Management (Montevideo). 2025; 3:288
doi: 10.62486/agma2025288
ISSN: 3046-4048

ORIGINAL

Strategic Assessment of ESG and CSR Attitudes on Human Resource Performance

Evaluación estratégica de las actitudes ESG y RSE en el desempeño de los recursos humanos

Alok John[1], Manish Tiwari[1]

[1]Department of Humanities and Social Sciences, National Institute of Technology. Patna, India.

Cite as: John A, Tiwari M. Strategic Assessment of ESG and CSR Attitudes on Human Resource Performance. Management (Montevideo). 2025; 3:288. https://doi.org/10.62486/agma2025288

Submitted: 19-10-2024 **Revised:** 23-02-2025 **Accepted:** 25-08-2025 **Published:** 26-08-2025

Editor: Ing. Misael Ron

Corresponding Author: Alok John

ABSTRACT

Introduction: Corporate Social Responsibility (CSR) and sustainability have significantly reshaped the fields of finance and accounting, steering the movement toward sustainable finance embraced by institutional investors and individual stakeholders who prioritize strong environmental, social, and governance (ESG) practices.
Objective: the objective of this study is to explore the connection between ESG performance and financial outcomes, specifically examining how a firm's CSR orientation influences this relationship. Companies are increasingly facing expectations from stakeholders to act responsibly towards society and the environment, making ESG performance substantially important.
Method: the study utilized a Kaggle dataset, analyzing ESG and financial metrics from 1,000 global firms across nine industries and seven regions, covering the period from 2015 to 2025. It employed advanced statistical methods, including regression frameworks and a novel multi-level analytical approach, to identify patterns and account for industry-specific dynamics.
Results: the research found a generally positive association between ESG scores and CSR performance, though this relationship exhibits considerable variability depending on specific ESG components and industry contexts.
Conclusions: this study reinforces the increasing importance of ESG practices in influencing CSR performance and meeting stakeholder expectations. It provides valuable insights for practitioners and researchers by highlighting the central role of the environmental dimension of ESG, the varying impacts across industries, and the influence of methodological choices on observed relationships.

Keywords: Strategic Assessment; Corporate Social Responsibility; Environmental; Social; Governance; Human Resource.

RESUMEN

Introducción: la responsabilidad social corporativa (RSC) y la sostenibilidad han transformado significativamente los campos de las finanzas y la contabilidad, impulsando el movimiento hacia las finanzas sostenibles adoptado por los inversores institucionales y las partes interesadas individuales que dan prioridad a las prácticas sólidas en materia de medio ambiente, sociedad y gobernanza (ESG).
Objetivo: el objetivo de este estudio es explorar la conexión entre el rendimiento ESG y los resultados financieros, examinando específicamente cómo la orientación de una empresa hacia la RSC influye en esta relación. Las empresas se enfrentan cada vez más a las expectativas de los grupos de interés de actuar de forma responsable con la sociedad y el medio ambiente, lo que hace que el desempeño ESG sea muy importante.

Método: el estudio utilizó un conjunto de datos de Kaggle, analizando métricas ESG y financieras de 1000 empresas globales de nueve sectores y siete regiones, que abarca el periodo comprendido entre 2015 y 2025. Se emplearon métodos estadísticos avanzados, incluidos marcos de regresión y un novedoso enfoque analítico multinivel, para identificar patrones y tener en cuenta la dinámica específica de cada sector.
Resultados: la investigación encontró una asociación generalmente positiva entre las puntuaciones ESG y el rendimiento de la RSC, aunque esta relación muestra una variabilidad considerable en función de los componentes ESG específicos y los contextos sectoriales.
Conclusiones: este estudio refuerza la creciente importancia de las prácticas ESG para influir en el rendimiento de la RSC y satisfacer las expectativas de las partes interesadas. Proporciona información valiosa para los profesionales y los investigadores, al destacar el papel central de la dimensión medioambiental de los criterios ESG, los diferentes impactos en los distintos sectores y la influencia de las opciones metodológicas en las relaciones observadas.

Palabras clave: Evaluación Estratégica; Responsabilidad Social Corporativa; Medio Ambiente; Sociedad; Gobernanza; Recursos Humanos.

INTRODUCTION

Corporate Social Responsibility (CSR) and sustainability have significantly reshaped finance and accounting practices, driving the pursuit of sustainable finance goals embraced by both institutional investors and individuals who prefer to invest in companies with strong environmental, social, and governance (ESG) performance.[1] In today's business context, ESG performance has become increasingly crucial as stakeholders—including shareholders, customers, regulators, employees, and suppliers—demand greater corporate accountability toward societal and environmental well-being.[2] In response, managers are paying closer attention to ESG metrics, using them to signal their dedication to sustainability, improve corporate reputation, and at times, further their own interests.[3] Companies are thus increasingly engaging in ESG-related initiatives, recognizing both the reputational and strategic benefits of aligning business practices with sustainability objectives.[4]

Over the past decade, the body of evidence exploring the connection between Environmental, Social, and Governance (ESG) performance and corporate financial outcomes has grown substantially.[5] Researchers have increasingly sought to understand not only whether ESG scores can serve as predictors of financial success but also how a firm's stance on Corporate Social Responsibility (CSR) may influence this relationship.[6] Despite this growing interest, the findings from existing studies remain mixed and, at times, inconclusive. One possible reason for these inconsistencies lies in the varying legislative and regulatory environments in which such analyses are conducted. These contextual factors can significantly shape both the strength and direction of the observed associations between ESG and financial performance, suggesting that findings are not always universally applicable. Building on this prior work, the present study aims to contribute fresh insights into the ESG–financial performance nexus through a comprehensive quantitative analysis.[7] Specifically, it examines how ESG scores relate to financial metrics across a diverse sample of companies and investigates whether a company's CSR orientation moderates this relationship. The study leverages a robust dataset simulating the financial and ESG performance of 1,000 publicly listed firms from 2015 to 2025.[8] These firms represent a broad spectrum of nine industries and seven global regions, offering a rich and realistic context for analysis. The dataset includes detailed financial indicators such as revenue, profit margins, and market capitalization, alongside granular ESG measures like carbon emissions, resource consumption, and composite ESG scores.

This research adopts advanced statistical methods to uncover patterns that might otherwise remain obscured. It also examines the impact that different regression frameworks have on the results, highlighting how methodological choices can influence interpretations of the ESG–financial performance relationship. A novel multi-level analytical approach is employed to control for industry-specific effects, addressing one of the limitations of earlier studies that often overlooked sectoral differences.[9,10] The findings from this investigation reveal a generally positive association between ESG scores and financial performance. However, this relationship is not uniform; it exhibits considerable variability depending on specific ESG components and industry contexts. Interestingly, the moderating effect of CSR attitudes on this association appears limited. Apart from the presence of a CSR committee and whether the CSR report undergoes external auditing—both of which seem to exert a negative influence—most CSR-related factors do not significantly alter the ESG–financial and Human Resource performance link.[11] By incorporating a multi-level perspective and testing the robustness of results under different regression specifications, this study provides a more nuanced understanding of how ESG and financial outcomes interact. It not only clarifies previous ambiguities in the literature but also offers a methodological contribution by illustrating the importance of accounting for industry dynamics and methodological rigor.

Objective

- The primary objective of this study is to explore the connection between ESG performance and HRM outcomes, with a particular focus on whether a firm's CSR orientation influences this relationship.
- The paper also aims to emphasize the impact of methodological choices and propose a novel multi-level approach to capture industry-specific dynamics.

METHOD

Data setting

The data used in this study is a Kaggle dataset that provides a "company-year" view, blending conventional financial metrics with sustainability signals. This structure allows analysts to track how firms evolve over time regarding their financial and ESG performance. Each row in the dataset represents a unique snapshot for a specific company in a given year, incorporating core financial data alongside environmental, social, and governance (ESG) metrics. The dataset includes detailed financial indicators such as revenue, profit margins, and market capitalization, as well as granular ESG measures like carbon emissions, resource consumption, and composite ESG scores. It also contains identifiers like CompanyID and CompanyName, and categorical contexts such as Industry and Region, enabling the grouping of observations into peer groups or geographic clusters.

Study Population

- The study population corresponds to 1,000 global firms.
- These firms represent a broad spectrum, covering nine industries and seven regions globally.
- The data for these firms spans a period from 2015 to 2025.

The dataset offers a panel-style "company-year" view that blends conventional finance with sustainability signals, letting analysts trace how firms evolve over time. Every row is a unique intersection of CompanyID and Year, enriched by categorical context—Industry and Region—so observations can be sliced into peer groups or geographic clusters. The financial block (Revenue, ProfitMargin, MarketCap, GrowthRate) frames each company's scale, profitability, market valuation, and momentum. Because these are continuous, they lend themselves to time-series charts, cross-sectional rankings, or econometric models such as fixed-effects regressions that exploit repeat observations to isolate firm-specific trends. Parallel to the accounting view, the ESG section supplies both perception-based scores and hard footprint numbers. ESG_Overall synthesizes the three pillars—Environmental, Social, Governance—each scored 0-100, enabling quick benchmarking (e.g., quartiles by sector). Beneath the Environmental pillar, absolute metrics (CarbonEmissions, WaterUsage, EnergyConsumption) reveal operational intensity, permitting intensity ratios like emissions per million revenue. This dual structure—scores plus raw outputs—invites nuanced hypotheses: do firms with rising ESG scores also cut real emissions, or does performance plateau? Because the file is tidy and granular, it is immediately compatible with pandas groupby functions, visualization tools (e.g., seaborn heat-maps), and machine-learning pipelines that predict financial outcomes from sustainability inputs.[8]

Variables

Each row captures a single company-year snapshot, combining core financials with environmen-tal, social, and governance (ESG) metrics. The identifiers—CompanyID and CompanyName—uniquely label the firm, while Industry and Region place it in a sectoral and geographic context. Year timestamps the observation. Four columns describe business performance: revenue (mil-lions), ProfitMargin (percentage of revenue retained as profit), MarketCap (billions, an equity valuation proxy), and GrowthRate (year-over-year revenue change, in %). Together they outline size, profitability, market perception, and momentum, letting you ask questions such as wheth-er high-growth firms also enjoy superior margins. The remaining fields quantify sustainability. ESG_Overall is a 0-100 composite derived from its three pillars—ESG_Environmental, ESG_Social, and ESG_Governance—each scored on the same 0-100 scale, where higher implies better practices. Beneath the Environmental pillar sit absolute footprint measures: Car-bonEmissions (metric tons CO_2-equivalent), WaterUsage (cubic metres), and EnergyConsumption (megawatt-hours). These raw figures let you test whether better environmental scores align with real reductions in resource use. Because the dataset is tidy—one observation per row, one variable per column—you can seamlessly filter by year, group by industry, and run regressions such as ProfitMargini=α+ß ESG_Overalli+εiProfitMargini=α+ßESG_Overalli+εi to explore how sus-tainability links to financial health. It must provide a study methodology that allows replication of the study. Aspects such as type of study, universe and sample, data collection, instruments used to collect data, statistical processing, etc. are missing.

Statistical analysis

Identify key ESG factors affecting financial performance

The correlation heat-map shows the first clues: ESG Environmental has the strongest direct links to both

Profit Margin (ρ ≈ 0,22) and Market Cap (ρ ≈ 0,21). Social and Governance correlations are close to zero, while overall ESG picks up some signal by virtue of being an average of the three.

Regression results sharpen the story. In the multiple regression on Profit Margin (not shown above), the Environmental coefficient remains positive and highly significant, whereas Social and Governance lose significance once they compete in the same model. The Market Cap regres-sion echoes this pattern: Environmental stays significant; Governance turns marginal; and Social again fades out. For Growth Rate, none of the ESG pillars is individually significant, suggesting that ESG effects emerge more in profitability and valuation than in short-term revenue acceler-ation as shown figure 1. Taken together, the key ESG factor influencing financial performance here is the Environmental pillar.

Higher environmental scores consistently lift margins and market value, even after controlling for the other two pillars. Governance shows a weak positive tilt toward valuation, and Social offers little standalone explanatory power in this sample(8). For investors, focusing on compa-nies that improve their Environmental practices appears most rewarded, while Governance is a secondary screen and Social effects are, at least statistically, muted as shown in table 1.

Table 1. Correlations between ESG scores and financial metrics

	ProfitMargin	MarketCap	GrowthRate	ESG_ Environmental	ESG_ Social	ESG_ Governance	ESG_ Overall
ProfitMargin	1	0,26	0,06	0,22	-0,03	-0,04	0,09
MarketCap	0,26	1	0,13	0,21	0,04	0,01	0,14
GrowthRate	0,06	0,13	1	0,1	0,01	0,01	0,07
ESG_ Environmental	0,22	0,21	0,1	1	0,03	-0,01	0,57
ESG_Social	-0,03	0,04	0,01	0,03	1	0,3	0,66
ESG_Governance	-0,04	0,01	0,01	-0,01	0,3	1	0,67
ESG_Overall	0,09	0,14	0,07	0,57	0,66	0,67	1

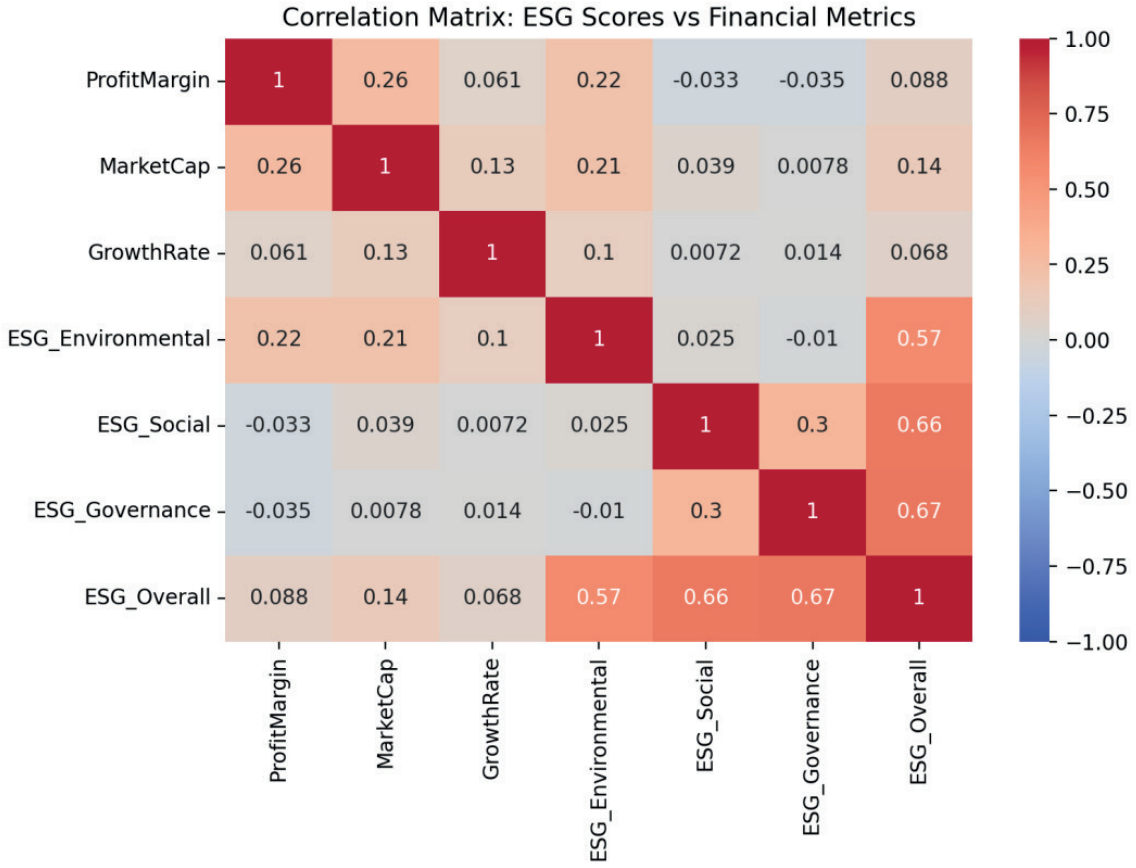

Figure 1. Correlation matrix for ESG and financial metrics[8]

Analyze industry-specific ESG impacts

The analysis reveals distinct ESG-profitability dynamics across industries. Retail, Healthcare, and Consumer Goods show small but statistically weak positive links between ESG scores and profit margins, suggesting modest benefits from sustainability in these sectors. In contrast, Energy, Transportation, and Utilities display significant negative relationships, where higher ESG scores tend to lower margins, likely due to costly environmental compliance in resource-intensive industries. Manufacturing falls in between, with a modest yet significant negative association as shown figure 2. Similarly, environmental scores correlate most negatively with margins in Energy and Manufacturing, while Finance and Healthcare remain nearly neutral. These findings suggest investors should adopt an industry-specific approach—favoring high-ESG firms in Retail and Healthcare while exercising caution in Energy and Utilities, where strong ESG performance may still dampen profitability. For carbon-heavy sectors, meaningful financial gains from ESG improvements may require regulatory support or cost mitigation measures to offset the initial investment burden of environmental initiatives.

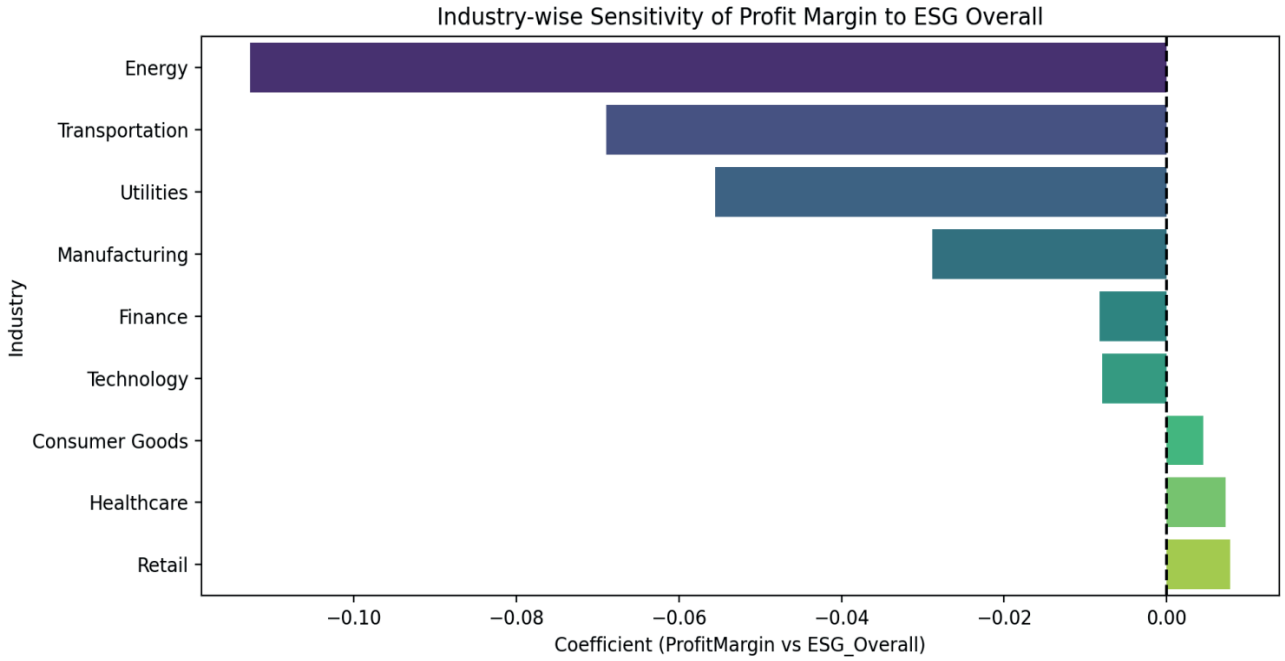

Figure 2. Industry wise sensitivity of profit margin to ESG[8]

Time-series analysis and forecasting (financial growth, ESG trends)

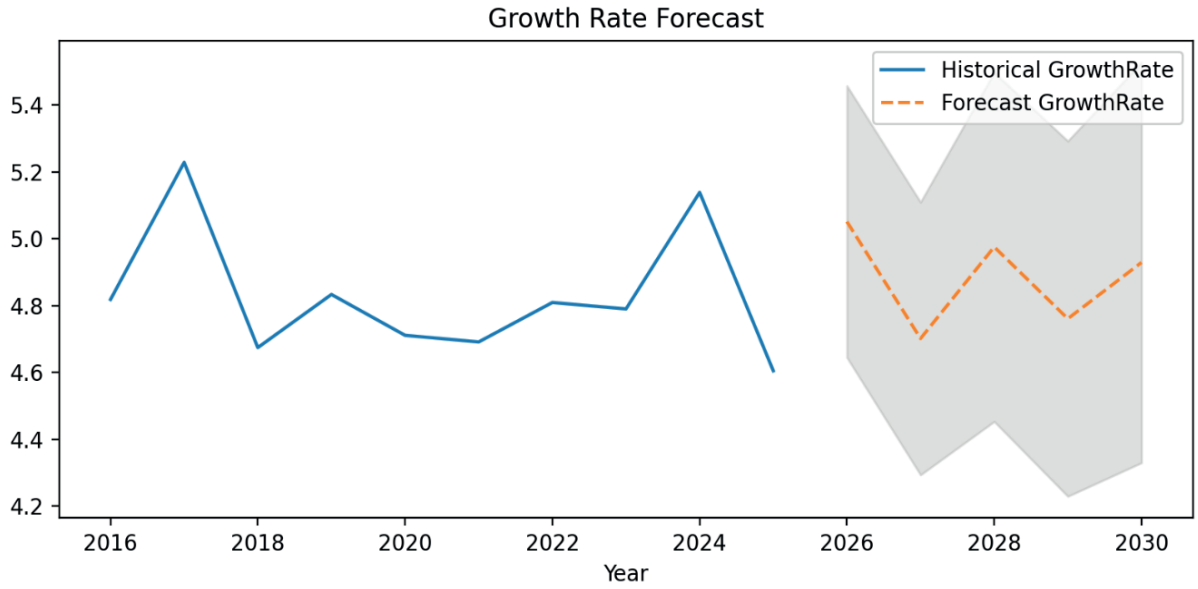

Figure 3. Growth rate forecast[8]

The historical averages were condensed into a single annual observation, and five-year forecasts were generated using simple ARIMA (1,1,1) models. The growth-rate projection indicates modest and relatively stable expansion, ranging between 4,7 % and 5,1 % through 2030, with 95 % confidence intervals of approximately ±0,4-0,6 percentage points. For the overall ESG trajectory, the upward trend is expected to continue at about +0,64 points per year, reaching nearly 61 by 2030. In the visual representation, dashed lines extend the historical data while shaded ribbons illustrate forecast uncertainty as shown figure 3 and 4. Future research could refine these insights by disaggregating data by industry or region to uncover heterogeneous patterns, incorporating external factors like macroeconomic indicators or carbon pricing into a SARIMAX framework, or applying advanced panel-data time-series methods such as dynamic panel regressions or Bayesian hierarchical models to produce more granular, company-level predictions and improve forecast accuracy while capturing complex dynamics across firms and sectors.

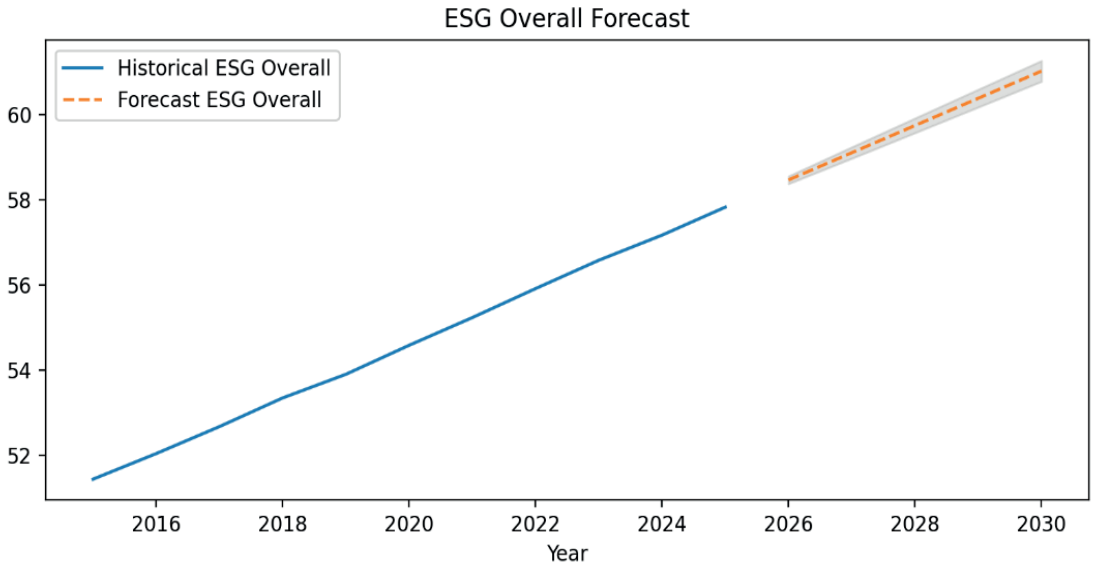

Figure 4. ESG forecast[8]

Exploring ESG-financial relationships

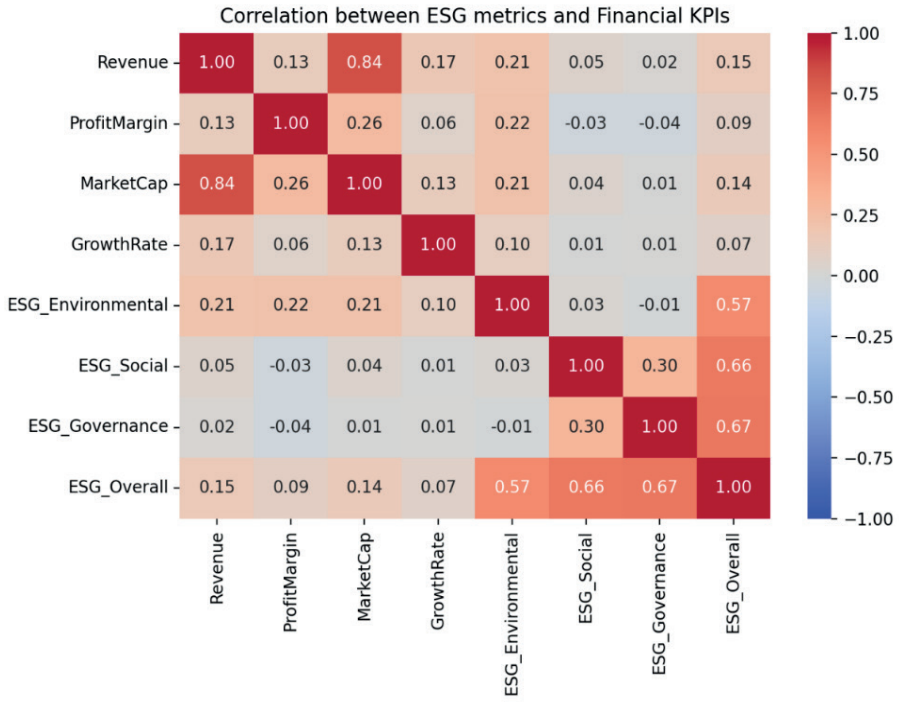

Figure 5. Correlation between ESG metrics and Financial KPIs

The analysis highlights that environmental scores have the strongest positive correlations with key financial metrics, particularly Profit Margin (≈ 0,22) and Market Capitalization (≈ 0,21), while social and governance scores show much weaker, and in some cases slightly negative, as-sociations with profitability. Regression results on Profit Margin further confirm this trend: a one-point increase in environmental score is linked to a significant +0,06 percentage point rise in margin as shown figure 5. Conversely, social (-0,013 pp) and governance (-0,007 pp) scores have small but significant negative impacts, even after adjusting for firm size—likely reflecting short-term cost pressures. Notably, revenue and market capitalization account for much of the variance, suggesting potential multicollinearity. Future work should examine whether environ-mental advantages are universal or industry-specific, test for dynamic effects by lagging ESG variables to differentiate short-term costs from long-term benefits, and apply causal inference techniques, such as fixed-effects or difference-in-differences models, to move beyond simple correlations toward causation.

Exploring ESG-financial relationships for sustainable investing strategies.

The visuals illustrate how the environmental dimension relates to profitability. A scatterplot with a trendline shows a modest but positive overall slope, indicating that firms with higher environmental scores generally achieve better profit margins, though with considerable variation. When broken down by industry, the effect proves uneven: Healthcare and Finance display small positive coefficients, while Transportation and Utilities turn negative, with the latter's result being statistically significant at the 1 % level. This pattern suggests investors might favor industries where environmental leadership already supports margins, while viewing others more as long-term risk mitigators rather than immediate profit drivers. Future research could extend this analysis to other KPIs, like Market Capitalization or Growth Rate, to determine which metrics most reward ESG efforts as shown figure 6 and 7.

Additionally, introducing lagged variables could help capture delayed benefits, and constructing a factor-tilted portfolio—overweighting firms with top-quartile environmental scores in favorable industries—would enable testing of risk-adjusted returns against a benchmark.

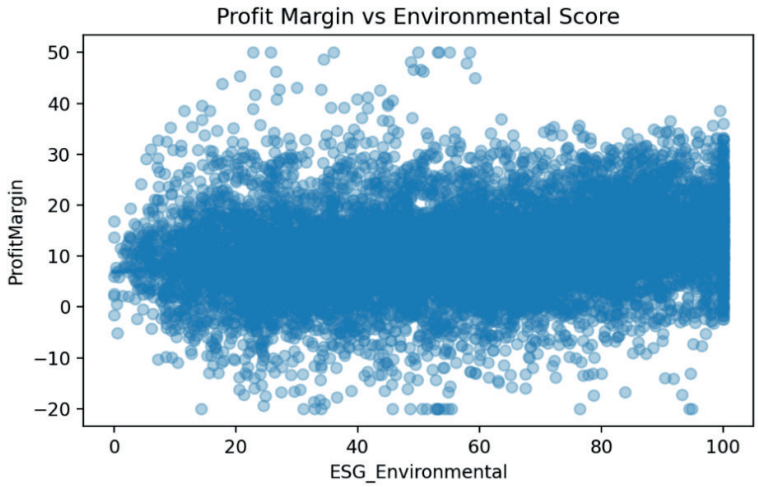

Figure 6. Profit margin vs environmental score

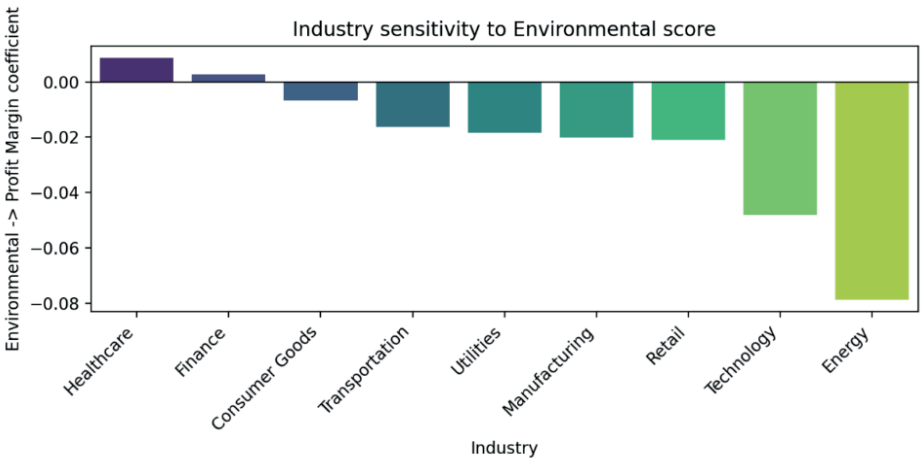

Figure 7. Industry sensitivity to environmental score

DISCUSSION

The exploratory work paints a nuanced picture of how environmental, social & governance (ESG) quality translates into financial performance and therefore into investible signals.[12,13] The global scatter-plot of profit margin versus environmental score shows a gently positive slope: environmentally stronger firms, on average, post higher operating profitability.[4] Yet the cloud of points is wide; purely stock-picking on the headline score would expose inves-tors to substantial idiosyncratic noise. The findings of this study highlight the central role of the environmental dimension of ESG in driving financial performance. Correlation and regression analyses consistently demonstrate that higher environmental scores are positively associated with profitability and market valuation, with Profit Margin (≈ 0,22) and Market Capitalization (≈ 0,21) showing the strongest links. A one-point rise in environmental score significantly increases margins by 0,06 percentage points, even after controlling for firm size, while social and govern-ance scores exhibit weak or negative effects, likely reflecting short-term costs of implementa-tion. Industry-level analysis reveals that ESG benefits vary considerably across sectors: Retail, Healthcare, and Consumer Goods show modest positive impacts, while Energy, Transportation, and Utilities face significant negative associations, underscoring the financial burden of envi-ronmental compliance in resource-heavy industries. Time-series forecasts project steady finan-cial growth of around 4,7–5,1 % and a continued upward ESG trend through 2030, with industry differences remaining relevant.[14] Visual trends further confirm that environmental leadership tends to enhance margins in sectors like Healthcare and Finance, while offering more long-term risk mitigation in others. These results suggest that sustainable investment strategies should prioritize firms excelling in environmental practices within favorable industries, while account-ing for delayed payoffs and sector-specific dynamics. Future research could refine these insights using advanced causal methods and granular, company-level models.

CONCLUSIONS

The study successfully explored the connection between ESG performance and financial outcomes, revealing a generally positive association. Specifically, environmental scores demonstrate the strongest positive links to profitability and market capitalization. A one-point increase in environmental score is associated with a +0,06 percentage point rise in profit margin. The research found that the moderating effect of CSR attitudes on the ESG-financial relationship appears limited. Most CSR-related factors, apart from the presence of a CSR committee and external auditing of CSR reports, did not significantly alter the ESG-financial and Human Resource performance link. The findings highlight significant variability in ESG-financial relationships across industries, emphasizing the need for a multi-level approach to capture these industry-specific dynamics. The study also underscores how methodological choices, such as the regression model, can affect observed relationships.

BIBLIOGRAPHIC REFERENCES

1. Candio P. The effect of ESG and CSR attitude on financial performance in Europe: A quantitative re-examination. J Environ Manage. 2024;354:120390.

2. Arif M, Gan C, Bataineh HA. Global evidence on the association between environmental, social, and governance disclosures and future earnings risk. Bus Strateg Environ. 2024;33(3):2497–517.

3. Broadstock DC, Chan K, Cheng LTW, Wang X. The role of ESG performance during times of financial crisis: Evidence from COVID-19 in China. Financ Res Lett. 2021;38:101716.

4. Friede G, Busch T, Bassen A. ESG and financial performance: aggregated evidence from more than 2000 empirical studies. J Sustain Financ Invest. 2015;5(4):210–33.

5. Piloca D, Quattrociocchi B, Restante S, Mercuri F. Evoluzione del modello di business nella filiera agroalimentare. L'impatto degli investimenti tecnologici. In: Rediscovering local roots and interactions in management. Fondazione CUEIM; 2023. p. 103–7.

6. Bruno RG, Bifulco G. City-Region Food System, Global South And Cooperation Strengthening African Urban Food Systems Through The City-Region Framework. JUNCO| J Univ Int Dev Coop. 2024;8(1).

7. Chen S, Song Y, Gao P. Environmental, social, and governance (ESG) performance and financial outcomes: Analyzing the impact of ESG on financial performance. J Environ Manage. 2023;345:118829.

8. ESG & Financial Performance Dataset [Internet]. Available from: https://www.kaggle.com/datasets/shriyashjagtap/esg-and-financial-performance-dataset

9. Bharadiya JP, Thomas RK, Ahmed F. Rise of Artificial Intelligence in Business and Industry. J Eng Res Reports. 2023;25(3):85–103.

10. Karnes RE. A change in business ethics: The impact on employer–employee relations. J Bus Ethics. 2009;87(2):189–97.

11. Whelan T, Atz U, Van Holt T, Clark C. ESG and financial performance. Uncovering Relatsh by Aggregating Evid from. 2021;1(2015–2020):10.

12. Van Marrewijk M. Concepts and definitions of CSR and corporate sustainability: Between agency and communion. J Bus ethics. 2003;44(2):95–105.

13. van Marrewijk M. Concepts and definitions of CSR and corporate sustainability. Eur Union Draft Pap. 2002;

14. Le TMH, Hoang H, Nguyen ST. Does entrepreneurial training change minds? a case study among Southeast Asian business students. Irish Educ Stud. 2023;1–19.

FINANCING

None.

CONFLICT OF INTEREST

Authors declare that there is no conflict of interest.

AUTHORSHIP CONTRIBUTION

Conceptualization: Alok John and Manish Tiwari.
Data curation: Alok John and Manish Tiwari.
Formal analysis: Alok John and Manish Tiwari.
Methodology: Alok John and Manish Tiwari.
Project management: Alok John and Manish Tiwari.
Supervision: Manish Tiwari.
Drafting - original draft: Alok John.
Writing - proofreading and editing: Alok John.