation was made by the OECD: Of the 1,518 Cooperative Patent Classification (CPC) classes, a minute, though significant, share of ESG-related patents was asserted to be encompassed within the larger patent ecosystem (InTraCoM GmbH).

Rather significant is the fact that while the total number of ESG patents has continued rising, their relative share has experienced an overall decline since 2016, indicating what could be an actual normalization following an initial surge (InTraCoM GmbH). In contrast, the mounting monetary value assigned to ESG patents reflects their increasing standing as valuable entities within corporate portfolios. This dual analyses-have a look both at the quantity and at the worth of patents-leads into a more profound understanding of how effectively corporations have integrated sustainability into the core purposes of their business strategies and upgraded their overall ESG performance (Porter and Derry, 2012). Future studies will consider the ESG patent factor in various industries to deepen the grasp of corporate managerial responsibility in different contexts. The inception of methodology for having better and clearer accounting or corporate reporting has all begun from the expanding body of the national laws and rules related to accounting for corporate performance, that is, the codification of corporate practices in Macedonia (Kocmanova and Simberova, 2012). For the European investment sector under consensus arrangements to develop uniform ESG measures, the "Brno University of

Technology Faculty of Business and Management” worked on a project illustrating the need for reasons for which multifactor evaluation methods of corporate performance are highlighted in the Czech manufacturing sector. To advance the share of responsible investments, international organizations, like the “United Nations Principles for Responsible Investment” (UN PRI) and the “Global Reporting Initiative” (GRI), support the insertion of ESG performance indicators in investment analysis. Moving away from traditional socially responsible investment (SRI) strategies toward a broader definition of SRI by aligning financial objectives with ESG concerns shows the need for very strong and context-specific ESG indicators. In the course of devising indicators that mesh well with performance measures that are suitable for certain industries, manufacturing case workflows combine both objective statistical studies and subjective assessments, according to (Dumay and Cai, 2015).

ESG performance indicators are now positioned to become vital instruments for assessing long-term risks and opportunities associated with corporate conduct that contribute to the cash flows and financial returns anticipated in the future inasmuch as they increasingly inform investment strategies. This existing research does not study much about small-cap companies and therefore, this study wishes to tap into this unstudied market and provide some conclusions for the complex relationship between ESG scores and corporate profitability.

### 3. RESEARCH METHODOLOGY

The study aims to answer the following research questions:

- How do ESG scores differ between different types of companies?
- How do these ESG factors influence corporate profitability and how does this influence differ between different types of companies?

To analyse how ESG factors affect corporate profitability, this study will employ binomial logistic regression. The dependent variable will be net profit margin, converted to a binary outcome:

- 1, if the company’s net profit margin exceeds 10%, (indicating strong profitability),
- 0, otherwise.

A net profit margin threshold of 10% is chosen based on industry benchmarks, representing companies with solid financial performance. Firms achieving this threshold are often considered to be operating efficiently and profitably within their respective industries.

The independent variables (X) will include:

1. Sales: A key indicator of the company’s revenue generation capability, retrieved from *screener.in*
2. ESG Scores: *Derived from CRISIL ratings* to represent the company’s performance on environmental, social and governance criteria and consists of 5 categories: “Weak” (ESG Scores < 31), “Below Average” (ESG scores between 41 to 50), “Adequate” (ESG scores between 51 to 60), “Strong” (ESG scores between 61 to 70), “Leadership” (ESG scores >71)
3. Company Type: Categorized as “large-cap”, “mid-cap” and “small-cap” based on market capitalisation, to assess the influence of company size on profitability.
4. Operating Expenses: Reflecting the costs incurred during the company’s operations, providing insight into the expense management and efficiency, retrieved from *screener.in*

Further, to analyse how these ESG scores differ between companies, the study will employ a multinomial logistic regression model, with ESG scores as the dependent variable (Y), and types of companies and binary net profit margins (1 for >10%, 0, otherwise) as the independent (X) variables. The sample will consist of NIFTY 500 companies, which represents a board cross-section of firms across various industries in India. The timeframe for the data collection will align with the most recent available financial and ESG information (FY 2023-24).

**3.1. Regression Output and Data Analysis**

**3.1.1 Model 1 – Multinomial Logistic Regression**

**Table 3.1.1: Model Fit Measures**

Model Fit Measures			
Model	Overall Model Test		
	$\chi^2$	df	p
1	105.3547	12	< .001

Source: Jamovi Output

**Table 3.1.2: Model Coefficients for ESG Scores**

Model Coefficients - ESG Scores							
ESG Scores	Predictor	Estimate	SE	p	Odds ratio	95% Confidence Interval	
						Lower	Upper
Strong - Adequate	Intercept	-0.9249	0.2868	<b>0.001</b>	0.3966	0.226	0.6957
	Type:						
	MC - LC	-0.6011	0.3014	<b>0.046</b>	0.5482	0.3037	0.9897
	SC - LC	-1.0286	0.2922	<b>&lt;.001</b>	0.3575	0.2016	0.6339
	NPM:						
	1 - 0	1.0912	0.2578	<b>&lt;.001</b>	2.9777	1.7964	4.9357
Below Average - Adequate	Intercept	-1.3913	0.3963	<b>&lt;.001</b>	0.2488	0.1144	0.5409
	Type:						
	MC - LC	0.2633	0.4631	0.57	1.3012	0.525	3.2255
	SC - LC	0.9989	0.416	<b>0.016</b>	2.7152	1.2014	6.1364
	NPM:						
	1 - 0	-0.8635	0.2579	<b>&lt;.001</b>	0.4217	0.2544	0.6991
Weak - Adequate	Intercept	-2.5932	0.7369	<b>&lt;.001</b>	0.0748	0.0176	0.317
	Type:						
	MC - LC	0.1082	0.8908	0.903	1.1143	0.1944	6.3859
	SC - LC	0.5584	0.7986	0.484	1.7479	0.3654	8.3615
	NPM:						
	1 - 0	-1.6357	0.6529	<b>0.012</b>	0.1948	0.0542	0.7005
Leadership - Adequate	Intercept	-11.4562	55.6201	<b>0.837</b>	0	0	2.34E+42
	Type:						
	MC - LC	-1.9342	0.8334	<b>0.02</b>	0.1445	<b>0.0282</b>	0.7402
	SC - LC	-3.0836	1.0942	<b>0.005</b>	0.0458	<b>0.0054</b>	0.391
	NPM:						
	1 - 0	10.2279	55.6208	0.854	27664.1	0	6.11E+51

Source: Jamovi Output





### Strong vs. Adequate ESG Scores

- Intercept ( $-0.9249$ ,  $p = 0.001$ ,  $OR = 0.3966$ ): Companies with Strong ESG scores are significantly less likely to achieve profitability compared to those with Adequate ESG scores (odds reduced by 60.3%).
- Mid-Cap vs. Large-Cap ( $-0.6011$ ,  $p = 0.046$ ,  $OR = 0.5482$ ): Mid-cap companies are 45.2% less likely to have Strong ESG scores compared to large-cap companies, given their net profit margin and other variables.
- Small-Cap vs. Large-Cap ( $-1.0286$ ,  $p < 0.001$ ,  $OR = 0.3575$ ): Small-cap companies are 64.3% less likely to have Strong ESG scores compared to large-cap companies.
- Net Profit Margin ( $1.0912$ ,  $p < 0.001$ ,  $OR = 2.9777$ ): Companies with higher profitability (net profit margin  $\geq 10\%$ ) are nearly 3 times more likely to have Strong ESG scores compared to Adequate ESG scores.

### Below Average vs. Adequate ESG Scores

- Intercept ( $-1.3913$ ,  $p < 0.001$ ,  $OR = 0.2488$ ): Companies with Below Average ESG scores are 75.1% less likely to achieve profitability compared to those with Adequate ESG scores.
- Mid-Cap vs. Large-Cap ( $0.2633$ ,  $p = 0.570$ ,  $OR = 1.3012$ ): There is no significant difference in the likelihood of mid-cap companies having Below Average ESG scores compared to large-cap companies.
- Small-Cap vs. Large-Cap ( $0.9989$ ,  $p = 0.016$ ,  $OR = 2.7152$ ): Small-cap companies are 2.7 times more likely to have Below Average ESG scores compared to large-cap companies.
- Net Profit Margin ( $-0.8635$ ,  $p < 0.001$ ,  $OR = 0.4217$ ): Companies with higher profitability are 57.8% less likely to have Below Average ESG scores compared to Adequate ESG scores.

### Weak vs. Adequate ESG Scores

- Intercept ( $-2.5932$ ,  $p < 0.001$ ,  $OR = 0.0748$ ): Companies with Weak ESG scores are 92.5% less likely to achieve profitability compared to those with Adequate ESG scores.
- Mid-Cap vs. Large-Cap ( $0.1082$ ,  $p = 0.903$ ,  $OR = 1.1143$ ): No significant difference in the likelihood of mid-cap companies having Weak ESG scores compared to large-cap companies.
- Small-Cap vs. Large-Cap ( $0.5584$ ,  $p = 0.484$ ,  $OR = 1.7479$ ): No significant difference in the likelihood of small-cap companies having Weak ESG scores compared to large-cap companies.
- Net Profit Margin ( $-1.6357$ ,  $p = 0.012$ ,  $OR = 0.1948$ ): Companies with higher profitability are 80.5% less likely to have Weak ESG scores compared to Adequate ESG scores.

### Leadership vs. Adequate ESG Scores

- Intercept ( $-11.4562$ ,  $p = 0.837$ ,  $OR = 0.0000$ ): The intercept is insignificant, implying no meaningful difference in profitability between Leadership and Adequate ESG scores.

- Mid-Cap vs. Large-Cap ( $-1.9342$ ,  $p = 0.020$ ,  $OR = 0.1445$ ): Mid-cap companies are 85.5% less likely to have Leadership ESG scores compared to large-cap companies.
- Small-Cap vs. Large-Cap ( $-3.0836$ ,  $p = 0.005$ ,  $OR = 0.0458$ ): Small-cap companies are 95.4% less likely to have Leadership ESG scores compared to large-cap companies.
- Net Profit Margin ( $10.2279$ ,  $p = 0.854$ ,  $OR = 27664.1135$ ): The result is insignificant and suggests no clear relationship between profitability and Leadership ESG scores.

### 3.2 Model 2 – Binomial Logistic Regression

**Table 3.2.1: Model Fit Measures**

Model Fit Measures					
Model	Deviance	AIC	Overall Model Test		
			$\chi^2$	df	p
1	537.4612	555.4612	149.4008	8	< .001

Source: Jamovi Output

- Deviance: The deviance value of 537.4612 indicates how well the model fits the data. The lower the deviance, the better the fit.
- AIC (Akaike Information Criterion): AIC is a measure of “model quality, balancing fit and complexity”. A lower AIC indicates a better model.
- Overall Model Test ( $\chi^2 = 149.4008$ ,  $df = 8$ ,  $p < 0.001$ ): This Chi-square test shows that the overall model is “statistically significant”, meaning at least one predictor significantly contributes to explaining the variance in the Net Profit Margins.

**Table 3.2.2: Likelihood Ratio Tests**

Omnibus Likelihood Ratio Tests			
Predictor	$\chi^2$	df	p
Sales	37.2293	1	< .001
Operating Expenses	55.3519	1	< .001
ESG Rating	40.9688	4	< .001
Type	11.8606	2	0.003

Source: Jamovi Output

This test evaluates the significance of each predictor:

- Sales ( $\chi^2 = 37.2293$ ,  $p < 0.001$ ): Significant effect, indicating that sales contribute significantly to the model.
- Operating Expenses ( $\chi^2 = 55.3519$ ,  $p < 0.001$ ): Highly significant, suggesting that operating expenses play an important role.
- ESG Rating ( $\chi^2 = 40.9688$ ,  $p < 0.001$ ): Significant, indicating that ESG ratings are important in predicting net profit margin.
- Type ( $\chi^2 = 11.8606$ ,  $p = 0.003$ ): Significant, meaning company size (small-cap, mid-cap, large-cap) influences net profit margin.

**Table 3.2.3: Model Coefficients – Net Profit Margin**

Model Coefficients - Net Profit Margin							
Predictor	Estimate	SE	Z	p	Odds ratio	95% Confidence Interval	
						Lower	Upper
Intercept	1.7962	0.4374	4.1061	<.001	6.0267	2.557	14.2049
Sales	0.0001	0.0000	3.7861	<.001	1.0001	1.0001	1.0002
Operating Expenses	-0.0002	0.0001	-4.5959	<.001	0.9998	0.9997	0.9999
<b>ESG Rating:</b>							
Below Average – Adequate	-0.6850	0.2725	-2.5142	0.0120	0.5041	0.2955	0.8598
Leadership – Adequate	18.6153	570.2793	0.0326	0.9740	121487676	0	Inf
Strong – Adequate	0.8431	0.2905	2.9017	0.0040	2.3235	1.3147	4.1064
Weak – Adequate	-1.3745	0.6824	-2.0142	0.0440	0.253	0.0664	0.9637
<b>Type:</b>							
MC - LC	-1.1306	0.4190	-2.6981	0.0070	0.3228	0.142	0.7339
SC - LC	-1.3784	0.4273	-3.2255	0.0010	0.252	0.1091	0.5823

Source: Jamovi Output

The logistic regression coefficients represent the log odds of having a positive net profit margin compared to a negative one.

- Intercept ( $\beta = 1.7962$ ,  $p < 0.001$ , Odds Ratio = 6.0267): The log odds of having a positive net profit margin when all other variables are zero. The odds ratio (6.03) indicates a strong baseline likelihood.
- Sales ( $\beta = 0.0001$ ,  $p < 0.001$ , OR = 1.0001): A small but significant positive relationship between sales and net profit margin. For each unit increase in sales, the odds of having a positive margin increase slightly.
- Operating Expenses ( $\beta = -0.0002$ ,  $p < 0.001$ , OR = 0.9998): A significant negative relationship with net profit margin. Higher operating expenses decrease the likelihood of having a positive margin.

- ESG Rating:

Below Average – Adequate ( $\beta = -0.6850$ ,  $p = 0.012$ , OR = 0.5041): Companies with below-average ESG ratings are less likely to have a positive net profit margin compared to those with adequate ESG ratings (odds ratio = 0.5041).

Leadership – Adequate ( $\beta = 18.6153$ ,  $p = 0.9740$ ): The large estimate and non-significant p-value ( $p = 0.9740$ ) suggest some anomaly in the data or model regarding this category, possibly due to very few observations.

Strong – Adequate ( $\beta = 0.8431$ ,  $p = 0.004$ , OR = 2.3235): Companies with strong ESG ratings are more likely to have a positive margin compared to adequate ESG ratings, with the odds being more than twice as high (OR = 2.32).

Weak – Adequate ( $\beta = -1.3745$ ,  $p = 0.044$ , OR = 0.253): Companies with weak ESG ratings are significantly less likely to have a positive margin compared to those with adequate ESG ratings.

- Company Type:

Mid-Cap – Large-Cap ( $\beta = -1.1306$ ,  $p = 0.007$ , OR = 0.3228): Mid-cap companies are less likely to have a positive net profit margin compared to large-cap companies.

Small-Cap – Large-Cap ( $\beta = -1.3784$ ,  $p = 0.001$ , OR = 0.252): Small-cap companies are even less likely to have a positive margin compared to large-cap companies.

**Table 3.2.4: Collinearity Statistics**

Collinearity Statistics		
	VIF	Tolerance
Sales	5.7964	0.1725
Operating Expenses	5.8481	0.171
ESG Rating	1.0111	0.989
Type	1.1145	0.8973

Source: Jamovi Output

Variance Inflation Factor (VIF): This assesses multicollinearity (how much the independent variables are correlated). VIF values above 5 can indicate problematic multicollinearity.

- Sales (VIF = 5.7964) and Operating Expenses (VIF = 5.8481) have moderate VIFs, indicating some multicollinearity between these variables. However, this is borderline and still less than 10, so it is unable to invalidate the model.
- ESG Rating (VIF = 1.0111) and Type (VIF = 1.1145) show low VIF values, suggesting no multicollinearity issues

**Table 3.2.5: Classification Table**

Classification Table – ...			
	Predicted		
Observed	0	1	% Correct
0	171	51	77.027
1	67	211	75.8993

Source: Jamovi Output

This table shows the performance of the model in terms of correct classifications:

- 77.027% of the companies with a profit margin of less than 10% were correctly classified as such.
- 75.8993% of the companies with a positive profit margin (margin >10%) were correctly classified.
- Overall, the model shows reasonably good classification performance.

**Table 3.2.6 Predictive Measures**

Predictive Measures			
Accuracy	Specificity	Sensitivity	AUC
0.764	0.7703	0.759	0.8177

Source: Jamovi Output

- Accuracy (0.764): The model correctly predicts 76.4% of the outcomes, which is quite good.
- Specificity (0.7703): The model accurately predicts 77% of the companies with a negative net profit margin.
- Sensitivity (0.759): The model correctly predicts 75.9% of companies with a positive net profit margin.



- AUC (Area Under the ROC Curve = 0.8177): An AUC of 0.8177 indicates good discriminatory ability. Values between 0.8 and 0.9 are considered excellent, suggesting the model distinguishes well between companies with positive and negative net profit margins.

#### Model Fit Measures

- Deviance: The deviance value of 537.4612 indicates how well the model fits the data. The lower the deviance, the better the fit.
- AIC (Akaike Information Criterion): AIC is a measure of model quality, balancing fit and complexity. A lower AIC indicates a better model.
- Overall Model Test ( $\chi^2 = 149.4008$ ,  $df = 8$ ,  $p < 0.001$ ): This Chi-square test shows that the overall model is statistically significant, meaning at least one predictor significantly contributes to explaining the variance in the Net Profit Margin.

## 6. CONCLUSION

This study explored the relationship between ESG (Environmental, Social, and Governance) scores, company size (categorized as large-cap, mid-cap, and small-cap), and profitability (measured through net profit margin) for firms in the Indian market. Using multinomial and binomial logistic regression, the analysis provided insights into how these factors interact and affect a company's likelihood of falling into various ESG score categories, namely Strong, Adequate, Below Average, Weak, and Leadership.

The findings of the multinomial regression reveal that:

- a) Profitability and ESG Scores:** The tendency, therefore, is for companies making a profit (net profit margin  $\geq 10\%$ ) to be significantly more likely to have Strong ESG scores. This implies that firms yielding impressive returns on their investments are able to earn elevated ESG ratings, most likely due to their scope for investment in sustainability research. A company with higher profitability is less susceptible to having a Below Average or Weak ESG score thereby attesting to a clear positive relationship between financial performance and better ESG performance.
- b) Company Size and ESG Scores:** A larger market cap is more likely to have strong or leadership ESG scores as opposed to mid-cap or small-cap achieving the top scores. Notably, small-cap companies are more significantly less likely to possess below-average or weak ESG scores in comparison with large-cap companies. This indicates the great difficulty faced by smaller firms in achieving higher rankings in ESG scores as compared to larger companies, attributing it to the lack of resources to approach sustainability or definitely bringing in robust sustainability frameworks.
- c) Differences Across ESG Categories:**
  - Strong ESG scores are positively associated with both company size and profitability, with large-cap firms and highly profitable companies being the most likely to attain this status.
  - Below Average and Weak ESG scores are more prevalent among small-cap firms and less profitable companies, indicating that smaller and financially constrained firms struggle more with ESG performance.

- Leadership ESG scores are rare in mid-cap and small-cap firms, reinforcing the idea that achieving the highest ESG standards requires substantial resources, often available only to the largest firms.

The findings of the binomial logistic regression reveal that:

- Below Average – Adequate ( $\beta = -0.6850$ ,  $p = 0.012$ ,  $OR = 0.5041$ ): Companies with below-average ESG ratings are significantly less likely to have a positive net profit margin compared to those rated as adequate.
- Strong – Adequate ( $\beta = 0.8431$ ,  $p = 0.004$ ,  $OR = 2.3235$ ): Companies with strong ESG ratings exhibit over twice the odds of achieving a positive margin, suggesting that better sustainability practices correlate with improved profitability.
- Weak – Adequate ( $\beta = -1.3745$ ,  $p = 0.044$ ,  $OR = 0.253$ ): Conversely, companies with weak ESG ratings face significantly lower chances of profitability, emphasizing the growing importance of ESG considerations in financial performance.
- Leadership – Adequate ( $\beta = 18.6153$ ,  $p = 0.9740$ ): The extremely high coefficient and non-significant p-value suggest potential anomalies in the dataset, which may require further investigation due to the limited observations in this category.

## 7. LIMITATIONS OF THE STUDY

For this particular study, the regression analyses were restricted to the year 2023 due to the unavailability of data for other periods. Therefore, for a better model fit, future research could extend the analysis by employing *panel data methodologies* across multiple years, incorporating a wider range of companies, and accounting for additional variables not considered in the current study, such as marketing expenditures. These enhancements would facilitate a more thorough and precise examination of the relationship between ESG factors and corporate profitability.

## References

- 1) Aguilera, R. V., Aragón-Correa, J. A., Marano, V., and Tashman, P. A. (2021). The Corporate Governance of Environmental Sustainability: A Review and Proposal for More Integrated Research. *Journal of Management*, 47(6), 1468–1497. <https://doi.org/10.1177/0149206321991212>
- 2) Amato, L. H., and Amato, C. H. (2007). The effects of firm size and industry on corporate giving. *Journal of Business Ethics*, 72(3), 229–241. <https://doi.org/10.1007/s10551-006-9167-5>
- 3) Annesi, N., Battaglia, M., Ceglia, I., and Mercuri, F. (2024). Navigating paradoxes: building a sustainable strategy for an integrated ESG corporate governance. *Management Decision*. <https://doi.org/10.1108/MD-10-2023-2006>
- 4) Carmine, S., and De Marchi, V. (2023). Reviewing Paradox Theory in Corporate Sustainability Toward a Systems Perspective. In *Journal of Business Ethics* (Vol. 184, Issue 1, pp. 139–158). Springer Science and Business Media B.V. <https://doi.org/10.1007/s10551-022-05112-2>
- 5) Dhaliwal, D. S., Radhakrishnan, S., Tsang, A., and Yang, Y. G. (2012). Nonfinancial disclosure and analyst forecast accuracy: International evidence on corporate social responsibility disclosure. *Accounting Review*, 87(3), 723–759. <https://doi.org/10.2308/accr-10218>
- 6) Dumay, J., and Cai, L. (2015). Using content analysis as a research methodology for investigating intellectual capital disclosure: A critique. *Journal of Intellectual Capital*, 16(1), 121–155. <https://doi.org/10.1108/JIC-04-2014-0043>



- 7) Eccles, R. G., Ioannou, I., and Serafeim, G. (2014). The impact of corporate sustainability on organizational processes and performance. *Management Science*, 60(11), 2835–2857. <https://doi.org/10.1287/mnsc.2014.1984>
- 8) Egorova, A. A., and Chigireva, D. A. (2021). The Influence of Corporate Governance Factors on ESG Rating of Industrial and IT Companies. In A. A. Egorova, D. A. Chigireva *PJKM* (Vol. 19, Issue 4).
- 9) Ferrero-Ferrero, I., Fernández-Izquierdo, M. Á., and Muñoz-Torres, M. J. (2015). Integrating Sustainability into Corporate Governance: An Empirical Study on Board Diversity. *Corporate Social Responsibility and Environmental Management*, 22(4), 193–207. <https://doi.org/10.1002/csr.1333>
- 10) Georg Kell. (2013, November 14). Companies must send a “clear message” on climate change. *The Guardian*. <https://www.theguardian.com/sustainable-business/georg-kell-companies-clear-message-climate-change>
- 11) Ionescu, G. H., Firoiu, D., Pirvu, R., and Vilag, R. D. (2019). The impact of ESG factors on market value of companies from travel and tourism industry. *Technological and Economic Development of Economy*, 25(5), 820–849. <https://doi.org/10.3846/tede.2019.10294>
- 12) Jo, H., and Harjoto, M. A. (2012). The Causal Effect of Corporate Governance on Corporate Social Responsibility. *Journal of Business Ethics*, 106(1), 53–72. <https://doi.org/10.1007/s10551-011-1052-1>
- 13) Khan, M., Dor, A. Ben, Gubler, J., Hartford, H., Hoepner, A., Jayaraman, A., Ketterer, S., Kuhnert, D., Myers, R., and Taylor, D. (2019). Corporate Governance, ESG, and Stock Returns around the World. In *Financial Analysts Journal* (Vol. 75, Issue 4).
- 14) Kiehne, D.-O. (2019). *Environmental, social and corporate governance (ESG)-also an innovation driver?* <https://www.cooperativepatentclassification.org/cpcScheme>
- 15) Kim, S., and Li, Z. (2021). Understanding the impact of esg practices in corporate finance. *Sustainability (Switzerland)*, 13(7). <https://doi.org/10.3390/su13073746>
- 16) Kocmanova, A., and Simberova, I. (2012). *Qualitative relationships between the environmental, social and governance (ESG) performance indicators for supporting the decision-making.* <https://www.researchgate.net/publication/231209980>
- 17) Kurznack, L., Schoenmaker, D., and Schramade, W. (2021). A model of long-term value creation. *Journal of Sustainable Finance and Investment*. <https://doi.org/10.1080/20430795.2021.1920231>
- 18) Leonidas, P., Mary, G., Theofilos, P., and Amalia, T. (2012). Managers’ Perceptions and Opinions towards Corporate Social Responsibility (CSR) in Greece. *Procedia Economics and Finance*, 1, 311–320. [https://doi.org/10.1016/s2212-5671\(12\)00036-6](https://doi.org/10.1016/s2212-5671(12)00036-6)
- 19) Manita, R., Bruna, M. G., Dang, R., and Houanti, L. (2018). Board gender diversity and ESG disclosure: evidence from the USA. *Journal of Applied Accounting Research*, 19(2), 206–224. <https://doi.org/10.1108/JAAR-01-2017-0024>
- 20) Margolis, J. D., Elfenbein, H. A., Gerald, J. P. W., Carey, E., and Administration, B. (2009). *Does It Pay to Be Good... and Does It Matter? A Meta-Analysis of the Relationship between Corporate Social and Financial Performance.* <http://ssrn.com/abstract=1866371>
- 21) McWilliams, A., and Siegel, D. (2000). Research Notes and Communications Corporate Social Responsibility and Financial Performance: Correlation or Misspecification? in *Strategic Management Journal Strat. Mgmt. J* (Vol. 21).
- 22) Naciti, V. (2019). Corporate governance and board of directors: The effect of a board composition on firm sustainability performance. *Journal of Cleaner Production*, 237. <https://doi.org/10.1016/j.jclepro.2019.117727>
- 23) Oh, W. Y., Chang, Y. K., and Martynov, A. (2011). The Effect of Ownership Structure on Corporate Social Responsibility: Empirical Evidence from Korea. *Journal of Business Ethics*, 104(2), 283–297. <https://doi.org/10.1007/s10551-011-0912-z>
- 24) Oprean-Stan, C., Oncioiu, I., Iuga, I. C., and Stan, S. (2020). Impact of sustainability reporting and inadequate management of esg factors on corporate performance and sustainable growth. *Sustainability (Switzerland)*, 12(20), 1–31. <https://doi.org/10.3390/su12208536>



- 25) Peiró-Signes, Segarra-Oña M, Mondéjar-Jiménez, J., and Vargas-Vargas. (2013). Influence of the Environmental, Social and Corporate Governance Ratings on the Economic Performance of Companies: An overview. *Int. J. Environ. Res*, 7(1), 105–112.
- 26) Porter, T., and Derry, R. (2012). *Sustainability and Business in a Complex World Business and Society Review* 117:1 33-53.
- 27) Securities and Exchange Board of India. (2021). *Balanced Framework for ESG Disclosures, Ratings and Investing*. [https://www.sebi.gov.in/sebi\\_data/meetingfiles/apr-2023/1681703013916\\_1.pdf](https://www.sebi.gov.in/sebi_data/meetingfiles/apr-2023/1681703013916_1.pdf)
- 28) Setiawati, A., and Hidayat, T. (2023). The Influence of Environmental, Social, Governance (ESG) Disclosures on Financial Performance. *Jurnal Ekonomi, Manajemen Dan Perbankan*, 09(03), 225–240.
- 29) Tran Ngoc, H., Hung TRAN, N., Thuy Hanh NGUYEN, T., and Lecturer, A. (2021). Factors Impacting on Social and Corporate Governance and Corporate Financial Performance: Evidence from Listed Vietnamese Enterprises Factors Impacting on Social and Corporate Governance and Corporate Financial Performance: Evidence from Listed Vietnamese Enterprises First Author and Corresponding. *Journal of Asian Finance*, 8(6), 41–0049. <https://doi.org/10.13106/jafeb.2021.vol8.no6.0041>
- 30) Woo, L., and Tan, D. (2021). *Considering ESG in Business Valuation*. <https://www2.deloitte.com/content/dam/Deloitte/sg/Documents/finance/sea-fa-esg-business.pdf>