ISSN 2063-5346

IMPACT OF SUSTAINABLE DEVELOPMENT ON THE INDIAN ECONOMY

Dr. R. Leema Rose[1], Dr. G. Anil Kumar[2], Dr. R. Ananthi[3]

Article History: Received: 01.02.2023 Revised: 07.03.2023 Accepted: 10.04.2023

Abstract

This study focuses on examining how Indian businesses practice ecological development and the creation of relationships among their attributes. To project the study goal, quantitative investigations on corporate sustainability are carried out in the preliminary phase. Using scientometric analysis, this study documents the historical functionality of corporate sustainability. Additionally, some bibliometric analysis is carried out to quantify the study gaps discovered in the earlier works. Here, the corporate sustainability performance and firm-level correlation mapping are carried out to demonstrate the connections between corporate sustainability, performance, and firm production. A comprehensive empirical study is also conducted to create a theoretical framework for business sustainability culture. The generalization of the model in the context of corporate heterogeneity is examined in this study using both linear and non-linear least square methods. The suggested model aims to quantify how corporate characteristics like governance, social responsibility, and tax avoidance affect business performance. To experimentally forecast the relationship between the corporate variables, some moderate variables are examined. This research makes significant contributions to the analysis of corporate sustainability.

Keywords- corporate sustainability, firm, organization growth, governance, corporate variables

[1] Assistant Professor, Department of B. Com Honours, Loyola College, Chennai.

[2]Manager- Marketing, Chennai Trade Centre, Chennai.

[3]Assistant Professor, School of Business, Amrita Vishwa Vidyapeetham, Kollam.

DOI:10.31838/ecb/2023.12.s1-B.202

1. Introduction

Urban communities are getting denser as a result of unchecked population growth. Since the middle of the 20th century, anthropogenic activities have strained society's connection with the environment [1]. This tense relationship harms society, the environment, and business. Urbanization has a greater worldwide impact due to the quick changes in our planet's appearance. Midway through the twentieth century, urbanization increased and still does today. Institutions (companies or firms) have long acted as breeding grounds for innovative concepts, economic expansion, and the construction of public infrastructure, resulting in flourishing economies [2]. However, numerous environmental and social issues exist in every country due to these changes.

Furthermore, these problems can only be solved through sustainable development (SD). In other words, sustainability emerged from people's attempts to maintain the advancement of the world economy without exhausting all natural resources [3]. Current management literature contains many instances of how sustainability has positive economic effects. The goal of eco-efficiency is to increase value while reducing environmental impact to accomplish sustainability [4]. As the market penalizes bad companies and rewards good ones, socially conscious investing is becoming increasingly popular.

Consequently, sustainability reports are now included in many companies' annual financial statements. However, such generosity can continue if these SRs are only used for greenwashing. These businesses will only succeed if their goods and services live up to customer standards over the long term, no matter how appealing they may seem in their books of accounts or SRs [5].

The concept of sustainability dates back to when businessmen gave money to temples or the less fortunate. The effects of corporate sustainability performance and reporting standards (CSPR) on global ecology are being studied across all corporate industries [6]. Sustainability and sustainable development are both continually changing ideas. Sustainability in the contemporary world means operating a business that promotes the growth of a society that is kind to the environment and its citizens while being effective and successful [7]. Sustainability is declining, not because people must be more conscious of current affairs or have less faith in corporate sustainability (CS) [8]. Instead, it's because bad behaviors are spreading like wildfire. People still need to know how difficult the sustainability problem is and how much change is required to resolve it [9].

Clarifying how a company ensures the global economy is sustainable for future generations is crucial to business sustainability reporting. A company's resource use and both positive and negative environmental effects can be tracked in a sustainability report [10]. The governance pillar ensures that the company's objectives align with the larger society's by enforcing transparency, integrity, and regulatory compliance. The firm's principles must also be integrated with the community, value chains, and end users. Adopting sustainable business practices may improve a company's sustainability and benefit society and the environment [11]. A company's efforts to support its employees and the community may increase goodwill. For instance, more consumers buying the company's products may be advantageous to the company over time. Every member of a company's management, from the top to the lowest, must be held responsible. Multinational corporations may gain a competitive edge by offering ecologically-friendly manufacturing processes that disrupt supply chains that only use cheap labor [12]. To give them greater accountability for SD, most international companies have

begun filing SRs.Furthermore, a lot of data was produced by the SRs reports. These days, it can be challenging to tell whether businesses are merely "greenwashing" their image to present themselves as sustainable practitioners or if there is any truth to it [13]. To address these problems, many academics use text analytics to evaluate the performance of businesses.

Building trust between organizations and their stakeholders is essential for achieving sustainable growth. Businesses increasingly depend on stakeholder involvement to promote trust, transparency, accountability, and better reporting on their operations' environmental and social effects [14]. Corporate governance is developing and applying rules and procedures that maximize shareholder worth while satisfying other stakeholders' requirements. Determine the stakeholders' concerns by looking at the firm's characteristics, such as its financial and market success [15]. This research looked into how a company's traits and moral principles are affected by sustainability reporting. This research provides a wider analysis of CSP and CSF by evaluating a firm's mean, median, and standard deviation (SD) along with other statistical measures and correlations. The country's GDP is analyzed based on the firm's growth, and the sustainability is evaluated based on certain factors discussed in section 3.

The work is drafted as section 2 provides a wider analysis of various prevailing CSP, CSF and corporate governance approaches. The methodology is discussed in section 3 based on various real-time hypothesis factors. The findings are discussed in section 4, with the conclusion in section 5.

2. Related works

Analyzing the sustainability reports (SRs) that various organizations submit each year takes time. A sophisticated and intelligent framework is required to analyze these reports and extract hidden information from them quickly. Because the researchers couldn't locate the pertinent content, earlier efforts to use text analytics to assess corporate SRs failed. Szekely et al. [16] successfully located the pattern line using this method, but the findings were limited to a few variables. The author in [17] developed a text mining (TM) algorithm to analyze the financial records of businesses. They found it simpler to spot potential risks in non-financial data than in financial data. Radiology and medical reports have been evaluated using TM in medical research. Previous studies have focused on mandatory or optional reporting processes using linguistic or disclosure analytics, which is fundamental but frequently misses highlighting the dynamic nature of CSPR processes [18]. Researchers who study qualitative disclosures consider logical, quantitative disclosure analysis. Conversely, quantitative researchers frequently criticize qualitative disclosures for being overly subjective and lacking adequate empirical support [19].

Researchers have established a linear relationship between business financial success (CFP) and CSPR [20]. The literature on the subject has two views on whether this connection occurs. The Porter hypothesis, which contends that environmental regulations can benefit polluting businesses and spur innovation, forms the basis of the first point of view. To offset the higher costs, this link produces additional revenue. There is, consequently, a favorable association between CSPR to CFP. However, in [21], the investigator maintains that the agency problem in CSPR leads to an issue with allocating inadequate resources and increased costs for businesses using CSPR. The unfavorable connection between CSPR and CFP results in an uncomfortable situation. However, a mixed (positive and negative) association

between CSPR and CFP or a neutral connection is only occasionally found in studies. The main causes of the literature's ambiguity are the different ways that CSPR and CFP are operationalized and conceptualized.Babu et al. [22] also noted several structural components as the root causes of these inconsistent results, including industry-specific CSPR strategies (for instance, as CSPR conception components) and financial circumstances (for example, as an operationalization factor of CFP).

The present work expands on the body of corporate sustainability literature. Examining how well corporations perform in terms of their sustainable growth is the primary goal of this study [23]. This research divided the main goal into two groups of interconnected goals distributed across various chapters to accomplish its broad goal. These two sets of connected goals each includes five additional goals that complete one another [24] – [25]. The first group has three goals that examine the CS's driving forces. The second group consists of two objectives that address the study's second goal: determining whether CSP and CSF adoption will increase profits.Based on the survey, it is observed that 51% of Indian firm says that they are suitable for the future functionality. For instance, Vodafone business stated a report that the sustainability is considered as the competitive benefits of high performance companies where the business fit for Future global research. It explores International business attitudes and activity over innovation, sustainability and resilience. A survey has been conducted among 3101 firms over 15 countries which include 748 regions of Asia-Pacific countries. Firms intends to deem ‘Fit for Future’ highest score by measuring change embrace, speed towards market, wider strategic planning and commencement of various new technologies.

Besides India, some other countries like Singapore, Australia, and china are included for the survey. The business report determines the Fit for Future (FFTF) business that has to understand the technological power to resolve diverse business challenges and technological roadmaps to transform working techniques. Some strategies are very documented, specific, appropriately funded and well-organized. They determine the forces shaping its business and help from diverse leaders while needed. Providing some efforts to execute and embrace FFTF strategies have advantages these firms as it report diverse financial performance. Nearly, 70% of FFTF firms with higher profits than it perform a year ago for 46% for non-FFTF firms. Then, 80% of FFTP firms predict superior earning for next five years compared to other non-FFTF firms. While sustainability is determined as a crucial factor, there are senses that the advancement may be stalling. Some business remains focuses on certain issues like satisfying customer expectations for better service and quality. Moreover, one-third firm says that customers are interested to pay for environmental sustainability of services and produces. It specifies that customers expect companies to employs sustainability practices devoid of translating superior price to them.

3. Methodology

Corporate sustainability Performance (CSP) and corporate sustainability of firms (CSF) are broad concepts with consequences for the socioeconomic system and the environment. The idea's implications have been the subject of more discussion [26]. Corporate social responsibility, or CS, was commonly used in the literature. Corporate social responsibility was nonexistent in the contemporary company until the 1930s and 1940s. The history of CS, as it is now called, shows that corporate executives are becoming increasingly concerned with societal problems. Understanding the

evolution of the idea is essential for comprehending CS, how businesses interact with their most significant stakeholders, and how a company should support social welfare [27]. This chapter examines the development of the CSP idea by examining the literature and historical occurrences that helped to shape it using firm and country-level sustainability analysis. The chapter also emphasizes incorporating corporate social responsibility (CSR) into CS as a fundamental aspect of business administration.

3.1. Country-level economy analysis

This part describes the regression equation that served as the foundation for our analysis of the relationships between GDP and SDG variables [28].

$$GDP = f(variables) \quad (1)$$

WhereTable 1 displays the model factors and associated SDGs.

3.2. Dataset description

Table 1 shows the country's sustainable development and development goals with model variables and empirical approaches.

Table 1 Dataset descriptions

SDG	Descriptions
1	Reduce poverty
2	Reduce hunger with improved nutrition and food security
3	Fulfill healthy live
4	Fulfill quality education
5	Promote gender equality by empowering women
6	Ensure sustainability management
7	Ensure modern energy
8	Improve sustainable economic growth
9	Construct the finest infrastructure
10	Diminish inequality in the country
11	Promote human settlements and sustainability
12	Ensure production and energy consumption
13	Action toward climatic changes and impacts
14	Conserve the use of seas, marine resources and development
15	Reduce biodiversity loss and manage forest resources
16	Ensure a peaceful environment and sustainable development and perform effective construction
17	Promote global partnership with sustainable development

Table 2 Variable Analysis of Dataset 1

Variables	SDG	Description
Water	1,3	The facility for managing human waste
R&D	8, 9, 11	Research and development investment
Poverty line	1, 2, 3, 4	Population ratio below the poverty line
Natural gas	7	Natural gas consumption/capital
Mortality	3	Children's mortality rate below 5 years
Equality (gender)	5	Ratio of seats held by women in parliament
Hunger	1 and 2	Population ratio who suffers from hunger
Energy	7	The population who access electricity
Emission	12 and 15	Carbon-di-oxide emission/GDP

The notations did not provide data for full-time where variables energy and education were excluded from regression estimations. The chosen factors are not particular to the SDGs but are related to them. To symbolize specific SDGs, different researchers have used various variables. Any standard factors do not represent the SDGs. However, our variables frequently share qualitative similarities with those used in other research. The group of models that can be approximated is denoted by the following:

$$y_t = \alpha I_m + x_t'\beta_{it} + I_m\varphi + \emptyset_t I_m + u_t \quad (2)$$

Here, $I_m$specifies m-element identity matrix, $u_t$refers to error terms for $t = 1,\ldots,T$ and ϕ is a vector of cross-section effects. $x'ts$pecifies k-element regressor vector. The dependent variable is y_t. The variables β and φ indicate period-specific impacts, while the model's parameter is constant (random or fixed). A series of period-specific equations stacked on top of one another can be used to represent Eq. (3) as in Eq. (2):

$$y = \alpha I_{Mt} + X\beta + (I_M \otimes I_t)\varphi + \emptyset(I_M \otimes I_T) + u \quad (3)$$

Where M is the number of cross-sections, which in this instance is 5. Similarly, assume$\ominus$ by is the error correlation.

$$\ominus = E(uu') \quad (3)$$

$$\ominus = E\begin{pmatrix} u_1u_1' u_2u_1' & \ldots & u_Tu_1' \\ \vdots & \ddots & \vdots \\ u_Tu_1 u_Tu_1' & \ldots & u_Tu_T' \end{pmatrix} \quad (4)$$

The study's panel data required consideration because of the sample's cross-section of countries and the

residuals' behavior over time. Several techniques are available in the Eviews research program for estimating balanced and unbalanced panels. Residuals are concurrently correlated and cross-sectionally hetero-skedastic where the feasible GLS (FGLS) estimator is the cross-sectional generalized least squares, i.e. Parks estimator. Residuals from the first step are used to calculate the covariance matrix. The creation of FGLS estimates is the second stage.

According to [29], many cross-sections could produce a nonsingular correlation matrix and brief time series, rendering FGLS estimation ineffective. It is crucial to comprehend that the sampled nations might affect one another's policies and perhaps even share experiences. We employed a variety of estimation techniques are suitable for balanced panel data including panel estimation with random/fixed time effects and regressions with coefficients that appeared to be unrelated. We won't go into great depth here because most econometrics textbooks explain the techniques and assumptions used for estimation in great detail. We will nonetheless give a succinct description of each estimation technique and the reasoning behind why we chose to use it.

In contrast to residual autocorrelation, initially, the model uses covariance to enable conditional correlation among contemporaneous residuals. The justification is that growth strategies are interdependent across nations and periods. As a result, residuals across various nations are linked over a specific time frame. However, because each country's policies might alter annually in reaction to fresh information and new objectives, the residuals for the time series for each nation will produce autocorrelation. The fixed effects estimation approach supposes that the global regression values are all uniform. This estimation technique is the same as estimating a model using the stacked data and the cross-sectional identifiers while presuming fixed effects over time. The ultimate technique, known as random time effects, uses cross-section weights in the array of coefficients of variation calculations to imply a random effect over time [30]. These suppositions can be altered to produce similar estimates and agree with one another. The evaluation is practical with FGLS which employs covariance's to weight the data. White cross-section is the final estimation technique, determines the robust SD of the coefficient values and presupposes the errors' contemporaneous (cross-sectional) correlation (period clustered).

3.3. Firm-level analysis

Corporate sustainability and firm performance are related to one another in a contextual manner based on the firm age, size, profit and some other prominent variables. The firm size, R&D, risk, and sector intensity are determined as the finest control variables while establishing the relationship. Firm performance is influenced by modern innovation, which drives factor analysis. R&D is considered the key component of sustainability factors that need to be handled with better solutions. Systematic risk is determined as the crucial factor for evaluating the impacts on CFP and CSP in a diverse manner. It specifically concentrates on social and environmental issues that adopt the risk management strategy and has to observe the essential factors. Therefore, the risk is measured as a beta firm, and the relationship is established based on the unique ability. The below-given estimations are considered for measuring the firm-level hypotheses.

$$CFP_{ijt} = C + \beta_1 * CSP_{kjt} + \beta_2 * F_{agejt} + \beta_3 * F_{size} + \beta_4 * R\&D + \beta 5 * F_{risk} + \varepsilon jt \quad (5)$$

$$CSP_{ijt} = C + \beta_1 * CFP_{kjt} + \beta_2 * F_{agejt} + \beta_3 * F_{size} + \beta_4 * R\&D + \beta 5 * F_{risk} + \varepsilon jt \quad (6)$$

$$CFP_{ijt} = C + \sum_{l=1}^{l} \propto lCFP_{ij}(t-1) + \sum_{l=1}^{l} \gamma lCSP_{kj}(t-1) + \varepsilon_{jt} \quad (7)$$

$$CFS = C + \sum_{l=1}^{l} \propto lCSP_{ij}(t-1) + \sum_{l=1}^{l} \gamma lCSP_{kj}(t-1) + \varepsilon jt \quad (8)$$

Here, $i = 1,2, and\ 3$ where CFP_1 refers ROA, CFP_2 refers ROE, and CFP_3 refers Tobins' Q. CFP_{ijt} specifies CFP for $the\ j^{th}$ firm over the 't' period. Then, $k = 1,2,3, and\ 4$where the CSP refers to the ESG score, i.e. (E-Score, S-Score and G-score) of j^{th} firm over $the\ 't'$ period. Next, C specifies the interception, and 1 represents lag orders. Finally, $F_{age,}F_{size,}\ R\&D\ and\ F_{risk}$ represent the firm age, size, R&D intensity and risk of the j^{th} firm over $the\ 't'$ time. εjt refers error rate.

Table 3 Dataset variables

Variables	Name	Mnemonic	Type	Functionality
CFP	Asset returns	ROA	Ratio	How is profit related to the overall firm asset
	Equity	ROE		Evaluate corporation profitability based on income and average equity.
	Tobins'Q	Tobins'Q		The proportion of firms' market value to total asset replacement
CSP	ESG score	ESG	Numeric	The Bloomberg score varies from 0.1 to 100 based on ESG
	E-score	E		The Bloomberg score varies from 0.1 to 100 based on environmental disclosure.
	S-score	S		Bloomberg score varies from 0.1 to 100 based on social disclosure.
	G-score	G		Bloomberg score varies from 0.1 to 100 based on governance disclosure
Control variables	Firm size	Size	Numeric	Market capitalization
	Sector	Sector	Category	Firm-based sector definition
	Firm Age	Age	Numeric	Variation among the present year
	Firm R&D	R&D	Ratio	R&D expenditure
	Firm Risk	Risk	Numeric	Volatility measure
	ESI	ESI	Binary	ESI sector of firms

3.3.1. Findings

The CSP variables are reported to provide positive skewness and kurtosis based on the nature of the data. Mean disclosure was superior for CSP variablesanalyzed by S and E. The SD derived for $G(7.5)$, which is lesser than $E(15)$, $S(16)$ and $ESG(12)$ by providing the least $G-score$. Table 4 and 5 represents the statistical analysis and correlation mapping (See Fig 1 to Fig 6).

Table 4 Statistical analysis

Factors	ESG	E	S	G	ROA	ROE	TOBINs	Age	Size	R&D	Risk
Mean	26	16	26	48	8	16	2.6	45	5	0.6	1
Median	21	11	23	47	6	16	1.6	38	5	0.02	0.9
Max	62	63	83	77	55	195	32	155	7	70	2.7
Min	8	1.8	3.1	27	-46	-195	0.5	4	2	0	0.02
SD	12	15	16	8	8.2	21	2.5	26	0.7	2.8	0.42
Kurtosis	3.9	4.09	2.7	4	6	28	22	4	2.6	277	0.55

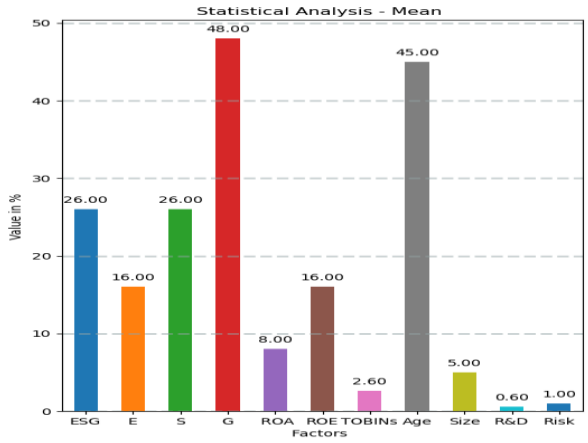

Fig 1 Statistical analysis on mean

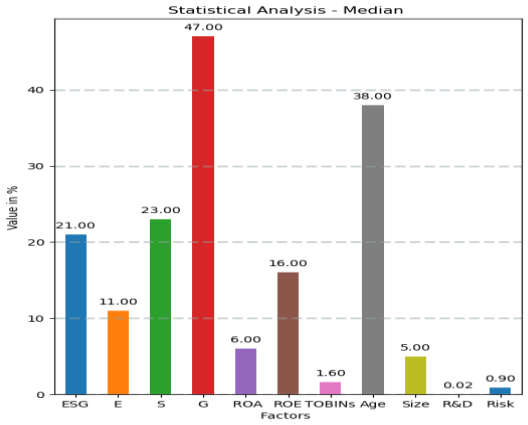

Fig 2 Statistical analysis on median

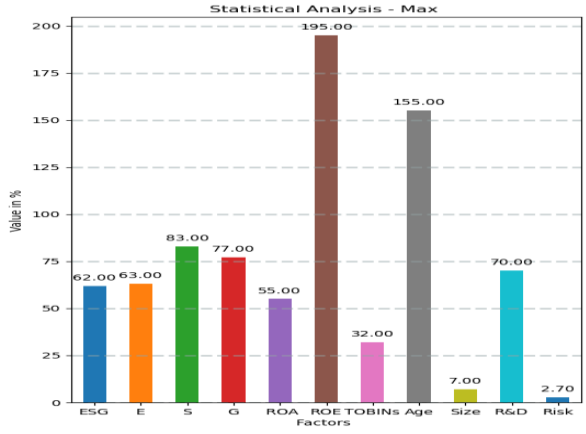

Fig 3 Statistical analysis on Max

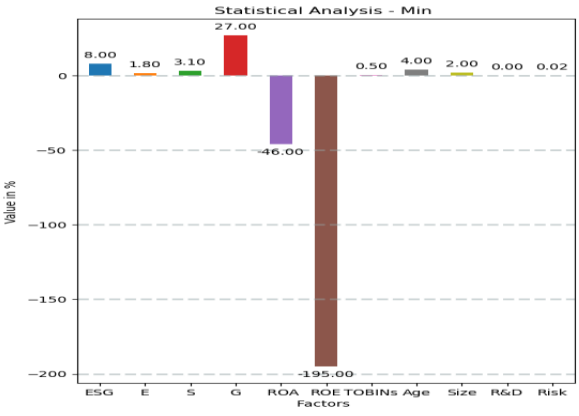

Fig 4 Statistical analysis on min

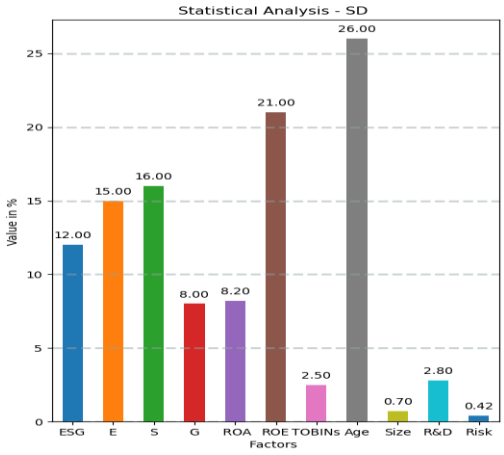

Fig 5 Statistical analysis on SD

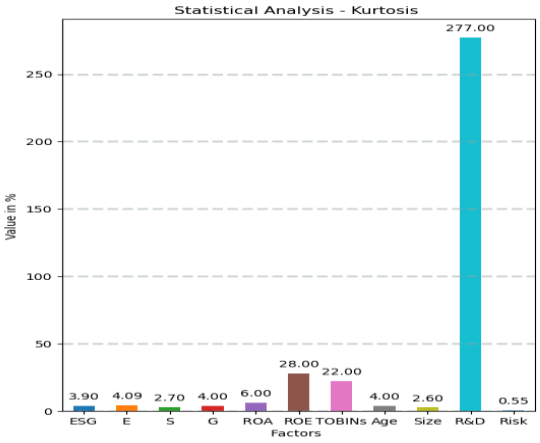

Fig 6 Statistical analysis on Kurtosis

Table 5 Correlation mapping

Factors	ESG	E	S	G	ROA	ROE	TOBINSQ	Age	Size	R&D	Risk
ESG	1										
E	0.9	1									
S	0.8	0.6	1								
G	0.7	0.6	0.5	1							
ROA	0.03	0.05	0.001	0.08	1						
ROE	0.01	0.02	-0.02	0.04	0.71	1					
TOBINSQ	-0.02	-0.04	0.04	0.01	0.61	0.41	1				
Age	0.019	0.01	0.06	-0.08	-0.03	0.0014	0.012	1			
Size	0.47	0.3	0.53	0.37	0.19	0.15	0.26	0.05	1		
R&D	-0.04	0.007	-0.018	-0.008	0.06	0.03	0.04	0.02	0.06	1	
Risk	-0.04	-0.07	0.02	-0.09	-0.49	-0.41	-0.3	0.006	-0.15	-0.1	1

The mean value specifies the TobinsQ of Indian firms, which shows the healthier condition of Indian Corporate companies. The average firm age is 45 years which is established more independently. The average value of R&D intensity shows less concentration toward the R&D activity. Similarly, the mean risk value is 1, and it shows that the Indian firms have an average risk of 1 percent, with not much volatility and risk encountered in Indian firms. The median value is 93% which shows the moderate functionality of the anticipated model. The correlation table shows the CSP and CSF relationship, with a significance level of 0.01. Firm age, size, and risk factors are also connected, and it shows the constant functionality of the firms.

4. Numerical result and analysis

Before we estimated the regression, this work looked at the bilateral relationships between the different SDG factors. The coefficient of Pearson's association showed the strength of the connection between the SDG measures. The

coefficients of Pearson's association varied from zero, which indicated no correlation, to one, indicating a perfect connection between the two factors. A strong bidirectional link could cause the regression model's multicollinearity. Both mortality and poverty had a moderately positive correlation, as did unemployment and poverty, but there didn't seem to be any collinearity that would have affected the regression findings. These results are summarized in Table 6. Hunger, the poverty line, and emissions all had strong favorable relationships. Therefore, one would anticipate greater emissions levels at higher GDP. It is more challenging to comprehend why there is a strong link between increased GDP and decreased starvation. When numerous variables are at play, bilateral correlation coefficients cannot fully explain the association of the factors. These intricate relationships must be investigated using a multivariate paradigm. The next phase of this study involved developing and estimating a multivariate regression model that could quantify the relationship between SDG variables and GDP.

Table 6 Correlation establishment (country-level analysis)

Factors	Natural gas	Gender	R&D	Emission	Poverty line	Energy	Mortality	Hunger	GDP
Natural gas	1	-0.2	0.08	0.30	-0.7	0.5	-0.5	-0.3	-0.05
Gender		1	-0.08	0.66	0.4	-0.1	0.7	-0.4	-0.13
R&D			1	0.10	0.08	0.6	0.04	-0.6	0.3
Emission				1	0.26	0.03	0.7	-0.3	0.4
Poverty line					1	-0.6	0.72	-0.4	0.5
Energy						1	-0.18	-0.8	0.1
Mortality							1	0.01	0.3
Hunger								1	0.4
GDP									1

While keeping all other variables constant, the suggested multivariate regression successfully captured the relationship between each SDG variable and GDP. We also calculated the variance inflation factor (VIF) and SDG variables (excluded) with large VIFs to reduce biases caused by multi-collinearity.

Collinearity causes regression estimates to be unstable, have large standard errors, and produce false p numbers and t statistics. The VIF determines the parameter increase values that arise from inter-variable collinearities. VIF is the amount of inflation brought on by the connection of various factors. There is no correlation between the variables when VIF is equivalent to 1. VIFs greater than 5 indicate potential varying collinearity. The regression model's many factors could have significant correlations, as shown in Table 7. Given that UN SDG variables measure different facets of sustainable development, it is conceivable.This work eliminated the highly correlated variables in regressions that shows high coefficient determination and F statistics. Emissions, for example, had a greater VIF than the other variables, natural gas usage and access to energy. It might mean that there is more collinearity here than there is with other explanatory factors.

Table 7 Statistical analysis (country-level analysis)

Variable	Mean	SD	Min	Max	VIF
Natural gas	0.5	0.9	0.002	33	7.6
Gender equality	17	11	7	45	6
R&D	1	0.3	0.7	2.2	3
Emission	0.5	0.3	0.13	0.9	8.1
Poverty line	18	14	0	39	6.7
Energy	90	12	56	100	8
Mortality	36	25	7	88	6
Hunger	16	6	8	38	6
GDP	4	3.9	-7.9	14	--

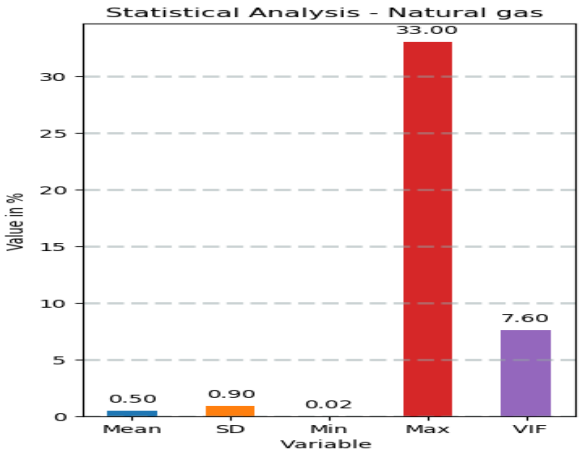

Fig 7 Statistical analysis on natural gas

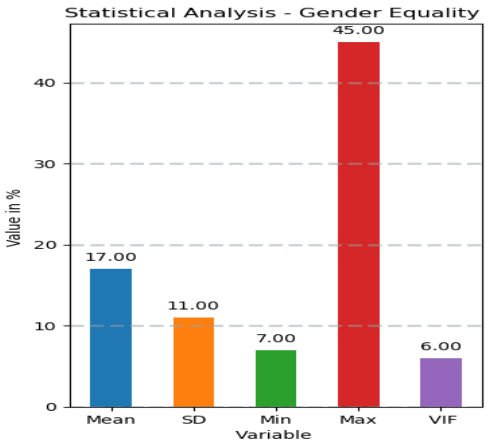

Fig 8 Statistical analysis on Gender equality

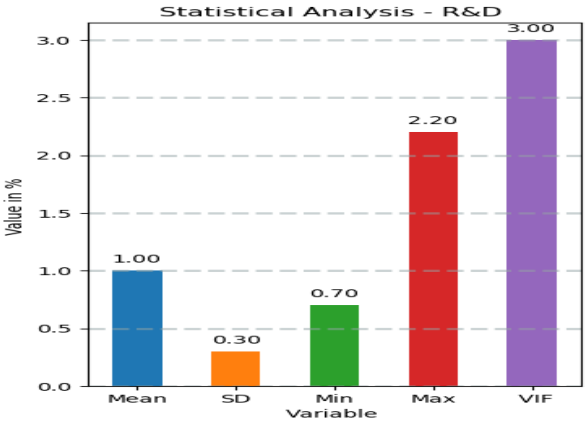

Fig 9 Statistical analysis on R&D

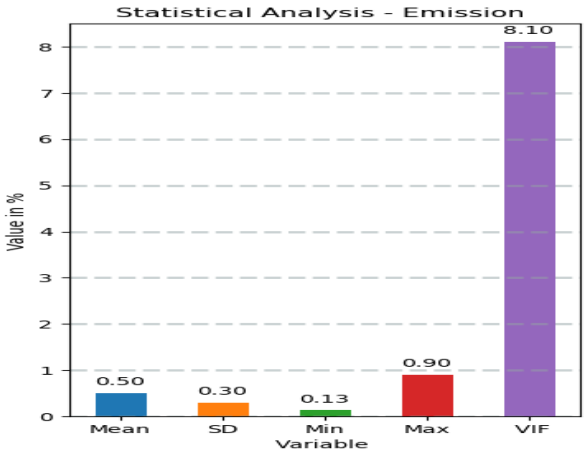

Fig 10 Statistical analysis on Emission

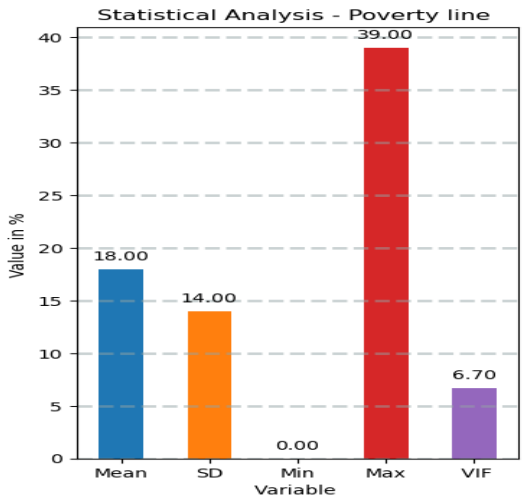

Fig 11 Statistical analysis on poverty line

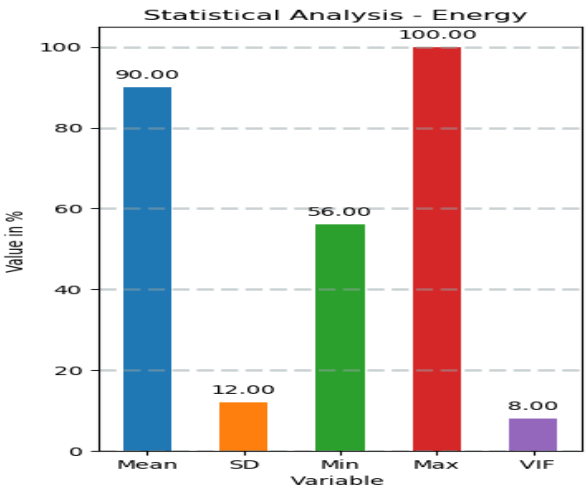

Fig 12 Statistical analysis on Energy

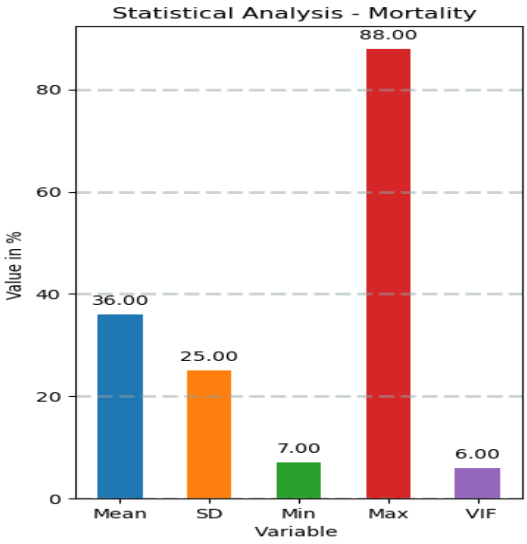

Fig 13 Statistical analysis on Mortality

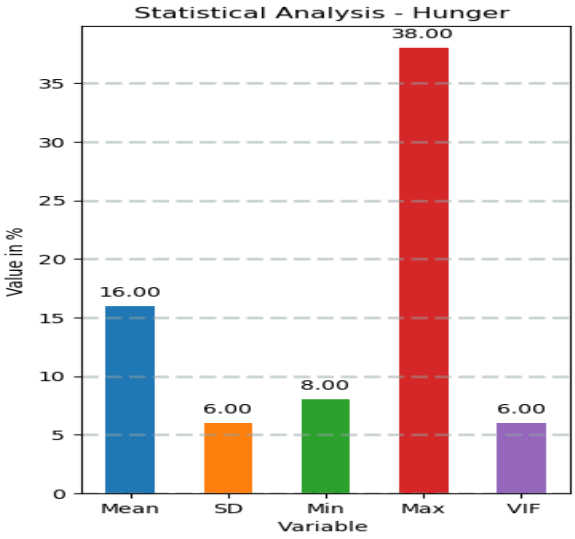

Fig 14 Statistical analysis on Hunger

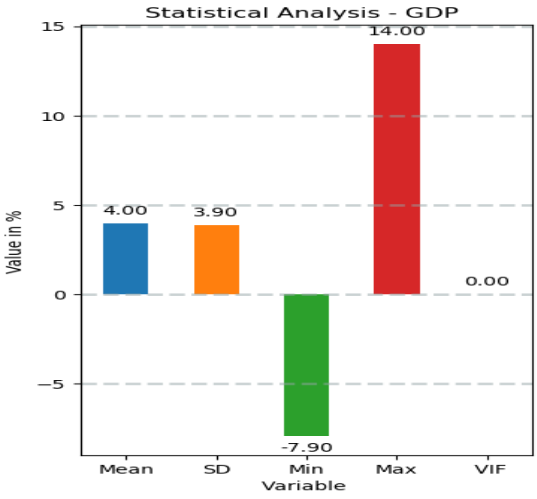

Fig 15 Statistical analysis on GDP

Table 8 lists the outcomes of these efforts. Panel estimation with period random effects and SUR found significant relationships between GDP and mortality, gender equality, emissions, and R&D according to the estimation findings. However, multicollinearity was a major issue, as evidenced by high $R-$squared and F statistics shows insignificant explanatory variables. The assessment is performed over the insignificant factors eliminated from the findings for the panel FGLS method is presented. We will not present similar results from estimation in the spirit of brevity. As expected, GDP was favorably correlated with energy access and emissions. The fact that these two factors have a positive relationship with GDP shows how difficult it is to achieve sustainable development (See Fig 7 to Fig 15). The need for more energy and emissions is anticipated to increase as countries try to increase their quality of living and GDP. The conflict between sustained growth and rising living standards draws attention to the difficulty many developing countries experience. It also suggests that global population growth must be restrained to lower energy consumption and decrease emissions. Furthermore, advancements in the areas of solar and wind energy are essential. Without the negative emissions issue, this development can raise the standard of living and add to the global GDP.

According to the regression's findings, the strongest predictor of a country's GDP is carbon dioxide emissions per unit of GDP. It is partial because emissions cover a wide range of economic activities, including production, farming, and transportation, all of which add to GDP. However, this suggests a significant link between economic development and carbon emissions. In light of the mounting evidence that carbon emissions have a detrimental effect on the environment, attempting to boost GDP while increasing emissions seems like it could be more sustainable, according to several researchers [25], by examining emerging nations, it is feasible to conclude that there is a link between development and climate change. Urbanization is prompted by economic growth, which can help achieve the SDGs, but carbon pollutants are also a contributing factor. Socioeconomic growth is accelerating and dynamizing in emerging economies. For instance, some authors [26] conclude that once economic growth and prosperity are attained, nations must put restraints on their pace of economic growth to slow down resource extraction.

At first glance, it doesn't appear probable that gender equity and GDP have a statistically significant and unfavorable correlation. Increases in gender equality should increase the number of qualified workers entering the workforce, which will boost GDP. However, the percentage of positions women hold in parliament is a more limited definition of this variable. Even though it is straightforward, this measurement disregards several factors, including the wage gap, the availability of opportunities in various sectors, and women's participation rate (labor). This variable's negative sign suggests that gender equality may not have been adequately and properly measured. As predicted, a statistically substantial negative correlation existed between mortality and GDP. Rising incomes, improved healthcare, and living standards are all linked to declining mortality rates. Thus, it is conceivable that declining mortality predicts increasing GDP and vice versa. R&D and GDP had an unfavorable relationship. The cause could be because transitional economies in this group invest more money in research and development, and GDP may suffer in the short term due to the diversion of scarce resources. Despite being essential for long-term development, R&D is dangerous in the short run. Spending on R&D may take some time before the benefits become

apparent. Furthermore, a scientific infrastructure is required for R&D expenditures to pay off. With the possible exception, most of the sampled BRIC nations may need more bases for R&D.OLS estimation is adopted to verify the accuracy of the findings. Table 7 contains a summary of the findings. The reported estimates are corroborated by being qualitatively similar to those provided, and their robustness is affirmed.

The conclusions of this study should be evaluated with care. Data constrain access to different SDG indicators from emerging economies needs to be more reliable and meticulously recorded. The model used in this research could have examined all of the indicators had it been given more reliable data. The proportion of kids enrolled in pre-kindergarten or kindergarten during the year before the formal primary school entry age (education) and the population's use of "safely managed" sanitation services were missing from some countries' records (water). This information could have been useful independent variables, giving us more understanding of socioeconomic growth in developing nations. In addition, this research only examined a small subset of emerging economies, namely five. The statistical analysis could be more comprehensive and significant with a bigger sample size and more emerging and growing nations' economies. However, the empirical results for the nations support the findings of an additional study.

5. Conclusion

The present work expands on the body of corporate sustainability in India as a whole. This study's main objective is to examine how well businesses function regarding their corporate sustainability about sustainable development. Stakeholder engagement transparency metrics are built into the CSP score, which also serves as a firm-level indicator of sustainable success. Several CSP and CSF indicators related to environmental, social, and governance attributes needed to be thoroughly investigated in the earlier study. Inconsistencies in disclosure practices were also found in the energy industry, according to the study. For example, businesses with relatively small sizes might put profits ahead of revealing their sustainable practices. Businesses with larger sizes might have to put CSP adoption ahead of growing their wealth. There are some constraints in this study. The findings of this study may be different for smaller energy companies and other industries because it only uses large, international companies. The findings might also differ depending on where the firms are located. These restrictions inspire fresh approaches to this field of study. The ESG score was used in this research as a stand-in for the CSP overall performance, as it had been in earlier ones, and it only links the dependent and determinant factors. Therefore, future research should concentrate on inverted U-shaped interactions considering both perspectives rather than demonstrating linear links based purely on value.

REFERENCES

[1] Aray, Y., Dikova, D., Garanina, T., & Veselova, A. (2021). The hunt for international legitimacy: Examining the relationship between internationalization, state ownership, location and CSR reporting of Russian firms. International Business Review, 30(5), 101858.

[2] Chaffee, E. C. (2017). The origins of corporate social responsibility. University of Cincinnati Law Review, 85, 347–373.

[3] Coles, J. L., Patel, E., Seegert, N., & Smith, M. (2022). How do firms respond to corporate taxes? Journal of

Accounting Research, 60(3), 965-1006.

[4] Djelic, M.-L., & Etchanchu, H. (2017). Contextualizing corporate political responsibilities: neoliberal CSR in historical perspective. Journal of Business Ethics, 142(4), 641– 661.

[5] Gallego-Álvarez, I. and Pucheta-Martínez, M. (2019). Environmental strategy in the global banking industry within the varieties of capitalism approach: The moderating role of gender diversity and board members with specific skills. Business Strategy and the Environment, 29(2), pp.347-360.

[6] Sarkar, S., & Searcy, C. (2016). Zeitgeist or chameleon? A quantitative analysis of CSR definitions. Journal of Cleaner Production, 135, 1423-1435

[7] Shahbaz, M., Raghutla, C., Song, M., Zameer, H., and Jiao, Z. (2020). Public-private partnerships investment in energy as the new determinant of CO2 emissions: The role of technological innovations in China. Energy Economics, 86, 104664. https://doi.org/10.1016/j.eneco.2020.104664

[8] Sharma, G., Tiwari, A., Talan, G., and Jain, M. (2021). Revisiting the sustainable versus conventional investment dilemma in COVID-19 times. Energy Policy, 156, 112467. https://doi.org/10.1016/j.enpol.2021.112467

[9] Shymko, Y., & Roulet, T. (2017). When Does Medici Hurt Da Vinci? Mitigating the Signaling Effect of Extraneous Stakeholder Relationships in the Field of Cultural Production. Academy Of Management Journal, 60(4), 1307-1338. doi 10.5465/amj.2015.046

[10] Sidhoum, A., and Serra, T. (2017). Corporate social responsibility and dimensions of performance: An application to U.S. electric utilities. Utility Policy, 48, 1-11. doi 10.1016/j.jup.2017.06.011

[11] Siyal, S., Ahmad, R., Riaz, S., Xin, C., & Fangcheng, T. (2022). The impact of corporate culture on corporate social responsibility: Role of reputation and corporate sustainability. Sustainability, 14(16), 10105.

[12] Song, W., Ren, S., & Yu, J. (2019). Bridging the gap between corporate social responsibility and new green product success: The role of green organizational identity. Business Strategy and the Environment, 28(1), 88-97.

[13] Spuerk S., Drobe M., And Lottermoser B.G., (2017), Evaluating resource efficiency at major copper mines, Minerals Engineering, Vol. 107, p.27-33

[14] Stjepcevic, J., & Siksnelyte, I. (2017). Corporate social responsibility in the energy sector. Transformations in Business & Economics, 16(1), 40.

[15] Sun, W., Yao, S., & Govind, R. (2019). Reexamining corporate social responsibility and shareholder value: The inverted-U-shaped relationship and the moderation of marketing capability. Journal of Business Ethics, 160(4), 1001-1017.

[16] Székely N., And Vom Brocke J. (2017), What can we learn from corporate sustainability reporting? Deriving propositions for research and practice from over 9,500 corporate sustainability reports published between 1999 and 2015 using topic modeling technique, in PloS one, Vol. 12 no. 4.

[17] Tempels, T., Blok, V., & Verweij, M. (2017). Understanding political responsibility in corporate citizenship: Towards a shared responsibility for the common good. Journal of Global Ethics, 13(1), 90–108.

[18] Testa, M., & D'Amato, A. (2017). Corporate environmental responsibility and financial performance: does bidirectional causality work? Empirical evidence from the manufacturing industry. Social Responsibility Journal, 13(2), 221-234. doi: 10.1108/srj-02-2016-0031.

[19] Trump, C., & Guenther, T. (2017). Too little or too much? Exploring U-shaped relationships between corporate environmental performance and corporate financial performance. Business Strategy and the Environment, 26(1), 49-68.

[20] Uribe-Bohorquez, M., Martínez-Ferrero, J. and García-Sánchez, I. (2018). Board independence and firm performance: The moderating effect of institutional context. Journal of Business Research, 88, pp.28-43.

[21] Van Balen, M., Haezendonck, E., & Verbeke, A. (2021). Mitigating brownfields' environmental and social footprint: The case for a peripheral CSR approach. European Management Journal, 39(6), 710-719.

[22] Babu A (2018) Causality between foreign direct investments and exports in India. Theoretical & Applied Economics 25(4):131– 140

[23] Buallay A (2019) Is sustainability reporting (ESG) associated with performance? Evidence from the European banking sector. Manag Environ Quality Int J 30(1):98–115

[24] Cheon O, An SH (2017) Blowing in the Wind: a study for Granger causality between managerial strategy and organizational performance. Public Manag Rev 19(5):686–704

[25] Dienes D, Sassen R, Fischer J (2016) What are the drivers of sustainability reporting? A systematic review. Sustainability Account Manag Policy J 7(2):154–189

[26] Famiyeh S (2017) Corporate social responsibility and firm's performance: empirical evidence. Soc Responsibility J 13(2):390–406

[27] Jayakumar T (2016) From philanthropy to strategic corporate sustainability: a case study in India. J Bus Strateg 37(6):39–50

[28] Landi G, Chiarelli M (2019) Towards a more ethical market: the impact of ESG rating on corporate financial performance. Soc Responsibility J 15(1):11–27

[29] Nagel S, Hiss S, Woschnack D, Teufel B (2017) Between efficiency and resilience: the classification of companies according to their sustainability performance. Historical Social Research/Historische Sozialforschung:189–210

[30] O'Higgins E, Thevissen T (2017) Revisiting the corporate social and financial performance link: a contingency approach. Bus Soc Rev 122(3):327–358