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Original Article

The Impact of ESG Practices on Corporate Profitability: A Panel Data Analysis

Aditya Kashyap

Hinsdale Central High School, Hinsdale, Illinois, USA.

Corresponding Author : kashyap.aditya2007@gmail.com

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Abstract *- ESG is an important criterion for companies and investors alike. This study aimed to determine whether Environmental Social Governance (ESG) practices have an impact on Financial Profitability for corporations in India and Korea. Panel data from 2018–2022 was analyzed using regression models with ROA as the dependent variable and ESG scores as key predictors for 400 companies in Korea and 553 companies in India. FGLS was the model used for India, and Fixed effects with robust standard errors was used for Korea. Governance scores show a significant negative association with ROA in India, suggesting potential costs relate to compliance costs, while their effect in Korea is insignificant. Environmental scores have a marginally positive effect in India but are not significant in Korea. Lastly, social scores are insignificant in both markets. Moreover, cash flow emerges as a consistent driver of profitability across market types, unlike ESG dimensions, which show context-specific effects since cash flow has a central role in corporate financial performance across different settings. Therefore, Indian firms can enhance investor trust and performance through improved governance and long-term environmental strategies. Furthermore, investors should focus on cash flow and ESG transparency for better valuation in emerging markets.*

Keywords *- Profits, Environment, Social, Governance, ESG scores.*

1. Introduction

1.1. General Background

Environmental, Social, and Governance (ESG) has been recognized as an important criterion for companies and is rapidly becoming a part of companies' financial expenditures. The quality of the firm, its risk management, and sustainability in the long term are also indicated by their ESG performance [1]. This practice aims to increase long-term profits and attract potential customers [2]. Companies could pursue environmental practices, including sourcing materials sustainably, utilizing renewable energy, and minimizing their greenhouse gas emissions [3]. Social practices include ensuring ethical practices towards labor, promoting workplace diversity and inclusivity, or contributing to community development [4]. Finally, governance practices include maintaining strong board oversight and independence, transparent financial reporting, and effective risk management frameworks [5]. Each of these criteria of ESG plays a nuanced role regarding how well a company manages itself. Understanding the role of these criteria on companies' financial performance could provide leading insights as to how other companies should allocate their expenditures. The rising importance of Environmental, Social, and Governance (ESG) factors in corporate decision-making is increasingly shaped by evolving consumer expectations and heightened investor awareness. Investors now tend to view ESG ratings as crucial metrics for assessing a firm's exposure to risk and its prospects for sustainable growth [6]. Consequently, firms face growing pressure to strengthen their ESG performance in order to remain competitive and appealing to the investment community [7]. The current push for ESG practices is further influenced by the growing global rise in sustainability and responsible corporate behavior [8]. Over the past decade, a number of global frameworks have emerged to guide sustainability efforts, most notably the United Nations' Sustainable Development Goals (SDGs) and the Paris Agreement on climate change.

These global efforts are significant drivers of ESG adoption, as companies worldwide are increasingly attempting to align their practices with these international agreements. For instance, the Paris Climate Agreement outlines targets to limit global temperature increase to no more than 1.5 °C above pre-industrial levels, specifically those recorded in the late 19th century [9]. Additionally, the SDGs are goals for the planet, which often involve using sustainable methods to address global challenges, thereby connecting to ESG practices [10]. In this context, companies that use ESG practices in their operations contribute to global

sustainability efforts and position themselves as trailblazers in a rapidly evolving marketplace.

Moreover, for investors, the ESG score has become a vital factor in making investment decisions [11]. A company's ESG performance is now frequently factored into the valuation process, as poor ESG scores can signal underlying risks that may affect future profitability [12]. Additionally, ESG can be seen as a way to determine a company's reputation with its consumers [13], thus reflecting how strong a brand they have made. This trend has led to more ESG-focused investment funds and has influenced capital allocation strategies globally. In addition, ESG has become a matter of concern for multiple other stakeholders alike. For consumers, when companies invest in practices that align with their own beliefs, they are more likely to purchase from that company, therefore, driving up financial performance. For policymakers, it is likely that in the future, there will be regulations regarding companies needing to invest a certain amount in the environment, so this research will guide them as to the limits to set. Lastly, policymakers likely create regulations on how much companies need to invest in sustainable practices; this research will guide companies on how to allocate their budgets strategically [7].

1.2. Review of Literature

Prior research on the relationship between ESG factors and financial performance has yielded mixed findings. While some studies report a positive correlation, others suggest a negative or insignificant association. For instance, a study examining the link between corporate social responsibility and financial performance in South Korea employed panel data techniques, including fixed and random effects models and quasi-maximum likelihood estimation, to analyze data from Korean firms spanning 2008 to 2014 [14]. The study found that ESG disclosure scores have mixed effects on financial performance in Korean firms. Specifically, governance disclosure scores were positively associated with return on equity, while environmental and social disclosure scores showed insignificant relationships. A quadratic analysis revealed a U-shaped relationship between Economic Development Strategies (EDS) and Return on Equity (ROE), indicating that initial Corporate Social Responsibility (CSR) efforts might reduce profits. However, long-term commitment can lead to positive returns. Similarly, the Global Distribution System (GDS) showed an inverse U-shape with financial performance, suggesting diminishing returns as governance efforts accumulate. However, the findings related to GDS revealed an inverse U-shaped relationship, indicating that beyond a certain threshold, increased ESG spending ceased to yield positive financial returns. Furthermore, a significantly positive relationship exists between GDS and ROE from the linear model.

In contrast, a study conducted in Turkey investigated the impact of ESG practices on the financial performance of firms listed on the Borsa Istanbul Corporate Governance Index over the period 2007 to 2017 [15]. The research employed a panel data approach, using information from corporate governance ratings, annual reports, sustainability reports, and CSR disclosures of 36 Turkish companies. It showed significant variables like shareholder rights (ESR) and board governance (BDC, BDR), as well as corporate policies (FFP, FOP). In contrast, certain control variables, such as board activities (BDA) and firm size (LNSIZE), have negative effects. The results suggest that stakeholder participation, board structure, and operational metrics (NPM, ATO) positively impact financial performance (as measured by Return on Assets (ROA)), while certain governance factors like board size (BDS) and SIR negatively affect ROA. It also highlights that ESG and financial performance were only positive for governance scores, while environmental and social performance were both negative. This contradicts the Korean study and shows the differences. Furthermore, the findings indicate that environmental disclosures have a negative effect on CFP.

Another study in the context of the USA used a random-effects panel data model to investigate how economic uncertainty and leverage influence the relationship between ESG Scores and Finance. The study found that control variables like minority interest, cash holding, and inflation are significant, with inflation negatively affecting ESG performance. Interaction variables such as Oil Price Uncertainty (OPU), leverage, and Economic Policy Uncertainty (EPU) were found to moderate the relationship between financial performance and ESG negatively. Robustness tests show that these results remain consistent across different performance measures and estimation methods. The study identified a positive linear relationship between ESG practices and corporate financial performance, suggesting that firms with stronger ESG engagement tended to exhibit improved financial outcomes over the period. [16]. This was different from the Korean study, since that was nonlinear, and from the Turkish study, since that had shown a negative relationship.

In the same realm, a European study investigated the relationship between ESG initiatives and firm value using a panel data regression approach, employing fixed effects GLS models. It assessed the impact of ESG scores alongside control variables such as firm size, profitability, and leverage on firm value and performance across diverse sectors. It was based on a 12-year panel dataset comprising 180 firms from 22 countries. The findings indicated a positive influence of ESG initiatives on firm value, particularly within the social and environmental dimensions, while the governance pillar showed minimal effect. The study also indicates that firms focusing on social aspects of ESG, such as workforce and community initiatives, achieve better performance outcomes, whereas governance and environmental aspects show mixed results. These findings underscore the significance of

emphasizing social sustainability initiatives to enhance firm performance, with broader implications for efficient resource allocation and long-term strategic decision-making. Notably, the study confirmed a positive association between ESG engagement and financial performance [17]. Comparable outcomes were observed among US firms; however, the U.S.-based research emphasized that the social component of ESG had the most substantial impact on financial outcomes—a conclusion that contrasts with the emphasis placed on environmental or governance dimensions in other studies.

In order to bridge those gaps, this research paper provides a perspective on the issue by analyzing companies from both India and Korea to understand whether ESG has an effect on developed vs developing countries in Asia. Additionally, this study looks at each of the components of ESG individually, along with measuring financial performance by looking at profitability.

1.3. Literature Gap and Rationale of the Study

The literature gap was due to the lack of studies in the field of developing vs developed countries. While studies did analyze countries individually, there were few studies that analyzed the two markets. Moreover, another gap was that there were fewer studies that were more focused on Asian markets than Western markets. The markets in Europe and the US were studied more closely in terms of ESG than those in Asia. Furthermore, most studies analyzed a variety of financial variables, whereas this study focused on just profitability.

ESG has become an important criterion for companies in recent years, often being taken into account by companies and investors alike. This practice aims to increase long-term profits and attract potential customers [18]. Furthermore, with recent legislation such as the Paris Agreement encouraging sustainability, ESG has become increasingly important for both the company and consumers. Understanding the role of these criteria on companies' financial performance could provide leading insights as to how other companies should allocate their expenditures. These insights prompted the central research question: "What is the relationship between ESG performance and financial outcomes on a global scale?" The study hypothesized that ESG factors significantly influence corporate financial performance. This expectation stems from the notion that companies that invest in ESG practices use efficient resource management practices, which would reduce costs and improve profitability over time.

2. Methods and Materials

2.1. Research Aim and Objectives

This study aims to evaluate the impact of ESG practices on companies' profitability. To assess the same, three research objectives are considered:

Objective 1: To analyze the impact of the Environment score on profitability
Objective 2: To interpret the impact of the Social score on profitability
Objective 3: To assess the impact of the Governance score on Profitability

2.2. Research Hypotheses

The following hypotheses are tested to find the relationship between ESG scores and profitability (as measured by ROA).
Null hypothesis 1: There is no significant impact of the Environment Score on ROA.
Null hypothesis 2: There is no significant impact of the Social Score on ROA.
Null hypothesis 3: There is no significant impact of the Governance Score on ROA.

2.3. Data

This empirical study aims to examine the impact of ESG performance on the Profitability of Indian and Korean companies. The rationale behind these two countries is that they are both located in Asia; however, India remains a developing market [19], while Korea is a developed market [20].

Using a Bloomberg database, the study examines how, for all the companies provided in each country, regardless of industry, between the years 2018 and 2022, the relationship between ESG scores and financial profitability is compared. Once the companies were filtered, only maintaining those from the years of 2018-2022, 400 companies were left for Korea, while 553 companies were left for India.

2.2 Variables

2.2.1. Dependent Variables

- Financial Profitability (ROA): Return on Assets (ROA) was considered the factor for financial profitability. ROA is Net Income/Average Total Assets. It is used as a key metric that helps businesses and investors understand how well a company is making money from its assets. [21] Additionally, it helps businesses identify areas where they can improve their efficiency and profitability.

2.2.2. Independent Variables

The independent variables incorporated into the analytical framework were the Environmental, Social, and Governance (ESG) scores. These scores are critical as they comprehensively assess how a company manages its responsibilities across environmental stewardship, social impact, and governance practices. These scores help investors assess long-term risks and opportunities, as companies with strong ESG practices are often better positioned for sustainable growth [22]. In the current study, the components of the ESG score were measured on a scale from 0 to 100.

- Environmental Score (EnvScore): The environmental component addresses a company's impact on the planet, influencing sustainability efforts and regulatory compliance [23]
- Social Score (SocScore): The social aspect looks at how companies treat their customers, communities, and employees [24]
- Governance Score (GovScore): Governance measures the transparency, accountability, and ethics of a company's leadership [25]

2.2.3. Controlled Variables

Control variables are experimental elements that remain constant throughout the study to prevent them from influencing the results.

- Cash Flow (cflow) measures the cash a company generates. A positive cash flow reflects a company's ability to generate enough funds to support its operations, meet debt obligations, and allocate resources toward future growth initiatives. This was measured in US Dollars. [28]
- Capital Expenditures (capxint) represent a company's investment in long-term assets such as buildings, equipment, and technology, aimed at sustaining or growing its business. High levels of capital expenditures can signal that a company is investing in expansion or innovation, but it also means that the company may incur higher debt or reduce liquidity. This was measured in US Dollars. [28]
- Cash Holdings (chold) refer to the amount of cash or liquid assets a company keeps on hand, which are available for immediate use. Excessive cash holdings can indicate inefficiency, as it may suggest that the company is not putting its resources to productive use, like reinvesting in growth or paying dividends. This was measured in US Dollars. [29]
- Nonoperating Income (nonopinc) includes revenues or gains that are not directly tied to the core business operations, such as investment income, sale of assets, or one-time gains. By isolating nonoperating Income, analysts can get a clearer picture of a company's profitability and operational efficiency. This was measured in US Dollars. [30]
- Log of Sales (LSale) accounts for the size of a company by taking the logarithm of its total sales. Larger companies typically have higher sales, which can influence their financial performance and market position [26].
- Tangible asset (tang): Tangibility is the proportion of a company's tangible assets. This includes property, equipment, and machinery, as opposed to intangible assets, which provide greater collateral to secure debt financing. This can affect a company's financial leverage, risk profile, and ability to weather economic downturns. This was measured in US Dollars. [27]

2.3. Methodology for Data Analysis

2.3.1. Correlation Analysis

For independent variables, it was necessary to determine which would be included in the model. A correlation matrix was generated to assess the relationships between the variables. Correlation matrices were used to finalize the variables, as it was necessary to ensure that the independent variables were not highly correlated.

Table 1. Results for Correlations between independent variables for India

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
(1) EnvScore	1.000								
(2) SocScore	0.580	1.000							
(3) GovScore	0.174	0.157	1.000						
(4) cflow	0.109	0.162	0.126	1.000					
(5) capxint	-0.026	-0.016	-0.185	0.101	1.000				
(6) child	0.253	0.272	0.221	0.379	-0.236	1.000			
(7) nonopinc	0.041	0.089	-0.044	0.578	0.027	0.156	1.000		
(8) sale	0.282	0.275	-0.106	-0.078	0.238	-0.028	-0.022	1.000	
(9) tang	-0.124	-0.152	-0.220	-0.061	0.505	-0.346	-0.038	0.272	1.000

Table 2. Results for Correlations between independent variables for Korea

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
(1) EnvScore	1.000								
(2) SocScore	0.814	1.000							
(3) GovScore	0.518	0.583	1.000						
(4) cflow	0.079	0.133	0.073	1.000					
(5) capxint	0.174	0.246	0.217	0.416	1.000				
(6) child	-0.067	-0.033	-0.095	0.149	-0.186	1.000			
(7) nonopinc	-0.114	-0.117	-0.091	0.244	-0.063	0.177	1.000		
(8) sale	0.556	0.563	0.549	0.113	0.217	-0.246	-0.114	1.000	
(9) tang	0.128	0.080	0.094	0.121	0.459	-0.422	-0.170	0.211	1.000

In the matrices, any pair of variables with values above 0.8, meaning a high degree of correlation, was removed from the dataset for both India and Korea. The remaining variables after correction were: lsale (log of sales), tang (Tangibility), cflow (cash flow), capxint (capital expenditures), chold (cash holdings), and nonopinc (nonoperating Income).

2.3.2. Multicollinearity

After analyzing the correlation matrices, the issue of multicollinearity was addressed. Multicollinearity poses a challenge in regression analysis as it complicates the process of isolating the distinct impact of each independent variable. When independent variables are highly correlated with one another, it becomes difficult to determine their contributions to the dependent variable [31]. Thus, it obscures the true relationship between variables and reduces statistical significance. To address the issue of multicollinearity, the Variance Inflation Factor (VIF) is employed within the framework of Ordinary Least Squares (OLS) regression analysis. VIF quantifies the extent to which the variance of a regression coefficient is inflated due to multicollinearity, thereby helping to identify and mitigate potential distortions in the estimation of individual variable effects. The calculator for VIF (VIF should be < 10) [32]:

$$VIF = 1 / (1 - R^2)$$

As VIF < 10 for both models (VIF_1=1.512 (India); VIF_2=1.931 (Korea)), the problem of multicollinearity does not exist. For this study, India was considered Model 1, while Korea was considered Model 2. The VIF values, which are both well below 10, indicate that multicollinearity does not pose a significant issue in either model.

2.3.3. Model Specification

In this study, regression analysis is used to understand the impact of ESG scores on the Return on Assets of firms in India and Korea. Regression Analysis allows understanding of the cause-and-effect relationship of different variables on one another. The regression model used under this research is:

$$ROA = \beta_0 + \beta_1 EnvScore + \beta_2 SocScore + \beta_3 GovScore + \beta_4 cflow + \beta_5 capxint + \beta_6 chold + \beta_7 nonopinc + \beta_8 lsale + \beta_9 tang + e$$

This study makes use of panel-data analysis that merges time series and cross-sectional data. Employing panel data provides a higher level of information, highlights individual heterogeneity, and helps with the identification of not easily observed effects [33]. It is essential to decide the type of regression model when working with panel data. Fixed effects models account for individual heterogeneity due to the fact that they allow each company to have its own intercept. In contrast, random effects assume that individual-specific differences are uncorrelated with the independent variables [34]. When the fixed effects model is used, the group means are considered fixed (non-random) quantities, meaning that each group has its unique, constant effect, which is pivotal when analyzing panel data.

An important advantage of the fixed effects model is its capacity to control for unobserved heterogeneity, characteristics that may influence the dependent variable but remain constant over time for each entity, thereby eliminating their confounding impact from the analysis [35]. In contrast, the random effects model assumes that these unobserved individual-specific factors are random and uncorrelated with the explanatory variables, allowing for greater efficiency under certain conditions [36]. Meanwhile, Ordinary Least Squares (OLS), when applied in a pooled framework, operates under the assumption that no unobserved, entity-specific effects affect the dependent variable across time or individuals.

2.3.4. Hausman Test

The Hausman test is used to determine the appropriate regression model by addressing potential endogeneity, which is a common challenge in such studies. The null hypothesis for the Hausman Test is that the random effects are consistent. If the p-value of the Hausman test is less than 0.05, then the fixed effects model is assumed to be appropriate. However, if the p-value is greater than 0.05, either the Random effects or Pooled OLS model can be used. However, for India, the Hausman test showed a p-value (0.061) above 0.05, meaning that further testing was necessary to determine whether the model used a Random or Pooled Ordinary Least Squares (POLS) model. To decide between the Random model and the Pooled OLS model, the Breusch Pagan test has been used. As indicated by the Hausman Test, the result for Korea (p-value = 0.00) was below 0.05, suggesting that a Fixed Effects Model is appropriate.

2.3.5. Breusch Pagan Lagrange Multiplier Test

The Breusch-Pagan test is used to determine whether the variance of errors is the same across observations. The null hypothesis is that the variance of the individual effects across all entities is zero, or POLS is appropriate. For India, after conducting the Breusch Pagan test, the results suggested that the Random Effects model would be appropriate, as the p-value indicated being 0.00.

2.3.6. Autocorrelation

Autocorrelation is used to represent the similarity between a lagged version of itself and a given time over successive time intervals [37]. Testing for autocorrelation in statistics is crucial because it helps identify patterns or dependencies within a time series dataset, which is important in panel data, ensuring that statistical models built on that data are accurate and reliable. The Wooldridge test was conducted to detect autocorrelation in the panel data. The

null hypothesis assumes the absence of serial correlation. This test identifies autocorrelation by regressing the first-differenced residuals on their lagged values [38]. As found in the Wooldridge test, there was no autocorrelation due to the value being 0.4361 for Korea. Conversely, due to the value being 0.0001 for India, it was necessary to solve for autocorrelation.

2.3.7. Heteroskedasticity

Heteroscedasticity occurs when the variance of the error terms is different across observations [39]. The Modified Wald Test was used for Korea, while the Log Likelihood, LM, and Wald Test were applied to India to address this. Since the model for Korea was assumed to be fixed effects, we used Modified Wald. We assumed random effects for India, which is why other tests were used. The null hypothesis is that there is no heteroskedasticity. Different tests were run for Korea and India because Korea used the fixed effects model while India used the random effects model. Both Korea and India exhibited signs of heteroscedasticity, as indicated by the test results with India (Lagrange Multiplier Test, p value = 0.00, Likelihood Ratio Test, p value = 0.00, and Wald Test, p value = 0.00) and Korea (Modified Wald Test, p value = 0.00).

2.3.8. Measures for Correction

To address heteroscedasticity and autocorrelation, the following adjustments were made. For Korea, since there was only the problem of heteroskedasticity and not autocorrelation in the Fixed Effects model, it was corrected by the Robust Standard Errors Fixed Effects Regression Model, otherwise known as a VCE (Variance-Covariance Matrix) Cluster.

Robust Standard Errors are a method used to calculate more reliable standard errors for regression coefficients, especially when the data exhibits heteroscedasticity [40].

For India, there was the problem of both heteroskedasticity and autocorrelation in the Random Effects Model, which was then corrected by the Feasible Generalized Least Squares Regression Model (FGLS).

FGLS is a statistical regression technique used to estimate model parameters when the error terms exhibit heteroscedasticity and autocorrelation, providing more efficient and reliable results than standard Ordinary Least Squares (OLS) regression in such situations [41].

3. Results

3.1. Descriptive Analysis

Table 3. Results for Descriptive statistics of the variables

Variable	Country	Mean	Standard Deviation	Minimum	Maximum
ROA	India	0.067	0.088	-0.405	0.516
	Korea	0.034	0.064	-0.47	0.524
EnvScore	India	0.544	0.210	0.019	0.970
	Korea	0.532	0.265	-0.056	0.972
SocScore	India	0.626	0.180	0.129	0.932
	Korea	0.525	0.270	0.002	0.930
GovScore	India	0.531	0.235	0.042	0.974
	Korea	0.488	0.235	0.015	0.942
cflow	India	0.102	0.087	-0.389	0.553
	Korea	0.075	0.063	-0.165	0.421
capxint	India	0.044	0.031	0.000	0.202
	Korea	0.041	0.040	0.000	0.252
chold	India	0.122	0.100	0.000	0.612
	Korea	0.149	0.099	0.007	0.548
nonopinc	India	0.008	0.038	-0.213	0.488
	Korea	0.002	0.024	-0.161	0.185
lsale	India	12.465	1.390	8.474	15.988
	Korea	15.680	1.404	10.496	19.527
tang	India	0.332	0.197	0.007	0.843
	Korea	0.312	0.181	0.000	0.839

Table 1 represents the descriptive statistics of all the variables considered in the research. Descriptive statistics are important because they help people understand and summarize data and provide a clear picture of a dataset's characteristics. It can be depicted that the average ROA for Indian companies (m=0.067, sd=0.088) is greater than that of Korea (m=0.034, sd=0.064). The Range can be calculated by the maximum value minus the minimum value of the variable. The Range for India's ROA (0.921) is less than that of Korea (0.994), implying that the spread of the data is higher for Korea. Moreover, on average, EnvScore (m = 0.544, sd = 0.210), SocScore (m = 0.626, sd = 0.180), and GovScore (m = 0.531, sd = 0.235) for Indian companies are higher than those of Korean companies' EnvScore (m = 0.532, sd = 0.265), SocScore (m = 0.525, sd = 0.270), and GovScore (m = 0.488, sd = 0.235). Hence, the mean ESG scores are higher in India than in Korea. The Range for EnvScore (0.951) and SocScore (0.803) in India is less than the Range of Korean EnvScore (1.028) and SocScore (0.928), suggesting a wider variability in environmental and social scores among Korean companies. However, the Range for GovScore in India (0.932) is slightly greater than that of Korea (0.927), showing comparable variability between the two countries. In addition to this, the table shows the statistical characteristics for the controlled variables. It is depicted that, except for cash holdings (m_I = 0.122, m_K = 0.149) and sales (m_I = 12.465, m_K= 15.680), the average value of other controlled variables, such as cash flow (m_I = 0.102, m_K = 0.075), capxint (m_I = 0.044, m_K = 0.041), nonoperating Income (m_I = 0.008, m_K = 0.002), and tangible assets (m_I = 0.332, m_K = 0.312), is greater for Indian companies in comparison to Korean companies. Lastly, the Range for cash flow ($range_I$ = 0.942, $range_K$ = 0.586), cash holdings ($range_I$ = 0.612, $range_K$ = 0.541), and nonoperating Income ($range_I$ = 0.701, $range_K$ = 0.346) is greater for India in contrast to Korea, suggesting greater disparity in these variables among Indian firms.

3.2. Regression Analysis

Table 3. Results for the Regression considering ROA as the dependent variable

Dependent Variable (ROA)		
Independent Variables	**Korea (Fixed effects, Robust SE)**	**India (FGLS)**
EnvScore	**-0.008** (0.028) 0.772	**0.01*** (0.006) 0.065
SocScore	**0.018** (0.032) 0.577	**0.005** (0.007) 0.431
GovScore	**-0.006***** (0.004) 0.000	**-0.020***** (0.004) 0.000
cflow	**1.030***** (0.063) 0.000	**0.967***** (0.014) 0.000
capxint	**0.073** (0.135) 0.592	**-0.057** (0.036) 0.115
chold	**-0.061** (0.062) 0.328	**-0.020*** (0.011) 0.068
nonopinc	**0.188** (0.132) 0.159	**0.095***** (0.030) 0.002
lsale	**-0.015*** (0.008) 0.064	**-0.001** (0.001) 0.135
tang	**-0.052** (0.055) 0.346	**-0.037***** (0.006) 0.000
Constant	**0.213*** (0.120) 0.077	**0.001** (0.009) 0.928
R-squared p-value	- 0.000	0.580 0.000

*Standard errors in parentheses and p-value below standard errors; ***p<0.01, **p<0.05, *p<0.1*

The table represents the regression results of the variables in order to see what level of significance they have with profitability. It can be seen that the Environment score is significantly affecting ROA at the 10 percent level of significance in India (p-value=0.065), but does not impact Korea (p-value=0.772) to any extent. In India, there exists a positive impact of EnvScore on Profitability (as measured by ROA). The results indicate that as EnvScore increases by one unit, the ROA increases by 0.01 unit in India. Similarly, the Social score shows no statistically significant relationship with ROA in either India (p-value = 0.431) or Korea (p-value = 0.577). This indicates that any change in the social scores does not have a notable effect on ROA. On the other hand, a notable difference is observed in the Governance score. GovScore is highly significant in India at the 1 percent level (p-value = 0.00). The findings suggest that a one-unit increase in GovScore leads to a significant decrease of 0.02 units in ROA. However, in Korea, the relationship is not significant (p-value = 0.759), indicating that the governance score does not have an impact on ROA.

Moreover, controlled variables have mixed effects on ROA. Both India and Korea have a statistically significant relationship with ROA (p-value = 0.00) in Cash Flow. In India, a one-unit increase in Cash Flow means a 0.967-unit increase in ROA, while in Korea, a one-unit increase in Cash Flow means a 1.03-unit increase in ROA. LSale is negatively significant in Korea at the 10 percent level (p-value = 0.064), but not in India (p-value = 0.135). In Korea, a one-unit increase in LSale corresponds to a decrease of 0.052 units in ROA. In India, there is no effect as it is insignificant. Capital Expenditure does not significantly affect ROA in either India (p-value = 0.115) or Korea (p-value = 0.592). It can be seen that Cash Holdings is marginally positively significantly affecting ROA at the 10 percent level in India (p-value = 0.068), but does not impact Korea (p-value = 0.328) to any extent. In India, cash holdings have a negative impact on profitability (as measured by ROA). The results indicate that as Cash Holdings increases by one unit, India's ROA decreases by 0.02 units. Nonoperating Income significantly affects ROA at the 1 percent level in India (p-value = 0.002), but does not impact Korea (p-value = 0.159) to any extent. In India, nonoperating Income positively impacts profitability (as measured by ROA). The results indicate that as Nonoperating Income increases by one unit, the ROA increases by 0.095 units in India. Tangibility is significantly negatively affecting ROA at the 1 percent level in India (p-value = 0.00), but does not impact Korea (p-value = 0.346). In India, there exists a negative impact of Tangibility on Profitability. The results indicate that as Tangibility increases by one unit, the ROA decreases by 0.037 units in India.

4. Discussion

In India, environmental scores are seen as significant due to the evolving nature of environmental initiatives. This is because companies that invest in environmental performance can differentiate themselves, which in turn leads to competitive advantages that result in higher profitability. Moreover, Indian firms are encouraged by government regulation and investors to engage in these practices, which could also be a potential reason for the increased profitability. For example, Section 80-IA of the Income Tax Act, 1961 offers a 10-year tax holiday for power generation companies. In contrast, Korean firms have a more mature regulatory structure due to practices already being widespread, which makes it more of a baseline factor that all companies have rather than a differentiator [42]. This leads to a contrast between Korea and India in terms of market maturity.

In both India and Korea, social scores insignificantly influence corporate profitability. In India, social projects enhance brand image in the long term, but do not directly relate to higher sales or demand [43]. Additionally, it often requires upfront investments, and since they take time, it would not be a gain realized in the short term, as seen in this study [43]. Furthermore, in these countries, social responsibility is viewed as a baseline expectation rather than a source of competitive advantage [44]. Ultimately, in neither country does social performance translate into measurable financial outcomes, thus creating an insignificant relationship.

Whether governance scores significantly affect profitability or not varies between India and Korea due to their differences in corporate landscapes. In India, the market has greater variability in governance practices among firms, and investors try to use governance to determine managerial effectiveness [45]. As a result, firms with higher governance scores attract greater investment, which in turn leads to better financial performance [48]. Furthermore, since Indian regulatory frameworks still have room to improve, companies that prioritize their governance create a differentiating factor from those that do not [45]. In contrast, Korea has a weaker relationship between governance scores and profitability due to the country's regulatory environment, in which strict governance practices are imposed on large firms [46]. Additionally, Korean firms do not differentiate their governance structures from one another, which does not lead to a difference in Profitability [46].

Subsequently, other financial metrics also influence financial performance. Investors in both India and Korea rely on cash flow to evaluate firm performance, as it is seen as a way that represents a firm's ability to generate value for its shareholders and fund future opportunities without the need for external financing [47]. Studies on Indian and Korean firms have found a significant and strong positive relationship between free cash flow and firm performance [47]. Thus, it serves as additional proof that cash flow leads to positive outcomes when it comes to a firm's performance.

Indian firms tend to have more diversified export portfolios, which means that sales alone may not be a strong indicator of profitability since other factors like cost structures and sectoral differences need to be considered [48].

In contrast, specifically, South Korea has a more specialized economy that focuses on goods like electronics, shipbuilding, and automobiles. This economy has an efficient regulatory environment that ensures sales growth translates into higher profits [49]. Thus, these structural differences lead to differences in sales between India and Korea.

In India, public sector investment often crowds out private investment. When the government increases capital expenditure, it can reduce the resources available for private firms to invest, which in turn limits the impact of capital expenditure on Profitability [50]. Korean firms tend to have high leverage and may rely more on debt financing for expansion rather than direct capital expenditure, which causes the link between capital expenditure and profitability to be less direct, which is why there is a difference between India and Korea [51]. Moreover, cash holdings significantly influence profitability in India due to limited access to external financing and weaker governance [52]. In contrast, Korea's stronger corporate governance and more efficient financial markets reduce firms' reliance on internal cash [53]. Thus, institutional maturity plays a key role in moderating the profitability impact of cash reserves.

Subsequently, nonoperating Income forms a substantial portion of a company's reported profits in India. Some Indian firms report nonoperating Income that exceeds their profit before tax, which is why it is a critical factor in determining overall profitability [54]. On the other hand, empirical research shows that Korean companies rarely use nonoperating Income as a major lever for profitability or tax management, which in turn causes it to have a lesser impact on the profitability [55]. Thus, it is rarely used to determine profitability. Lastly, in India, tangible assets are crucial as they serve as collateral for obtaining external financing. Since collateral reduces lender risk and facilitates borrowing, it can then be used to invest to drive profitability [56].

On the other hand, Korea's more developed financial system offers firms better access to diverse financing options such as unsecured loans and capital markets. As a result, reliance on tangible assets as collateral is less critical for obtaining funding [51]. Overall, the ESG scores reported in India and Korea differ in some cases and do not differ in others, mainly due to the similarities and differences between the two markets.

5. Conclusion

Environmental, Social, and Governance (ESG) practices have become essential to modern corporate strategy due to the increasing push from global sustainability goals (SDGs) along with investor demands for profitability. The study aims to evaluate the relationship between ESG scores and financial profitability, comparing developed and developing markets in Asia: Korea and India. Using panel data from 2018 to 2022 for Indian and Korean firms, this study conducts regression analysis with ROA as the dependent variable and ESG scores as independent variables to determine whether there is an effect on profitability. To address issues within the dataset, Fixed Effects robust standard errors and FGLS techniques were used. The regression results show that Environmental and Governance scores are significantly and positively associated with ROA in India but not in Korea, while Social scores are insignificant in both.

Furthermore, both countries' cash flow is significantly and positively related to ROA. However, variables like Capital Expenditure and Sales are insignificant in both contexts. Cash Holdings, Tangibility, and Nonoperating Income are marginally significant in India but are insignificant in Korea.

In India, environmental scores increasingly influence profitability due to evolving sustainability policies and investor expectations, such as green practices that offer firms a competitive edge and regulatory incentives. In contrast, Korea's mature environmental standards serve more as a legitimacy baseline than a profit driver, thus reflecting different market maturities. Social scores have a limited impact on profitability in both countries. Subsequently, in India, social efforts enhance brand image but yield delayed returns, thus not being effective in the short term. In Korea, social responsibility is culturally expected, offering little competitive advantage and not yielding any profitability advantages. Governance scores, on the other hand, affect Profitability more in India due to quality variations that shape investor trust. In Korea, uniform regulatory standards reduce governance as a differentiator, thus making it less impactful when it comes to profitability. Moreover, cash flow stands out as the only control variable with a significant positive effect on ROA in both India and Korea. This shows it has a central role in corporate financial performance across different settings. All the ESG variables were significant, but there were differences between the two markets depending on whether it was positive or negative. The significant control variable in both was the log of sales, which turned out to be negative in both countries. The level of significance for ESG in India and Korea is similar in some cases and differs in others, largely due to their differences in market types.

Limitations and Future Scope of the Study

Despite the dynamic and significant results, this study has several limitations. The study does not capture long-term ESG-performance dynamics, which may understate ESG

benefits that unfold over time. Since the data is from 2018-2022, looking at it more long-term might lead to more accurate results. The analysis does not control for industry-specific effects, which could skew ESG and profitability relationships. For example, some industries, such as construction vs software, could affect ESG differently. This study only looks at two specific Asian countries to analyze the effects of developed markets compared to developing markets. Hence, the study could have analyzed additional countries in Asia in order to determine whether the same trends continue to hold true as well.

The findings of this study can be used by multiple stakeholders, including Indian firms, financial managers, and investors. Indian firms can leverage governance improvements to boost investor confidence and operational efficiency. For example, Indian firms can improve their corporate governance to boost investor confidence and operational efficiency by promoting transparency and accountability. Thus leading to an increase in investor confidence. This will, in turn, lead to higher profitability for the firms. Companies should approach environmental initiatives as long-term investments, especially in developing markets like India, as they will lead to greater ROI (Return on Investment). For example, companies can focus on strategic planning, integration, and stakeholder engagement. Financial managers in both countries should prioritize cash flow management, as it directly impacts firm profitability. Prioritizing profitability regardless of markets would lead to enhanced effects. Investors should emphasize cash flow and ESG disclosures for better valuation of firms in emerging markets. Investors will be able to make more accurate predictions by looking at the two in order to see an increase in ROI.

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