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The Impact of CSR Disclosure on Sustainable Finance: Empirical Evidence from ESG Ratings, Green Bonds and Financial Performance

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A B S T R A C T

The growing emphasis on sustainability in financial systems has intensified scrutiny of Corporate Social Responsibility (CSR) disclosures as a key driver of sustainable finance. This study examines the relationship between CSR spending, financial performance, and Environmental, Social, and Governance (ESG) metrics, focusing on how CSR transparency influences investor behavior and market outcomes. Using a quantitative research design, the paper analyzes data from 26 publicly listed companies across multiple sectors (2021–2024), assessing correlations between CSR expenditures, Return on Equity (ROE), Return on Assets (ROA), ESG ratings, and transparency indices.Key findings reveal a strong positive correlation between CSR spending and financial performance (ROE: $r = 0.628$, $p < 0.01$; ROA: $r = 0.732$, $p < 0.01$), suggesting that firms investing more in CSR achieve higher profitability. Additionally, CSR expenditures significantly correlate with higher ESG ratings ($r = 0.676$, $p < 0.01$) and transparency ($r = 0.718$, $p < 0.01$), reinforcing the role of CSR in ethical governance. Regression analysis indicatesthat governance quality ($B = 0.992$, $p < 0.001$) and ESG compliance ($B = 0.346$, $p = 0.011$) are key predictors of CSR spending, while MANOVA results confirm that higher-rated firms outperform peers in financial efficiency. The study bridges critical gaps in sustainable finance literature by demonstrating how CSR disclosures function asa signaling mechanism, influencing investor trust and financial mechanisms like green bonds and ESG investing. It provides policy and strategic recommendations for enhancing CSR reporting standards to foster sustainable financial growth.

Keywords: Sustainable finance, CSR, CSR disclosure, sustainability reporting, green finance, ESG

1. Introduction:

In recent years, sustainable finance has emerged as a critical component of global financial systems, reflecting a growing re cognition of the need to align financial decision-making with long-term environmental, social, and governance (ESG) goals. As climate risks, social inequality, and ethical business practices gain visibility, investors, regulators, and stakeholders increasingly demand greater transparency and accountability from corporations. Within this context, Corporate Social Responsibility (CSR) disclosures have become a pivotal tool for assessing a company's commitment to sustainability and ethical governance. CSR disclosures provide a narrative and quantitative snapshot of how firms engage with environmental and social issues, including carbon emissions, labor practices, community development, and ethical sourcing. These reports not only communicate corporate values but also influence investor perceptions and decision-making. For financial markets, this means that CSR transparency can directly impact investment flows, risk assessment, and the valuation of companies, thereby positioning CSR disclosures as a bridge between sustainable development and financial performance.

Evaluating sustainable finance through the lens of CSR disclosures offers a unique opportunity to assess the effectiveness, c redibility, and impact of corporate

sustainability efforts. It also raises important questions: How do CSR disclosures align with financial sustainability goals? Are they reliable indicators of long-term corporate performance? Do they foster trust among stakeholders and attract responsible investment?

This paper seeks to explore these questions by analyzing the role of CSR disclosures in sustainable finance frameworks. Through a critical review of existing literature and empirical evidence, this research aims to assess how CSR practices and reporting standards influence financial decisions, market behavior, and the overall integration of sustainability into mainstream finance.

2. Review of literature:

Wei Wu et al (2024)The literature review emphasizes the role of green finance and Corporate Social Responsibility (CSR) in promoting sustainability, particularly in Small and Medium Enterprises (SMEs). Key variables include green finance, CSR, green investment, green techno logy, sustainability, and corporate governance. These factors positively influence sustainability outcomes by supporting environmentally friendly initiatives, with green finance driving investment in green technologies. However, the review reveals a research gap in understanding the long-term effects of green finance on

SMEs in developing countries. Most studies focus on short-term impacts or specific industries, leaving the need for longitudinal research that explores the sustained impact of green finance on SMEs' growth and resilience in emerging economies.

Chengbo Fu et al (2023) reviewed the relationship between green finance and sustainable development, with a focus on combating climate c hange and achieving carbon neutrality. Through a narrative review of scholarly articles, it highlights the importance of substantial investments in green and low-carbon initiatives, along with robust regulatory frameworks to support green finance. The paper emphasizes the potential of impact investing, where investors accept lower returns for non-financial benefits, and the role of institutional ownership in promoting better environmental and social performance. It also stresses the integration of ESG factors in investment decisions and the impact of environmental risks on financial choices. The study calls for collaboration, further research, and policy measures to advance green finance, foster transparency, and align financial incentives with sustainable outcomes.

Hao liang et al (2020) Corporate Social Responsibility (CSR) integrates Environmental, Social, and Governance (ESG) considerations into business and investment decisions. Socially responsible firms aim to internalize negative externalities and are accountable to both shareholders and broader stakeholders. Over the years, ESG rating systems have emerged, but inconsistencies remain due to differing methodologies and factor weightings. CSR also relates closely to Sustainable and Responsible Investing (SRI), which includes strategies like negative and positive screening, and shareholder activism. Key research areas include the financial performance of SRI funds, the existence of an ESG factor, and whether investors are willing to sacrifice returns for ethical satisfaction. Growing interest is seen in green finance, particularly green bonds, as climate concerns increasingly influence market dynamics and investor choices.

Muhammad Haroon Rehan et al (2025) This study examined the mediating role of Green Intellectual Capital (GIC) in the relationship between Corporate Social Responsibility (CSR) and Sustainable Social Performance (SSP) within Islamic banks in Pakistan. The sample includes 32 0 employees from 15 Islamic banks in the southern region of Khyber Pakhtunkhwa, Pakistan, selected using non -probability sampling for convenience. It includes key variables Corporate Social Responsibility (CSR) in which Practices adopted by banks to manage their social, environmental, and economic impacts. Green Intellectual Capital (GIC): The knowledge, skills, and intellectual assets within an organization focused on environmental sustainability. And Sustainable Social Performance (SSP): The social outcomes of a company's sustainability efforts, particularly its impact on employees and the co mmunity. The study highlights the role of GIC in integrating green practices and sustainable knowledge within CSR strategies, enhancing social perform ance. While the research does not focus on specific technologies, GIC could imply the use of environmentally sustainable technologies in banking operations.

Haichuan Hu et al (2025) This study explored the impact of FinTech and green finance on corporate environmental, social, and governance (ESG) performance across different life-cycle stages of companies. It utilizes a two-way fixed-effects model with data from Chinese A-share listed companies between 2009 and 2021, applying symbiosis theory and stakeholder theory. Key variables include FinTech, green finance, and ESG performance, with life- cycle stages (growth, maturity, and decline) serving as a critical moderating factor. The technology involved is FinTech plays a central role in enhancing ESG performance, with digital innovations potentially improving efficiency, transparency, and environmental practices. Green finance moderates the relationship between FinTech and ESG, particularly in the growth stage. FinTech and green finance initiatives based on the life-cycle stage and industry characteristics to optimize ESG outcomes, offering valuable insights for companies and policymakers to enhance sustainable bu siness practices.

Bingxue Han et al (2025) This study explored As China transitions economically, its manufacturing sector must embrace Corporate Social Responsibility (CSR) to support green, sustainable development. This study, based on stakeholder theory, categorizes CSR into internal and e xternal dimensions and introduces a dual-chain intermediary model to assess their impact on green innovation. Using data from 1,743 listed manufacturing firms (2011 –2020), it finds that CSR overall positively influences green innovation. Specifically, internal CSR significantly promotes green innovation, while external CSR surprisingly inhibits it. Financing constraints and R&D expenditure act as key mediators in this relationship. Robustness tes ts confirm the validity of these findings. The study expands CSR research through a more nuanced framework and offers valuable insights for advancing green in novation in manufacturing.

3. Research Gap:

While the existing literature extensively explores the interplay between green finance, CSR, and sustainability —particularly in the context of SMEs (Wei Wu et al., 2024), climate change (Chengbo Fu et al., 2023), and sector-specific practices (Bingxue Han et al., 2025)—several critical gaps remain. Most studies have focused on the macro-level implications of green finance or sector-specific CSR strategies, often emphasizing short-term outcomes, technological innovation, or institutional factors. However, there is limited integrative research that examines how the transparency, quality, and scope of CSR disclosures directly influence investor behavior, financial mechanisms like green bonds and ESG investments, and the broa der framework of sustainable finance.

Furthermore, while previous studies highlight the conceptual importance of CSR in fostering sustainability, they do not provide a comprehensive analysis of the causal or correlative linkages between CSR disclosure practices and the operationalization of su stainable financial instruments across diverse markets or economies. The role of CSR disclosure as a signaling mechanism to investors and stakeholders, and how it aligns or conflic ts with actual environmental and social outcomes, remains underexplored.

This paper addresses these gaps by:

- Focusing on CSR disclosure specifically as a driver of sustainable finance, rather than treating CSR as a general ethical pra ctice.

- Analyzing the relationship between the depth and quality of CSR reporting and the deployment of sustainable financial instrum ents, such as green bonds, ESG investing, and impact financing.
- Bridging the gap between disclosure and financial behavior, by investigating how transparent CSR communication affects invest or decisions and long-term ESG outcomes.
- Providing a cross-sectional analysis across industries and financial products, offering a broader perspective than single-sector or regional studies.

4. Objective of the study:

- To examine the role of Corporate Social Responsibility (CSR) disclosure in promoting sustainable finance, with a focus on how transparent and comprehensive reporting influences investor behavior and market outcomes.
- To analyze the relationship between CSR disclosure practices and the implementation of sustainable financial instruments, suc h as green bonds, ESG investing, and impact financing.
- To evaluate the impact of CSR disclosure quality on the financial performance and long-term Environmental, Social, and Governance (ESG) outcomes of firms across different sectors.
- To investigate how CSR disclosures function as signaling mechanisms, affecting the perceptions and decisions of investors, re gulators, and other stakeholders in the context of sustainability.
- To bridge theoretical and practical insights by exploring whether CSR transparency contributes to the operationalization of s ustainable finance frameworks, especially in emerging or under-researched economic settings.
- To provide policy and strategic recommendations for firms, investors, and regulators on enhancing CSR

5. Research Methodology:

Research Design:

This study adopts a quantitative research design to examine the relationship between Corporate Social Responsibility (CSR) spending and firm -level financial performance (ROE, ROA), as well as their alignment with ESG metrics (ESG ratings, transparency, green bonds, and ca rbon disclosure). The aim is to determine whether CSR and ESG-related activities are statistically associated with enhanced profitability and operational efficiency .

The design includes:

- Descriptive statistics to analyse central tendencies (mean, median), variation, and distribution skewness.
- Correlation analysis to assess the strength and direction of relationships between CSR spending and key financial/ESG variables.
- Cross-sectional multiple regression models to identify significant predictors of both CSR spending and financial outcomes.
- MANOVA (Multivariate Analysis of Variance) to evaluate the effect of categorical ESG rating levels on multiple dependent fina ncial indicators (ROE and ROA).

Data Sources:

The dataset comprises 26 publicly listed domestic and multinational companies, drawn from various sectors including automotive, technology, consumer goods, finance, healthcare, and infrastructure. Data points span across financial years 2021 –22, 2022–23, and 2023–24, enabling cross-year comparison where applicable.

Data were compiled from:

- Company Annual Reports
- CSR disclosures under India's Companies Act, 2013
- MSCI and CSRHub ESG rating databases
- Sustainability and Integrated Reports for non-financial disclosures

Sample Size:

The study covers 26 companies across sectors, ensuring a diverse and representative sample. Time Frame consists of Data from three financial years (2021 –

22, 2022–23, 2023–24) were analysed.

Variables:

Dependent Variables:

- CSR Spending (₹ Crores)
- Return on Equity (ROE)
- Return on Assets (ROA) Independent Variables:
- ESG Rating (CSRHub / MSCI)
- Transparency Index (TI)
- Green Bonds Issued (GB)
- Carbon Disclosure Index
- Financial Performance Metrics Control Variables:
- Industry sector
- Firm size (market cap, total assets)
- Company type (Indian/MNC)

6. Data Analysis and Interpretation:

Correlation Analysis

- **CSR spending on ROE**

Correlations

		CSR SPENDING(in crores)	roe24
CSR SPENDING(in crores)	Pearson Correlation	1	.628**
	Sig. (2-tailed)		.000
	N	94	94
roe24	Pearson Correlation	.628**	1
	Sig. (2-tailed)	.000	
	N	94	94

**. Correlation is significant at the 0.01 level (2-tailed).

Pearson Correlation Coefficient (r = 0.628):

- This value shows the strength and direction of the linear relationship between CSR spending and ROE24.
- 0.628 indicates a moderate to strong positive correlation.
- This means that as CSR spending increases, ROE24 tends to increase as well.

There is a statistically significant, moderately strong positive relationship between a company's CSR spending and its ROE in 2024. In simpler terms, companies that spend more on CSR tend to have higher returns on equity

Correlations

		csr23	roe23
csr23	Pearson Correlation	1	.706**
	Sig. (2-tailed)		.000
	N	94	94
roe23	Pearson Correlation	.706**	1
	Sig. (2-tailed)	.000	
	N	94	94

**. Correlation is significant at the 0.01 level (2-tailed).

Correlations

		csr22	roe22
csr22	Pearson Correlation	1	.725**
	Sig. (2-tailed)		.000
	N	94	94
roe22	Pearson Correlation	.725**	1
	Sig. (2-tailed)	.000	
	N	94	94

**. Correlation is significant at the 0.01 level (2-tailed).

The correlation analysis across the years 2022, 2023, and 2024 reveals a consistent and statistically significant positive re lationship between CSR spending and Return on Equity (ROE). In 2022, the Pearson correlation coefficient was 0.725, indicating a st rong positive correlation, followed by 0.706 in 2023, and 0.628 in 2024, both of which also reflect a strong to moderately strong positive association. All correlations a re significant at the 0.01 level ($p = 0.000$), confirming that the observed relationships are highly unlikely to be due to chance. This pattern suggests that companies investing more in CSR activities tend to achieve higher financial returns in terms of ROE. Over time, while there is a slight decline in the strength of the correlation, the overall trend underscores the potential value of CSR initiatives in enhancing a firm's financial performance. This consistent association supports the view that CSR is not merely a social or ethical obligation but can also contribute positively to shareholder value.

- **CSR spending on ROA**

Correlations

		CSR SPENDING(in crores)	roa 24
CSR SPENDING(in crores)	Pearson Correlation	1	.732**
	Sig. (2-tailed)		.000
	N	94	94
roa 24	Pearson Correlation	.732**	1
	Sig. (2-tailed)	.000	
	N	94	94

Correlations

		roa23	csr23
roa23	Pearson Correlation	1	.754**
	Sig. (2-tailed)		.000
	N	94	94
csr23	Pearson Correlation	.754**	1
	Sig. (2-tailed)	.000	
	N	94	94

Correlations

		csr22	roa22
csr22	Pearson Correlation	1	.705**
	Sig. (2-tailed)		.000
	N	94	94
roa22	Pearson Correlation	.705**	1
	Sig. (2-tailed)	.000	
	N	94	94

The correlation analysis between CSR spending and Return on Assets (ROA) for the years 2022, 2023, and 2024 indicates a consistently strong and statistically significant positive relationship. In 2022, the Pearson correlation coefficient was 0.705, suggest ing a strong positive correlation between CSR spending and ROA. This relationship further strengthened in 2023, with a correlation coefficient of 0.754, the highest among the three years, indicating that increased CSR spending was strongly associated with improved asset efficiency that year. In 2024, the positive trend continued with a correlation of 0.732, again signifying a robust and significant association. All correlations are significant at the 0.01 level ($p = 0.000$), confirming that these results are highly reliable and not due to random variation. Overall, the findings imply that companies investing more in CSR initiatives tend t o

manage their assets more effectively, resulting in better financial outcomes. This supports the notion that CSR is not on ly a tool for social impact but also a strategic investment contributing to improved operational and financial performance.

- **CSR spending on ESG Rating**

Correlations

		CSR SPENDING(in crores)	csr_hub
CSR SPENDING(in crores)	Pearson Correlation	1	.676**
	Sig. (2-tailed)		.000
	N	94	94
csr_hub	Pearson Correlation	.676**	1
	Sig. (2-tailed)	.000	
	N	94	94

**. Correlation is significant at the 0.01 level (2-tailed).

CSRHub ESG ratings, the correlation analysis shows a strong and statistically significant positive relationship between CSR spending and ESG ratings, with a Pearson correlation coefficient of 0.676 (p = 0.000). This indicates that companies that spend more on CSR tend to have higher ESG ratings as evaluated by CSRHub. The significant positive correlation suggests that greater financial investment in CSR initiatives is associated with better performance in environmental, social, and governance (ESG) dimensions. In other words, firms that actively allocate more resources to CSR activities are also recognized for stronger ESG practices, reinforcing the idea that meaningful CSR efforts contribute positively to a company's overall sustainability and ethical profile.

- **CSR spending on Transparency Index**

Correlations

		CSR SPENDING(in crores)	ti
CSR SPENDING(in crores)	Pearson Correlation	1	.718**
	Sig. (2-tailed)		.000
	N	94	94
ti	Pearson Correlation	.718**	1
	Sig. (2-tailed)	.000	
	N	94	94

**. Correlation is significant at the 0.01 level (2-tailed).

The correlation analysis between CSR spending and the Transparency Index (TI) reveals a strong and statistically significant positive relationship, with a Pearson correlation coefficient of 0.718 (p = 0.000). This indicates that companies that allocate more funds to CSR activities tend to score higher on the transparency index. In essence, firms that are more financially committed to corporate social responsibility are also more transparent in their operations, disclosures, and governance practices. The significant correlation suggests that increased CSR spending may be part of a broader commitment to ethical conduct, accountability, and openness, reinforcing stakeholder trust and corporate credibility.

i. Cross-sectional Multiple regression Analysis

- Dependent variable: CSR Spending
- Independent Variable: ROE, ROA, ESG RATING, CSR Transparency index, Green bonds, carbon emission disclosure

Model Summary b

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.816[a]	.666	.643	4.556	.666	28.933	6	87	.000

a. Predictors: (Constant), carbon, ti, csr_hub, roe24, roa 24, gb

b. Dependent Variable: CSR SPENDING(in crores)

ANOVA a

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	3603.870	6	600.645	28.933	.000[b]
	Residual	1806.087	87	20.760		
	Total	5409.957	93			

a. Dependent Variable: CSR SPENDING(in crores)

b. Predictors: (Constant), carbon, ti, csr_hub, roe24, roa 24, gb

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Correlations			Collinearity Statistics	
		B	Std. Error	Beta			Zero-order	Partial	Part	Tolerance	VIF
1	(Constant)	-.128	.771		-.166	.869					
	roe24	-.475	.232	-.288	-2.050	.043	.628	-.215	-.127	.194	5.157
	roa24	.383	.225	.208	1.702	.092	.732	.179	.105	.256	3.906
	csr_hub	.346	.133	.318	2.601	.011	.676	.269	.161	.257	3.888
	ti	.238	.566	.055	.420	.676	.718	.045	.026	.220	4.541
	gb	.992	.254	.605	3.909	.000	.753	.387	.242	.160	6.245
	carbon	-.068	.256	-.026	-.268	.789	.574	-.029	-.017	.392	2.550

A multiple regression analysis was conducted to assess the impact of organizational and sustainability -related factors—ROE, ROA, CSRHub ESG ratings, Transparency Index, Governance/Board Index, and carbon emissions—on CSR spending. The model was statistically significant (F (6,87) = 28.933, p <

0.001) and explained 66.6% of the variance in CSR spending, indicating a strong model fit. Among the predictors, Governance/Board Index (B = 0.992, p

< 0.001) and CSRHub ESG ratings (B = 0.346, p = 0.011) showed significant positive effects, highlighting the importance of governance and ESG performance in driving CSR investment. In contrast, ROE (B = -0.475, p = 0.043) had a significant negative effect, suggesting firms with higher shareholder returns may allocate less to CSR. Other variables—ROA, Transparency Index, and carbon emissions—were not statistically significant in this model. No multicollinearity issues were detected. Overall, the results suggest that strong governance and ESG credentials are key predictors of CSR spending, while financial performance indicators have a less consistent impact.

ii. **Cross-sectional Multiple regression Analysis**

- Dependent variable: ROE
- Independent Variable: CSR Spending, ESG RATING, CSR Transparency index, Green bonds, carbon emission disclosure.

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.866a	.750	.736	2.379	.750	52.930	5	88	.000

a. Predictors: (Constant), rating, carbon, CSR SPENDING(in crores), ti, gb

b. Dependent Variable: roe24

ANOVA a

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1498.396	5	299.679	52.930	.000[b]
	Residual	498.242	88	5.662		
	Total	1996.638	93			

a. Dependent Variable: roe24

b. Predictors: (Constant), rating, carbon, CSR SPENDING(in crores), ti, gb

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Correlations			Collinearity Statistics	
		B	Std. Error	Beta			Zero-order	Partial	Part	Tolerance	VIF
1	(Constant)	-.419	.469		-.893	.374					
	Ti	.417	.287	.160	1.453	.150	.752	.153	.077	.233	4.285
	Gb	.622	.114	.625	5.448	.000	.848	.502	.290	.216	4.635
	Carbon	.267	.121	.170	2.211	.030	.662	.229	.118	.481	2.078
	CSR SPENDING (in crores)	-.067	.053	-.110	-1.275	.206	.628	-.135	-.068	.379	2.639
	Rating	.271	.461	.074	.589	.558	.772	.063	.031	.180	5.567

a. Dependent Variable: roe24

A multiple regression analysis was performed to assess the influence of various organizational and sustainability -related variables—Transparency Index (TI), Governance/Board Index (GB), Carbon Emissions, CSR Spending, and ESG Rating—on Return on Equity (ROE). The overall model was statistically significant ($F(5,88) = 52.930$, $p < 0.001$), indicating that the included variables collectively have a strong explanatory effe ct on ROE. The R-squared value was 0.750, suggesting that approximately 75% of the variation in ROE can be explained by the model, with an adjusted R^2 of 0.736, denoting excellent model fit. Among the predictors, Governance/Board Index had the strongest and most statistically significant positive effect ($B = 0.622$, $p < 0.001$), implying that firms with stronger governance structures tend to report higher ROE. Carbon emissions also showed a sign ificant positive effect on ROE ($B = 0.267$, $p = 0.030$), which may reflect operational scale or efficiency that simultaneously increases emissions and profitability. Othe r variables, including Transparency Index ($B = 0.417$, $p = 0.150$), CSR Spending ($B = -0.067$, $p = 0.206$), and ESG Rating ($B = 0.271$, $p = 0.558$), did not demonstrate statistically significant effects in this model. Multicollinearity diagnostics indicated no critical concerns, though ESG Rating showed a high variance proportion (97%) under a high condition index (10.140), suggesting potential mild multicollinearity with other variables, particularly governa nce. Residual statistics confirmed a reasonable spread and normality of errors. the findings suggest that governance quality and carbon-related factors significantly influence a firm's ROE, while transparency, CSR spending, and ESG ratings may play more nuanced or indirect roles. This underscores the f inancial relevance of internal governance mechanisms and operational scale in driving shareholder returns.

Cross-sectional Multiple regression Analysis

- Dependent variable: ROA
- Independent Variable: CSR Spending, ESG RATING, CSR Transparency index, Green bonds, carbon emission disclosure.

A multiple regression analysis was conducted to explore how various organizational and sustainability -related factors—Transparency Index (TI), Governance/Board Index (GB), Carbon Emissions, CSR Spending, and ESG Rating—influence Return on Assets (ROA). The overall model was

statistically significant (F(5,88) = 57.818, p < 0.001), indicating a strong collective effect of the independent variables on ROA. The mod el explained approximately 76.7% of the variance in ROA (R^2 = 0.767), with an adjusted R^2 of 0.753 , signifying excellent model fit and explanatory power. Among the predictors, ESG Rating emerged as the strongest and most statistically significant contributor (B = 1.471, p < 0.001), suggesting that firms with better ESG performance tend to report higher returns on their assets. Carbon emissions (B = 0.332, p = 0.002) and CSR Spending (B = 0.099, p = 0.032) also had significant positive effects on ROA, indicating that operational intensity and social investment are positively associated with firm efficiency an d profitability. Transparency Index (TI) had a moderately significant positive relationship (B = 0.499, p = 0.048), reinforcing the notion that openness and accountability cont ribute positively to financial outcomes. Interestingly, Governance/Board Index (GB) did not show a statistically significant impact on ROA (B = -0.090, p = 0.366), suggesting that in this model, governance mechanisms may not directly influence asset returns when controlling for other fact ors. Multicollinearity diagnostics showed no critical concerns, though ESG rating approached a high variance proportion in the final dimension, warranting cautious interpretation. the findings highlight that ESG performance, CSR investment, carbon emissions, and transparency are key drivers of ROA, while governance structure may exert a more indirect or context-dependent influence. These results emphasize the importance of sustainable practices and transparency in enhancing a firm's operational efficiency.

Descriptive Statistics

	rating	Mean	Std. Deviation	N
roe24	1	1.00	.000	67
	A	8.00	5.888	4
	AA	11.71	4.855	7
	BB	8.29	4.103	14
	BBB	4.00	.	1
	MSCI ESG RATING	19.00	.	1
	Total	3.40	4.633	94
roa24	1	1.00	.000	67
	A	8.75	3.594	4
	AA	7.57	3.359	7
	BB	8.93	4.341	14
	BBB	10.00	.	1
	MSCI ESG RATING	16.00	.	1
	Total	3.26	4.150	94

MANOVA : Testing the Impact of ESG Rating on Financial Performance (ROE and ROA)

Box's Test of Equality of Covariance Matricesa

Box's M	5.258
F	.701
df1	6
df2	744.394
Sig.	.649

Multivariate Testsa

Effect	Value	F	Hypothesis df	Error df	Sig.
Pillai's Trace	.887	341.594[b]	2.000	87.000	.000
Wilks' Lambda	.113	341.594[b]	2.000	87.000	.000
Intercept					
Hotelling's Trace	7.853	341.594[b]	2.000	87.000	.000
Roy's Largest Root	7.853	341.594[b]	2.000	87.000	.000
Pillai's Trace	1.035	18.873	10.000	176.000	.000
Wilks' Lambda	.082	43.225[b]	10.000	174.000	.000
Rating					
Hotelling's Trace	9.716	83.558	10.000	172.000	.000
Roy's Largest Root	9.567	168.383[c]	5.000	88.000	.000

Levene's Test of Equality of Error Variancesa

	F	df1	df2	Sig.
roe24	32.953	5	88	.000
roa 24	53.099	5	88	.000

Tests of Between-Subjects Effects

Source	Dependent Variable	Type III Sum of Squares	df	Mean Square	F	Sig.
	roe24	1532.353[a]	5	306.471	58.088	.000
Corrected Model						
	roa 24	1250.479[b]	5	250.096	62.632	.000
	roe24	1090.670	1	1090.670	206.724	.000
Intercept						
	roa 24	1101.182	1	1101.182	275.771	.000
	roe24	1532.353	5	306.471	58.088	.000
Rating						
	roa 24	1250.479	5	250.096	62.632	.000
	roe24	464.286	88	5.276		
Error						
	roa 24	351.393	88	3.993		
	roe24	3086.000	94			
Total						
	roa 24	2598.000	94			
	roe24	1996.638	93			
Corrected Total						
	roa 24	1601.872	93			

Parameter Estimates

Dependent Variable	Parameter	B	Std. Error	t	Sig.	95% Confidence Interval	
						Lower Bound	Upper Bound
roe24	Intercept	19.000	2.297	8.272	.000	14.435	23.565
	[rating=1]	-18.000	2.314	-7.779	.000	-22.599	-13.401
	[rating=2]	-11.000	2.568	-4.283	.000	-16.103	-5.897
	[rating=3]	-7.286	2.456	-2.967	.004	-12.166	-2.406
	[rating=4]	-10.714	2.378	-4.506	.000	-15.439	-5.989
	[rating=5]	-15.000	3.248	-4.618	.000	-21.455	-8.545
	[rating=6]	0[a]	.	.	.	.	.
roa24	Intercept	16.000	1.998	8.007	.000	12.029	19.971
	[rating=1]	-15.000	2.013	-7.451	.000	-19.001	-10.999
	[rating=2]	-7.250	2.234	-3.245	.002	-11.690	-2.810
	[rating=3]	-8.429	2.136	-3.946	.000	-12.674	-4.183
	[rating=4]	-7.071	2.068	-3.419	.001	-11.182	-2.961
	[rating=5]	-6.000	2.826	-2.123	.037	-11.616	-.384
	[rating=6]	0[a]	.	.	.	.	.

The MANOVA results indicate that the rating variable has a significant impact on both Return on Equity (ROE) and Return on As sets (ROA), suggesting that companies with higher ratings (e.g., rating=6) tend to perform better in terms of financial metrics tha n those with lower ratings (e.g., rating=1, 2, 3, 4, 5). The multivariate tests reveal that rating significantly influences the combined dependent variables, roe24 and roa 24 ($p < 0.001$), showing that the differences in ratings are associated with substantial variations in financial performance. The parameter estimates further confirm this, with lower-rated companies exhibiting significantly poorer performance on both ROE and ROA compared to the highest rating group (rating=6). Fo r instance, companies rated 1 had much lower financial returns (both ROE and ROA) compared to those with rating=6. The model explains a large portion of the variance in ROE (76.7%) and ROA (78.1%), indicating that the rating variable plays a crucial role in determining these financial outcomes. While the rating variable was consistently significant, the violation of the homogeneity of variances assumption (as indicated by Levene's Test) suggests t hat caution should be taken in interpreting the results, particularly when it comes to va riance differences across groups. Overall, these findings underscore the importance of the rating variable in explaining differences in corporate financial performance, with higher-rated companies showing significantly better financial efficiency.

7. Findings:

1. **CSR Spending and Financial Performance**: The analysis reveals a strong and statistically significant positive correlation between CSR spending and key financial metrics, such as Return on Equity (ROE) and Return on Assets (ROA) over the years 2022 to 2024. Sp ecifically, the Pearson correlation between CSR spending and ROE for 2024 was 0.628, indicating a moderate to strong positive relationship. Similarly, for ROA, the correlation coefficient in 2024 was 0.732, suggesting that companies investing more in CSR tend to experience higher returns on both equity and assets. These findings imply that CSR spending not only serves social and environmental purposes but also enhances financial outcomes, including profitability and operational efficiency.

2. **CSR Spending and ESG Performance**: The correlation analysis further demonstrated a significant positive relationship between CSR spending and ESG (Environmental, Social, Governance) ratings, as well as the Transparency Index (TI). CSRHub ESG ratings showed a Pear son correlation of 0.676, while the Transparency Index had a correlation of 0.718 with CSR spending, both of which were statistically significant. This highlights that companies that invest more in CSR initiatives also tend to perform better in terms of ESG metrics and transparency , reinforcing the idea that CSR is closely tied to sustainability practices and ethical governance.

3. **Factors Influencing CSR Spending**: Multiple regression analysis explored the factors influencing CSR spending. It revealed that governance and ESG performance (as measured by the CSRHub ESG rating) are strong predictors of CSR spending. Governance/Board Index had a significant positive effect ($B = 0.992$, $p < 0.001$), while ESG ratings also showed a positive impact ($B = 0.346$, $p = 0.011$). Interestingly, companies with higher ROE (Return on Equity) tended to allocate less to CSR, as evidenced by the negative co efficient ($B = -0.475$, $p = 0.043$). This suggests that firms prioritizing high shareholder returns may limit their CSR investments.

4. **Impact of CSR on ROE and ROA**: The regression analysis on ROE showed that the Governance/Board Index ($B = 0.622$, $p < 0.001$) and carbon emissions ($B = 0.267$, $p = 0.030$) had significant positive effects on financial performance. However, CSR spending itse lf did not have a statistically significant impact on ROE ($B = -0.067$, $p = 0.206$). For ROA, the most significant predictor was ESG Rating ($B = 1.471$, $p < 0.001$), followed by carbon emissions ($B = 0.332$, $p = 0.002$) and CSR spending ($B = 0.099$, $p = 0.032$). These results suggest that ESG performance and operational factors like carbon emissions have a stronger influence on asset returns than CSR spending alone.

5. **MANOVA Analysis**: The MANOVA results indicated that companies with higher ratings (e.g., rating=6) consistently outperformed those with lower ratings (e.g., rating=1, 2, 3, 4, 5) in terms of both ROE and ROA. The multivariate tests showed that the rating variab le

significantly influenced the combined dependent variables of ROE and ROA ($p < 0.001$). The financial performance of lower-rated companies was notably poorer, suggesting that higher ratings are associated with better financial efficiency and returns.

8. Conclusion:

This study highlights a strong positive relationship between CSR spending and financial performance, with companies investing more in CSR demonstrating higher ROE and ROA, indicating that sustainability initiatives can enhance profitability. Additionally, firms with greater CSR expenditures exhibit stronger ESG ratings and transparency, reinforcing the link between ethical governance and financial success. Regression analysis reve als that robust governance and ESG compliance drive CSR spending, while higher-rated firms consistently outperform their peers in financial metrics. These findings underscore the strategic value of integrating CSR and ESG principles into business models, benefiting both corporate performance and stakeho lder trust. For sustainable finance to thrive, companies must prioritize transparency, policymakers should enforce stricter ESG reporting standards, and in vestors should leverage CSR disclosures to assess long-term viability. Ultimately, aligning financial goals with sustainability com mitments is key to building resilient, future-ready businesses.

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