

ESG Performance as a Determinant of Financial Performance of Firms: A Study on NSE Nifty 100 ESG Index Companies

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ABSTRACT

In recent years ESG reporting has gained considerable importance. ESG performance of a firm is viewed as an important determinant of firm's performance. In this context the present study examines the effect of ESG performance on the financial performance of select NSE Nifty 100 ESG Index companies. The financial performance, in the study, is measured through Return on Assets (ROA), Return on Equity (ROE) and Earnings per Share (EPS) while the ESG scores released by CRISIL has been taken as an independent variable along with several other control variables. The data used in this study is comprising of a 3 years' panel data ranging from 2022-2024. A quantitative explanatory approach is applied to measure the effect of overall ESG score on the financial performance of the selected firms. The results indicate that Return on Assets and Return on Equity of the selected firms are significantly affected by its overall ESG performance measured in terms of total ESG score while Earnings per Share is not affected significantly by their total ESG score.

Keywords: ESG Performance, Firm Performance, Nifty ESG Index

The exhaustion of natural resources and climate variability are among the vital issues which are affecting the environment. This situation highlights the roles and responsibilities of a business concern in resource drainage and conservation strategies (Kalia & Aggarwal, 2022). Now-a-days people are more concerned with the environmental and social issues and they are focussing on the entity's roles and responsibilities with the intervention of mainstream media (Reverte, 2009). Stakeholders are prone to identify the ESG activities performed and investment in those activities by the corporates (Kalia & Aggarwal, 2022). Firms are not only judged by the ability of providing financial results but also by the responsibility of managing environmental impacts, social relationships, and governance practices (Khan, Serafeim, & Yoon, 2016). This practice was started around 2010 with the introduction of National Voluntary Guidelines in 2009 and Business Responsibility Reporting in 2012. This eventually was accelerated by the introduction of Companies Act, 2013 and Business Responsibility and Sustainability Reporting (BRSR) by the top 1000 listed firms from the financial year 2022–23 onwards. With increasing recognition of firms' ESG performance by investors and other stakeholders, it is worthwhile to identify whether ESG performance has any impact on financial performance of the firms

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or not. Presently, there is a separate index formed and maintained by National Stock Exchange (NSE) to rank the firms based on their ESG score measured from their ESG activities and reporting. This index is known as NSE Nifty 100 ESG index. The present study focusses on the impact of ESG performance on financial performance of these indexed listed companies.

LITERATURE REVIEW

International Context:

By analyzing the impact of ESG scores on firm performance in Southeast Asia, it is observed that firms with higher ESG scores have higher return on equity. Firm size also significantly moderates the relationship between ESG performance and profitability (Baroto et al., 2025). Chinese listed companies' social score of ESG has a significant positive correlation with firm performance. Adversely, the relationships between the Environmental (E) and Governance (G) scores with firm performance is not that much significant (Zhang, 2024). A positive relationship exists between environment score and profitability of Borsa Istanbul Sustainability Index companies. But social score and profitability have a negative correlation. It is also found that this index listed firms' value and social score have a positive relationship (Bumin & Ertugtul, 2024). Chinese enterprises with A-share listings from 2011 to 2021 proves that improved ESG performance result into higher Tobin's Q. It is also found that the individual Social and Governance score have a significant effect on firm performance (Li, 2024). Banks listed in the BIST Bank Index shows that there is a significant and positive correlation between ESG scores and firm performance while the correlation between firm age and size and firm performance is significant and negative. Overall, firms with higher ESG performance indicates better financial performance (Korkmaz & Nur, 2023).

National Context:

By examining the effect of ESG score on firm performance of metals and mining, and chemicals industries, it is concluded that metals and mining firms' Economic Value Added (EVA) and Market Value Added (MVA) moderately increased due to stronger environmental and governance improvements. But chemical industry shows contradictory result (Mondal & Rakshit, 2025). Indian energy firms listed on the BSE Sustainability Index and BSE 500 Index depict that firms' overall ESG performance has a significant and positive impact on Return on Assets (ROA), Return on Equity (ROE), and Earnings Per Share (EPS). Environmental and Governance factors exhibit a strong and positive associations with ROA and ROE, while the social factor has a weaker positive association with ROA and ROE (Chakraborty et al., 2025). There is a statistically significant negative relationship between revenue and ESG ratings. A higher ESG rating is correlated with a lower revenue of the firm. It indicates that sustainable business practices may not results to quick financial rewards (Huralikoppi, 2024). BSE-100 index firms' financial performance measured by Return on Assets; Return on Equity; firm size; market capitalization; Profit before Depreciation, Interest and Tax; Tobin's Q and share price are influenced by ESG score with time lags. ESG score plays an important role to affect future financial performance of firms and selecting risk mitigation strategies (Ray & Goel, 2022). The study on NSE 500 firms and NSE 100 ESG enhanced index firms concludes that overall ESG performance of firms has a positive and significant association with operational and market performance of firms. Also, individual components of ESG performance positively affect operational performance and negatively impact market performance (Lunawat & Lunawat, 2022).

Objectives of the Study

The primary objectives of the study are:

- To determine the effect of overall ESG performance on the ROA of the selected companies.
- To determine the impact of overall ESG performance on the ROE of the selected companies.
- To determine the effect of overall ESG performance on the EPS of the selected companies.

RESEARCH METHODOLOGY

NSE Nifty 100 ESG index comprises of 88 companies according to the latest index composition. A sample of 78 companies is selected from this index for the current study. The study period taken for this purpose is 3 years ranging from 2022 to 2024. Hence 234 (78*3) firm-year observations are obtained for each variable for the present study. The remaining firms from the index are not considered due to non-availability of data. ESG scores are collected from the database maintained by CRISIL Limited (www.crisilesg.com), which is a widely trusted analytics company in India which provides ESG scores of companies. Other data are collected from CMIE Prowess, and analyzed in Stata14.

The present study investigates the impact of ESG performance on financial performance of the selected firms. For this purpose, the financial performance has been measured in terms of Return on Assets (ROA), Return on Equity (ROE) and Earnings per Share (EPS) and the ESG performance has been measured in terms of total ESG score released by CRISIL. Accordingly, the study develops three independent panel data regression models taking one of the above financial performance measures at a time as the dependent variable and total ESG score as the independent variable along with control variables such as Leverage, Firm Age and Firm Size (Chakraborty et al., 2025). Table 1 shows all the variables used in the study.

Table 1: Definition of the Variables used in the Study

Variables	Type	Explanation
ROA	Dependent Variable	Return on Assets
ROE	Dependent Variable	Return on Equity
EPS	Dependent Variable	Earnings per Share
ESG	Independent Variable	Total ESG Score as released by CRISIL
LEV	Control Variable	Leverage (Total Debt / Total Equity)
FA	Control Variable	Firm Age (years since incorporation)
FS	Control Variable	Size of the Firm (log of total assets)

The three models used in this study are as follows:

$$\text{Model 1: } \text{ROA}_{i,t} = \beta_0 + \beta_1 \text{ESG}_{i,t} + \beta_2 \text{LEV}_{i,t} + \beta_3 \text{FA}_{i,t} + \beta_4 \text{FS}_{i,t} + \mu_{i,t}$$

$$\text{Model 2: } \text{ROE}_{i,t} = \beta_0 + \beta_1 \text{ESG}_{i,t} + \beta_2 \text{LEV}_{i,t} + \beta_3 \text{FA}_{i,t} + \beta_4 \text{FS}_{i,t} + \mu_{i,t}$$

$$\text{Model 3: } \text{EPS}_{i,t} = \beta_0 + \beta_1 \text{ESG}_{i,t} + \beta_2 \text{LEV}_{i,t} + \beta_3 \text{FA}_{i,t} + \beta_4 \text{FS}_{i,t} + \mu_{i,t}$$

Where,

$\text{ROA}_{i,t}$ = Return on Assets, $\text{ROE}_{i,t}$ = Return on Equity, $\text{EPS}_{i,t}$ = Earnings per Share, $\text{ESG}_{i,t}$ = Total ESG Score, $\text{LEV}_{i,t}$ = Leverage, $\text{FA}_{i,t}$ = Firm Age, $\text{FS}_{i,t}$ = Firm Size and $\mu_{i,t}$ = Error Term

$\beta_0, \beta_1, \beta_2, \beta_3, \text{ and } \beta_4$ = Coefficients of the regression model

We applied pooled regression model as our initial model and revised them into fixed effects model and random effects model. Breusch and Pagan Lagrangian multiplier test, Restricted F test and Hausman Test are conducted to identify the appropriate panel regression model.

ANALYSIS AND RESULTS

1. Descriptive Statistics

Table 2 shows mean, standard deviation, minimum, and maximum value of variables used in the present study.

Table 2: Descriptive Statistics of the Variables used in the Study

Variable	Observation	Mean	Std. Dev.	Min	Max
ROA	234	8.838110	8.674838	-8.163851	78.32326
ROE	234	17.67861	16.87353	-26.12287	132.9145
EPS	234	66.30440	113.8280	-6.960000	844.4000
ESG	234	59.93162	6.569178	43.00000	77.00000
LEV	234	2.382100	3.693509	0.012952	17.57632
FA	234	48.50000	24.67075	7.000000	118.0000
FS	234	4.818119	0.698897	3.647554	6.791886

In the present study, the data show that mean value of ROA is 8.838110% with standard deviation of 8.674838%. Mean value of ROE is 17.67861% while standard deviation is 16.87353%. Another dependent variable, EPS has mean value of Rs. 66.30440 and standard deviation value of Rs. 113.8280. Mean value of leverage is 2.3821 times with standard deviation of 3.693509 times. Thus, it appears that the sample companies have a very healthy ROE and a standard ROA with a decent EPS. The average ESG score is also good. The leverage is hovering around 2 which indicates that they are exploiting the benefit of financial leverage.

2. Variation Inflation Factor

Additionally, to ensure the robustness of the multicollinearity test, the study also shows the Variation Inflation Factor. The following table indicates the result of VIF.

Table 3: Variation Inflation Factor

Variable	VIF	1/VIF
ESG	1.025	0.9756
LEV	2.030	0.4926
FA	1.040	0.9615
FS	1.947	0.5136

Any VIF value exceeding 5 can be considered to have high multicollinearity. It is observed that the highest value of VIF in the above table is 2.03. So, no multicollinearity issues found within the independent variables.

3. Pearson Correlation Matrix

By analyzing the correlation matrix shown below, it is observed that the dependent variable ROA and independent variable total ESG score are significantly correlated at 1% level (0.184). ROA is significantly correlated with leverage and firm size at 1% level. Another dependent variable taken in this study, ROE and total ESG score are not significantly

correlated (0.126). ROE is significantly correlated with firm size. While EPS (dependent variable) and total ESG score are also not significantly correlated (0.019). Among the control variables, leverage is significantly correlated to total ESG score at 5% level. Leverage is also significantly correlated with firm age and firm size at 1% level. Hence it is worthwhile to measure the impact of firms' overall ESG score on their financial performance.

Table 4: Pearson Correlation Matrix of the Variables

	ROA	ROE	EPS	ESG	LEV	FA	FS
ROA	1	-	-				
ROE	-	1	-				
EPS	-	-	1				
ESG	0.184**	0.126	0.019	1			
LEV	-0.392**	-0.094	-0.123	0.142*	1		
FA	-0.019	0.106	0.008	-0.031	0.179**	1	
FS	-0.387**	-0.182**	-0.110	0.076	0.696**	0.083	1

**correlation is significant at 1% level

*correlation is significant at 5% level

4. Regression Results

a) Regression results from Model 1: $ROA_{i,t} = \beta_0 + \beta_1 ESG_{i,t} + \beta_2 LEV_{i,t} + \beta_3 FA_{i,t} + \beta_4 FS_{i,t} + \mu_{i,t}$

The data set used for the study is a panel data for a period of 3 years. To know the best fitted regression model among the three models (namely Pooled Ordinary Least Square Model, Random Effects Model and Fixed Effects Model), at first Breusch and Pagan Lagrangian multiplier test is conducted to determine the appropriate model between pooled OLS and random effects model. The results of Breusch and Pagan LM test indicates that random effects model is appropriate than pooled OLS. Restricted F test is performed at the next step to select between pooled OLS and fixed effects model. This test shows that fixed effect model is the appropriate for this study. Finally, Hausman test is carried out to select between random effects and fixed effects model. The following Table 5 shows the result of Hausman Test.

Table 5: Hausman Test Result

Test Summary	Chi-Sq. Statistic	Prob.
Cross-section random	14.61	0.0056

Hausman test result shows that p value is 0.0056 which indicates that the null hypothesis of selecting random effect model is rejected at 1% level. Hence it is decided that fixed effect model is the most appropriate for this study. The result from fixed effects model is as follows:

Table 6: Results from Fixed Effects Model

Independent Variables	Regression Coefficient	p value
Cons	4.363499	0.11
ESG	-0.40822	0.038
LEV	-0.6243686	0.469

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FA	-0.0338073	0.963
FS	6.655473	0.556
R-squared		
Within:	0.0374	
Between:	0.1648	
Overall:	0.0961	

According to the result depicted in the above table firms' overall ESG performance proxied by total ESG score significantly affects ROA (p value = 0.038). Hence it can be said that overall ESG performance is a significant determinant of financial performance of NSE Nifty 100 ESG index firms. While leverage, firm age and firm size have no impact on firms' ROA as p values of the same are more than 0.05.

b) Regression results from Model 2: $ROE_{i,t} = \beta_0 + \beta_1 ESG_{i,t} + \beta_2 LEV_{i,t} + \beta_3 FA_{i,t} + \beta_4 FS_{i,t} + \mu_{i,t}$

To know the impact of total ESG score on ROE of selected firms, Breusch and Pagan Lagrangian multiplier test is conducted at the very first stage to determine the appropriate model between pooled OLS and random effects model. The results of Breusch and Pagan LM test indicates that random effects model is appropriate than pooled OLS. Furthermore, Restricted F test is performed to select between pooled OLS and fixed effects model. This test shows that fixed effect model is the appropriate for this study. Finally, Hausman test is carried out to select between random effects and fixed effects model. The following Table 7 shows the result of Hausman Test.

Table 7: Hausman Test Result

Test Summary	Chi-Sq. Statistic	Prob.
Cross-section random	13.71	0.0083

The result of Hausman test shows that p value is 0.0083 which indicates that the null hypothesis of selecting random effect model is rejected at 1% level. Hence it is decided that fixed effect model is most appropriate for this study. The following table shows the result from fixed effect model.

Table 8: Results from Fixed Effects Model

Independent Variables	Regression Coefficient	p value
Cons	-19.72376	0.747
ESG	-0.780797	0.012
LEV	-0.9406206	0.488
FA	0.3481475	0.762
FS	14.43557	0.417
R-squared		
Within:	0.0584	
Between:	0.0158	
Overall:	0.0092	

The above result indicates that ESG is significant at 95% level of significance (p value = 0.012). Thus, sample firms' overall ESG performance as measured by total ESG score is

significantly affecting their ROE. Leverage, firm age and firm size are insignificant to determine the ROE of the firms as p values of these variables are more than 0.05.

c) Regression results from Model 3: $EPS_{i,t} = \beta_0 + \beta_1 ESG_{i,t} + \beta_2 LEV_{i,t} + \beta_3 FA_{i,t} + \beta_4 FS_{i,t} + \mu_{i,t}$

To select the appropriate model for determining the impact of overall ESG score on firms' EPS, at first Breusch and Pagan Lagrangian multiplier test is conducted to determine the appropriate model between pooled OLS and random effects model. The results of Breusch and Pagan LM test indicates that random effects model is appropriate than pooled OLS. Next, Restricted F test is performed to select between pooled OLS and fixed effects model. This test shows that fixed effect model is the appropriate for this study. Finally, Hausman test is carried out to select between random effects and fixed effects model. The following Table 9 shows the result of Hausman Test.

Table 9: Hausman Test Result

Test Summary	Chi-Sq. Statistic	Prob.
Cross-section random	1.25	0.8702

Hausman test result shows that p value is 0.8702 which indicates that we fail to reject the null hypothesis of selecting random effect model at 5% level. Hence it is decided that random effects model is most appropriate model for this study.

Table 10: Results from Random Effects Model

Independent Variables	Regression Coefficient	p value
Cons	73.34414	0.572
ESG	0.1468964	0.916
LEV	-3.550858	0.367
FA	0.1736211	0.717
FS	-3.280451	0.878
R-squared		
Within:	0.0005	
Between:	0.0216	
Overall:	0.0174	

According to the results shown above it is observed that ESG is insignificant to determine the EPS of the selected firms (p value = 0.916). Control variables namely, leverage, firm age and firm size also have no impact on firms' EPS (p values are more than 0.05).

CONCLUSION

The present study examines whether NSE Nifty 100 ESG Index companies' overall ESG performance measured in terms of total ESG score is a determinant of their financial performance or not. The findings depict that companies' overall ESG performance has an impact to determine their financial performance measured in terms of ROA and ROE though the overall explanatory power of the models is not remarkable. In addition, the overall ESG performance is not a determining factor of companies' EPS, may be because of the fact that EPS is an absolute measure while the other two are relative measures. Thus, it can be concluded that NSE Nifty 100 ESG Index companies' overall ESG performance is a major

determinant of financial performance of companies. In other words, companies complying with ESG expectations are rewarded with higher profitability.

Limitations and Suggestions

- The study considers ESG performance of sample companies up to 3 years only due to non-availability of ESG data. Further studies may consider a relatively longer time frame.
- The study is based on only NSE Nifty 100 ESG Index companies. Similar studies may be attempted for a larger sample size including companies beyond the above index.
- Finally, instead of total ESG score, individual E, S and G scores may also be used to study the impact of the above components separately.

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Conflict of Interest

The author(s) declared no conflict of interest.

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