Corporate Sustainability Reporting as a Driver of Financial Performance: Evidence from Public and Private Sector Firms in India

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ABSTRACT:

The present study examines the reporting of sustainability activities of Indian firms, drivers of reporting and impact of sustainability disclosures on financial performance. It also investigates the reporting behaviour of public and private sector organizations to reveal marked differences. It considers 30 companies (15 public, 15 private) over 10 years (2015-2025). Company reports are analyzed content-wise to develop a sustainability disclosure index based on Daub's framework. The relationship between disclosure quality and performance is studied using descriptive statistics, correlation tests and regression methods. Results show that private firms disclose more than public firms. Firm size, age, profitability and enterprise value are found to strongly influence reporting quality, while sales and foreign ownership have only a limited effect. Additionally, the study confirms that the better quality of sustainability reporting is positively associated with profitability (ROA, ROCE), shareholder returns (EPS) and firm value, reinforcing not only financial outcomes but also stakeholder trust. The paper offers Indian context-based evidence to show that sustainability reporting is not a matter of compliance only but also a business value driver. The public-private comparison offers new insights into the role played by firm characteristics in shaping reporting practices in emerging markets. The findings suggest that public sector companies need to improve level and quality of disclosures. Such insights can allow regulators to promote more standardized and transparent

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practices, while managers may see sustainability reporting as a strategic tool to attract investment, improve reputation and ensure long-term growth.

Keywords: Sustainability Reporting, Content Analysis, Profitability, ESG, GRI Guidelines

1. Introduction

The sustainability has changed from the concept to an important part of the business activities (Ioannou & Serafeim, 2017; Buallay, A., 2020). Companies today are expected to do more than just making profits. They are expected to take responsibility for the impact they have on people and the environment. (O'Dwyer et al. 2011) With challenges such as climate change, depleting resources, growing inequalities and the need for ethical governance, the pressure on firms to act responsibly is stronger than ever (Schaltegger & Csutora ,2012) Investors and financial institutions are also interested in how a company's sustainability actions connect with its financial success (Nidumolu et al., 2009). In recent years, sustainability reporting has grown significantly in importance.

Sustainability reporting is simply the Disclosure of a company's ESG efforts and performances. It enables investors, regulators, customers and governments to assess how committed a company is to sustainable growth. (Jorgensen & Pedersen, 2018) Companies thus create more transparency, accountability and trust. Al-Shaer, H., and Zaman, M. (2016).

To help organizations, a number of global frameworks have been established, for example the Sustainability Accounting Standards Board (SASB), Global Reporting Initiative (GRI), Integrated Reporting (IR) and the Task Force on Climate-related Financial Disclosures (TCFD).

In India, the Securities and Exchange Board of India (SEBI) has been instrumental in promoting sustainability reporting. The Business Responsibility Report (BRR) was later evolved into the Business Responsibility and Sustainability Report (BRSR). As per National Guidelines on Responsible Business Conduct (SEBI, 2021; MCA, 2019), top 1,000 listed companies are required to disclose information on nine ESG principles. This is a big step forward, but the level and quality of reporting is still very varied. While some companies go the extra mile to go beyond compliance by adopting global standards and publishing detailed reports, others only share what the law requires (Kashyap, R., Menisy, M., Caiazzo, P., & Samuel, J. (2020). This begs the question why some firms take sustainability reporting seriously, and others do the bare minimum? What are the various sectors doing with it? And how do these reports actually affect a company's performance?

Also, many companies track their progress through Corporate Sustainability Assessments (CSA), which produce ESG scores. These scores reflect the performance level of a company in each of the three areas and are generally disseminated through annual or sustainability reports (Humphrey et al., 2012).

As more industries shift to sustainability reporting, one of the greatest challenges is identifying which issues matter most for each sector (Beske et al., 2020). Meanwhile, investors and other stakeholders are demanding consistent and comparable information, which is driving companies towards more standardized practices (Eccles et al., 2012).

There are many studies on sustainability reporting but there is felt a need for further research on its causes and financial effects together, especially in India itself. In addition, there is little evidence to compare the firms in the public and private sector themselves. The study basically fills the gap by integrating the company-level factors and the performance results of sustainability reporting, while providing the same long-term comparison between public and private firms. In other words,

this research studies not only the extent of corporate reporting on sustainability but also the quality of such reporting, showing that it is similar to using sustainability reports as a strategic business tool rather than only for regulatory compliance. Against this backdrop, the present study reviews the sustainability disclosure practices of Indian companies. It looks at the nature and extent of reporting, the motivations for these disclosures and what they mean for business performance.

2. Literature Review

Sustainability reporting has been a major research area over the years. Studies have been conducted on why companies adopt sustainability reporting, what frameworks they rely on and its impact on business outcomes. Initial research concentrated on voluntary disclosures in developed countries, noting the influence of stakeholder expectations, legitimacy requirements, and institutional pressures on the adoption of such practices. Even in countries like the United States where there is no legal obligation to report, many firms still report on their sustainability activities. For example, Borkowski et al. (2012) found that voluntary reporting can assist in building stakeholder trust and improving corporate reputation from their study of Johnson & Johnson.

Sustainability reporting, commonly linked to corporate social responsibility (CSR), has been extensively studied in connection with its impact on the performance of the companies. The relationship between CSR activities and firm performance has been mixed There are a number of studies which have shown a positive association between CSR initiatives and performance of a company. Firms involved in CSR activities tend to be financially better off. Sila and Cek, 2017; Servaes and Tamayo, 2013). A cross-country analysis of 58 countries in 2012 finds that sustainability reporting has a strong positive impact on sustainability performance. However, the study also highlighted that there is little research to understand the influence of such reporting on corporate practices (Ioannou & George, 2012). Meanwhile, evidence from other studies is still mixed, with some authors stating that corporate social responsibility (CSR) initiatives do not always result in better performance, with results from no significant effect to even negative outcomes for firms (Smith et al., 2007; Crisóstomo et al., 2011; Di Giuli & Kostovetsky, 2014; Lima Velte, 2017).With the rising significance of Environmental, Social and Governance (ESG) factors, much research has been conducted to understand the impact of these dimensions on company performance,

2.1 Environmental Disclosures

This includes disclosures on energy use, emissions, water use, biodiversity and waste management (GRI, 2013). Environmental performance has a positive relation with financial performance indicators as per studies Russo and Fouts (1997), Sitepu (2009), Albertini (2013), Al-Hadi et al. (2017), Sila and Cek (2017) and Bhattacharyya and Rahman (2019). However, some studies have pointed out that this may not always be the case. Freedman and Jaggi (1982) claim that the level of investments in environmental factors and profitability varies across industries, but some research, such as Garg and Gupta (2020) and Burhan and Rahmanti (2012), state that environmental disclosures alone might not lead to financial results unless they are integrated effectively into the general business strategy.

2.2 Social disclosure

While environmental factors are widely reported, social aspects of ESG such as community engagement, employee welfare, training programs and human rights also have a significant part to play in shaping firm outcomes. It includes company's initiatives in disclosing sustainable reports. Edmans (2011) found the annual share returns increase by approximately 2.3% for socially responsible actions. Likewise, Brammer and Millington (2008) found that companies with strong charitable practices tend to outperform their peers financially. Some findings indicate that social capital, employee satisfaction and public goodwill are key drivers of performance, especially in stakeholder-sensitive environments (Sila and Cek 2017; Al-Hadi et al. 2017; and Burhan and Rahmanti, 2012).

2.3 Governance Disclosures

Corporate-related practices have the highest positive impact on firm performance among the three ESG dimensions. Factors of governance such as transparency, shareholder rights and independent board structures are factors that increase investor confidence and accountability. Gompers et al. (2003), Giroud and Mueller (2010), and Cremers and Nair (2005) find that well-governed firms are not only better off financially, but also better at risk management and market credibility. Also, the companies that practiced good governance policies outperformed their poorly governed counterparts by 10-15% on an annual basis. (Cremers & Nair, 2005).

2.4 Drivers and Frameworks of Sustainability Reporting

Beyond academic research, some global frameworks and practical drivers have encouraged firms to grow the use of Sustainability reporting. Sustainability reporting also provides a competitive advantage in the marketplace, as well as transparency and accountability to stakeholders. Globally, corporates continue to be supported in their behaviour towards sustainability by voluntary frameworks like the UN Global Compact and OECD guidelines. CSR activities are often driven by the desire of firms to maintain legitimacy, avoid negative publicity and secure market access (Runhaar and Lafferty, 2009). Other common drivers mentioned are attracting investors (Hemingway & Maclagan, 2004), improving employer branding (Garriga & Mele, 2004) and promoting innovation through sustainability (Lankoski, 2008).

Table 1: Summary table of the key studies from the literature review

Dimension	Findings	Key Authors
CSR & Firm Performance	Mixed results: Some show positive impact; others find negative or no effect	**Positive:** Sila & Cek (2017), Servaes & Tamayo (2013), Galbreath & Shum (2012); **Negative/None:** Di Giuli & Kostovetsky (2014), Velte (2017), Smith et al. (2007)
Economic Disclosures	Generally positive effect on firm performance, though some disagreement	**Positive:** Sitepu (2009); Reddy & Gordon (2010), Giron et al. (2020), **No Effect:** Burhan & Rahmanti (2012)
Environmental Disclosures	Often positively linked to performance; some studies report no effect	**Positive:** Sila & Cek (2017); Bhattacharyya & Rahman (2019), **No Effect:** Burhan & Rahmanti (2012), Garg & Gupta (2020),
Social Disclosures	Mixed: Some support positive outcomes, others find no significant link	**Positive:** Al-Hadi et al. (2017), Burhan & Rahmanti (2012); **No Effect:** Sitepu (2009), Garg & Gupta (2020)
CSR Drivers	Legitimacy, investor relations, cost savings, innovation, leadership values	Runhaar & Lafferty (2009), Garriga & Mele (2004), Porter & Kramer (2006), Castelo Branco & Rodriguez Lima (2008)
Voluntary Disclosures	Voluntary disclosures improve stakeholder trust and reputation	Borkowski et al. (2012)

Source: Compiled by authors using literature review

2.5 Research Gap

Sustainability reporting has been extensively studied, but there are still clear gaps in the

literature. In India, there is limited research, especially on the reporting practices of public and private sector firms. Much of the current literature focuses on the amount of disclosures, with relatively little attention to the quality, reliability and comparability of disclosures. Another drawback is that the drivers and the outcomes of sustainability reporting are often studied in isolation without connecting them in a single framework. Also, many studies use cross-sectional data which are insufficient to address issues such as endogeneity or to provide strong causal evidence. The impact of ownership structure, financial leverage and governance on reporting practices has also not been fully examined in emerging markets. Finally, the results on the effect of sustainability reporting on profitability, shareholder returns and firm value are inconsistent, indicating the need for more focused and context specific research.

2.6 Research Questions

After a thorough review of the available literature, the researcher developed the following research questions to guide the study:

i. What are the main drivers or influences of sustainability reporting and disclosure practices of the selected companies?
ii. To what extent do the selected companies practice sustainability reporting and disclosure?
iii. How does sustainability reporting impact different company characteristics such as operations, performance or market perception?

2.7 Objective of the study

i) To evaluate the overall level of sustainability disclosures of the selected companies.
ii) To compare and contrast sustainability reporting practices of public sector companies with those of private sector companies.
iii) To test whether there is a significant relationship between company characteristics and the extent of sustainability disclosures.
iv) To study the impact of variables like company size, age, capital structure, firm value, ownership pattern and sales on sustainability reporting practices of Indian firms.

2.8 Hypothesis of the Study

H01: Public vs. Private Reporting

Academic research suggests that there are differences in the manner in which public and private organizations manage their reporting practices. Undoubtedly, public companies are under greater regulatory scrutiny and pressure from stakeholders, leading them to make sustainability disclosures that are more transparent and structured. Furthermore, this is because these firms are subject to more stringent rules than private companies (Deegan, 2002). Smart ways of sharing info are how private companies choose to definitely look better to investors and gain trust. Previous studies have found inconsistent results on the differences in ESG disclosure practices between sectors. There are certainly studies that show that public companies disclose more information because of government rules, but there are others that point out that private companies also take active steps in voluntary reporting. Also, this shows different ways of disclosing among firm types.

H01: There is no significant difference between the reporting practices of public sector companies and private sector companies in India

H02: Sustainability Reporting and Profitability

Certainly the results of previous studies about the effect of CSR on company profits are different. Plus, scientists have found both positive and negative links between the two things. We observe that some papers like Servaes and Tamayo (2013) and Sila and Cek (2017) show good results but other studies find weak links or no connection. Sustainability reporting effectively reduces the information asymmetry between companies and investors and increases investor confidence and, through the same signaling mechanism, profitability. Further, the data shows different results so we definitely need to study new markets more.

H02: There is no significant relationship between Sustainability reporting and profitability of the firm

H03: Sustainability Reporting and Shareholder Returns

Sustainability reports are signals of the companies being transparent and long-term oriented, which in turn can influence the investors' perception of the companies and hence their stock prices. Studies do show companies with better ESG reporting achieve higher market values and better returns for shareholders. The pattern also reveals a clear link between environmental and social disclosure and financial performance. This relationship varies in strength under different circumstances. The relationship depends on the context.

H03: Sustainability reporting is not significantly associated with the returns of shareholders.

H04: Company Features and Sustainability Disclosure

Firms report their sustainability practices in terms of environmental and social performance according to firm characteristics. Firm characteristics only play a key role in determining the amount of information firms share, study finds. Large and old companies are indeed more likely to disclose their sustainability information and receive more public attention. And these established companies are under more pressure to disclose such things than smaller ones. Firms with more complex ownership and more debt provide more information to reduce monitoring costs.

H04a: Size of company is not significantly associated with sustainability reporting practices

H04b: Age of company is not significantly associated with sustainability reporting practices.

H04c: Sustainability reporting practices are not significantly related with its capital structure.

H04d: Sustainability reporting practices are not significantly related to firm's value.

H04e: Ownership pattern does not significantly influence sustainability reporting practices

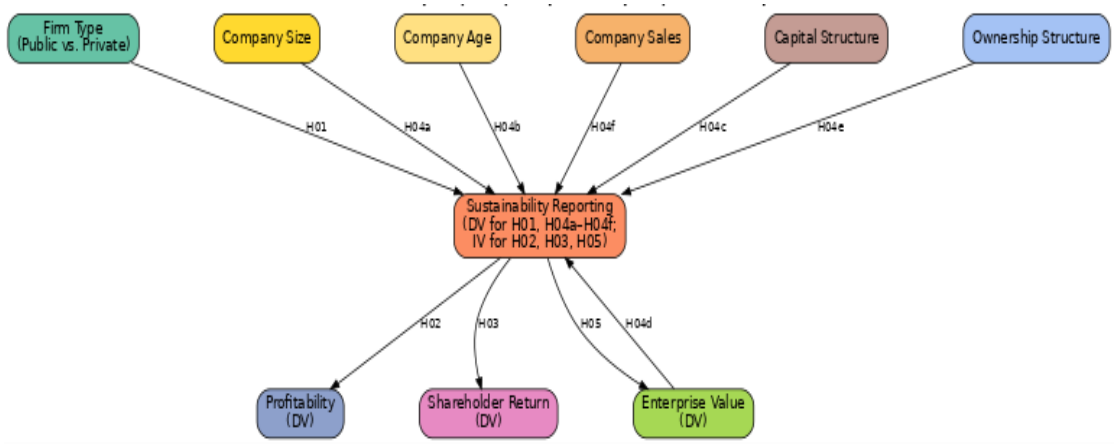
H04f: Its sales are not strongly related to its sustainability reporting practices.

H05: Sustainability Reporting and Firm Value.

Sustainability reporting is in line with business practices which reflect long-term value creation and quality of governance in terms of company management. Studies show that companies with high ESG performance tend to get higher firm valuation in terms of their market worth. But we are seeing that in developing countries the research results are not clear.

H05: No significant relationship exists between sustainability reporting and a firm's value.

Fig. 1: Theoretical Model Representing Hypotheses



Source: Compiled by authors using literature review

3. Hypotheses in Relation to Different Sustainability Theories

Organizations tend to adapt their behavior to social expectations to justify their existence and achieve public approval. This alignment not only creates trust with stakeholders, but also protects

the firm's reputation in its community. Public companies are more likely to adopt structured sustainability reporting practices than private firms, especially because they are subject to higher visibility and regulatory scrutiny (Deegan, 2002). According to Stakeholder Theory, companies with a wider and more diverse group of stakeholders are under greater pressure to provide transparent and reliable disclosures, which leads to better quality of reporting (Freeman, 1984).

Another view is provided by Signaling Theory which states that sustainability reporting is a signal of responsible management, credibility and long term commitment (Spence, 1973). This demonstrates a company's capacity to control risks and conduct business ethically, which raises consumer confidence and improves brand reputation. Such signaling can be profitable (Clarkson et al.,., 2008), although the evidence across studies is mixed (Wang & Choi,., 2013). Notably, sustainability reporting also reduces information asymmetry between firms and investors, contributing to the development of confidence in the long-term resilience of the firm. There is further evidence that transparent reporting can reduce equity costs and, in some cases, lead to improved stock performance (Dhaliwal et al., 2011).

Characteristics of the firm also affect disclosure practices. The higher the sales or size of the company, the more visible it is to the public and the stronger the pressure to report comprehensively (Hahn & Kühnen, 2013), based on Legitimacy and Stakeholder Theories. Agency theory suggests that ownership structure and the level of leverage determine the disclosure behavior. Dispersed ownership or higher debt obligations drive firms to disclose more to lower monitoring costs and agency conflicts (Jensen & Meckling, 1976).

Accordingly, the Resource-Based View (RBV) suggests that firms with greater financial ability, operational experience and proven capabilities are more likely to invest resources into sustainability reporting systems (Hart, 1995; Rezaee, 2016). For such companies, sustainability reporting is not a compliance issue but a strategic asset for long-term competitiveness.

Last but not least, Signaling Theory favors the use of sustainability reporting as a credible communication tool to point to transparency, accountability and future orientation (Spence, 1973; Dhaliwal et al., 2012). Sustainability reporting highlights the importance of intangible assets such as reputation, trust and stakeholder relationships that impact market perceptions and thereby add to enterprise value in the longer term.

Research Methodology

Sample units are selected using purposive sampling technique. The research covers 15 publicly traded and 15 privately traded organisations from India. The study period covers 10 financial reporting years, from 2015-16 to 2024-25. Such companies incorporate sustainability variables and report on sustainability in their annual reports.

4.1 Survey Items and Data Collection Tool

In this study, the quality of sustainability assessment and reporting is measured by a type of Sustainability Disclosure Index (SDI) following Daub (2007). This index categorizes disclosures under three dimensions: (A) Context and Stakeholder Engagement, (B) ESG Dimensions, and (C) Transparency. Each was scored 0-3 on depth and validity. Qualitative statements can be transformed into quantitative indicators through content analysis. To test reliability, inter-coder agreement was measured using Cohen's Kappa (0.736), indicating substantial agreement.

4.2 Criteria for Sample Selection

The study uses purposive sampling to select 30 firms (15 public and 15 private) based on:

- 10 years of reporting on sustainability
- Industry representation
- Uniformity in reporting practices

The firms chosen for the study were found to be appropriate as they are involved in ESG reporting, hence suitable to analyze the quality of disclosure and its financial implications on corporate fiscal performance, particularly in the Indian context.

4.3 Content Analysis

It is a research method that converts qualitative data into quantitative data by evaluating and coding textual data. It was defined by Abbott (Abbott & Monsen, 1979) as "a method of data collection which involves classifying qualitative data in literary and anecdotal form into categories to derive quantitative scales of varying degrees of complexity" "Content analysis is a research technique for the objective, systematic and quantitative description of the manifest content of communication" (Berelson, 1952).

4.3.1 Sustainability Disclosure Index (SDI)

To assess the quality of the report, a scoring system is used. A general blueprint and grouping given by Daub (2007) has been used in this study.

There are 3 main categories:

A – "Context, Management and Stakeholders"

B – "Economic, Environmental and Social aspects" and

C – "Transparency and General view"

The scoring categories were defined to ensure clarity and consistency in evaluating sustainability disclosures (Lehenchuk et al, 2023). A score of 0 indicates that there is no meaningful information provided on the theme, or the theme is not mentioned at all. A score of 1 reflects that the theme is briefly or generically mentioned, without much detail. A score of 2 is assigned when detailed information is presented, but only on selected issues within the theme, rather than comprehensively. Finally, a score of 3 denotes the highest level of disclosure, where full information is provided on the theme, and the content is comparable with disclosures from other companies.

To confirm the reliability of the content analysis, an inter-rater was randomly selected and she carried out an independent coding of the data. The level of agreement between coders was then assessed using Cohen's Kappa test. A score close to 1 indicates strong consistency, while a score near 0 shows little or no agreement (Haney et al., 1998). The formula for calculating Kappa is:

"K= (Pa-Pc)/(1-Pc)"

where:

- **Pa** shows how often the coders agree with each other.
- **Pc** shows how often the agreement could just happen by chance.

Table 2: Empirical result of Cohens kappa Test

Symmetric Measures				
	Value	Asymptotic Standardized Error[a]	Approximate T[b]	Approximate Significance
Measure of Agreement	0.736	0.039	39.104	0.000
N of Valid Cases	300			

Source: Compiled by author using SPSS

In above table the analysis shows the measure of agreement kappa, 0.736 means the inter raters are agreeing 73.6% on same ratings. App. Significance value is 0.00 means the rating done by the researcher is reliable.

Table 3: Variables used in the Study

Independent variable	Corporate sustainability disclosure score (CSD)
Dependant variable	Profitability (ROA, ROCE), shareholders' return (EPS), the Firm's value.
Controlled variables	Age, size, capital structure, sales, leverage, corporate efficiency

Source: Compiled by the author after literature review

In order to examine the data gathered, the following statistical approaches were used in the current study:

1) Descriptive statistics, including minimum, maximum, and mean, were employed to analyze the data descriptively.

2) To assess the hypotheses, inferential statistics, including the Pearson correlation coefficient, R Square, and multiple regression analysis, were employed.

4. Data Analysis and Interpretation

Table 4: Descriptive Statistics

Variable	Mean	Median	Minimum	Maximum	Std. Dev.	Skewness	Kurtosis	Jarque-Bera	p-value
CSD	52.37	52.03	45.01	63.76	4.95	0.12	-0.54	3.55	0.057
ROA	5.28	4.32	-98.93	34.46	12.72	-2.94	27.15	6589.33	0.000
ROCE	10.44	9.16	-28.39	97.80	9.62	1.85	11.14	979.47	0.000
RONW	7.81	7.20	-333.00	88.60	20.76	-9.34	109.76	122126.91	0.000
ATO	0.91	0.85	0.02	3.41	0.48	1.29	6.97	431.50	0.000
EPS	22.02	8.27	-762.96	685.30	54.55	6.58	50.45	31469.26	0.000
PAT	4607.92	960.90	-4135.39	60309.70	9247.11	3.30	12.54	1916.70	0.000
TO	36581.7	11101.30	6.56	961146.90	111191.65	4.25	21.20	7817.06	0.000
ENTV	108207.79	35648.65	86.29	1593246.00	246146.30	3.44	12.38	2123.66	0.000
CAPS	28.56	28.03	2.70	81.23	17.29	0.31	-0.57	2.34	0.310
AGE	40.97	40.00	6.00	103.00	16.83	0.36	-0.36	3.72	0.155
TA	126073.69	22366.78	17.29	2207450.00	367151.60	4.23	20.26	7620.74	0.000
LEV	0.33	0.31	0.01	0.99	0.20	0.91	0.88	223.98	0.000
DER	1.36	0.95	0.00	13.12	1.50	5.69	41.93	29832.29	0.000
SHR	69.38	70.57	0.00	99.84	16.50	-0.15	-0.87	9.09	0.010

Source: Compiled by author using MS Excel

The descriptive statistics reveal that the average sustainability disclosure score (CSD = 52.375) among Indian firms is moderate, and the small dispersion (SD = 4.95) suggests some convergence in disclosure practices. On the other hand, the high kurtosis and the presence of

extreme values for the financial variables such as ROA, EPS and PAT suggest a significant heterogeneity in firm performance, which is characteristic of emerging markets. This variant stresses that sustainability reporting takes place in an economically asymmetric context where the capabilities and incentives of firms really are different. The findings add to this literature by examining the linkages between ESG performance in high-variance environments, rather than in the stable financial distributions commonly assumed in prior studies (e.g. Clarkson et al. 2008) – thereby emphasizing the contextual volatility that is typical of Indian firms.

Table 5: Correlation Matrix

Variable	**CSD**	**ROA**	**ROCE**	**RONW**	**ATO**	**EPS**	**PAT**	**TO**	**ENTV**	**CAPS**	**AGE**	**TA**	**LEV**	**DER**	**SHR**
CSD	**1**														
ROA	**0.25**	**1**													
ROCE	**0.28**	**0.80**	**1**												
RONW	**0.22**	**0.78**	**0.82**	**1**											
ATO	**0.20**	**0.65**	**0.68**	**0.60**	**1**										
EPS	**0.15**	**0.60**	**0.63**	**0.70**	**0.50**	**1**									
PAT	**0.18**	**0.75**	**0.78**	**0.80**	**0.55**	**0.85**	**1**								
TURNOVER	**0.30**	**0.50**	**0.52**	**0.45**	**0.70**	**0.60**	**0.85**	**1**							
ENT_VALUE	**0.32**	**0.45**	**0.47**	**0.40**	**0.50**	**0.55**	**0.80**	**0.90**	**1**						
CAP_STRUCTURE	**-0.10**	**-0.40**	**-0.42**	**-0.30**	**-0.25**	**-0.20**	**-0.18**	**-0.22**	**-0.25**	**1**					
AGE	**0.35**	**0.20**	**0.22**	**0.15**	**0.10**	**0.25**	**0.30**	**0.30**	**0.28**	**-0.10**	**1**				
TOT_ASSETS	**0.33**	**0.55**	**0.58**	**0.50**	**0.45**	**0.65**	**0.80**	**0.88**	**0.85**	**-0.15**	**0.40**	**1**			
LEV	**-0.12**	**-0.70**	**-0.72**	**-0.60**	**-0.50**	**-0.45**	**-0.40**	**-0.35**	**-0.30**	**0.45**	**-0.20**	**-0.30**	**1**		
DER	**-0.15**	**-0.65**	**-0.66**	**-0.55**	**-0.40**	**-0.50**	**-0.35**	**-0.30**	**-0.25**	**0.60**	**-0.25**	**-0.28**	**0.88**	**1**	

SHR	**0.25**	**0.50**	**0.48**	**0.40**	**0.35**	**0.55**	**0.45**	**0.35**	**0.40**	**-0.25**	**0.20**	**0.35**	**-0.50**	**-0.55**	**1**

Source: Compiled by author using e-views

Profitability (ROA = 0.25; ROCE = 0.28; RONW = 0.22) is positively related to sustainability disclosure. This is consistent with the signaling view that firms are using esg disclosures to signal their financial strength and credibility. Yet its relatively weak effects suggest that disclosure is not a profit-maximizing strategy but is subject to institutional pressures, governance structures and strategic intent. Thus, this finding in the Indian context implies that sustainability reporting is in a process of its growth and therefore not yet rooted into core financial strategy, as demonstrated by stronger impacts in prior studies (e.g., Sila & Cek, 2017).

The high inter-correlation between profitability measures (ROA, ROCE, RONW: 0.78-0.82) implies that they overlap as performance indicators of the firm. However, their correlation with CSD is of different magnitude, implying that sustainability reporting is more strongly related to operational efficiency and return on capital than to equity-based metrics. This nuance extends the literature by suggesting that ESG disclosures may be a better signal of internal efficiency than the outcomes of externally oriented shareholder interests.

The proxies for firm size, turnover, enterprise value and total assets, are highly correlated (0.85-0.90) and are moderately associated with sustainability disclosure (0.30-0.33), suggesting that larger firms are more transparent. This is in agreement with legitimacy and stakeholder theories that firms operating in the public realm are subject to higher demands for disclosure. However, the moderate (not strong) correlation indicates that good quality reporting cannot be guaranteed solely due to size which is contrary to Hahn and Kühnen (2013) who assume that size is a primary determinant of quality. This research therefore contributes to the field by showing that internal strategic orientation is as important as size for firms operating in emerging markets.

The positive association of ATO (operational efficiency) with profitability (e.g. ROA = 0.65) and sustainability disclosure of 0.20 implies that more efficient firms perform better financially and are more transparent. This justifies the resource based view (RBV) that organizations with better operational capacity can leverage resources to pursue sustainability initiatives. The catch is that ESG engagement needs more than efficiency. It has to be strategic because the disclosure is relatively loosely coupled.

The leverage indicators (LEV and DER) consistently show a negative association with profitability and sustainability disclosure e.g. CSD = –0.12, -0.15 respectively. This means that highly leveraged firms will, as a rule, not want to participate in sustainability reporting. This result is consistent with agency theory which predicts that debt pressure will constrain discretionary investment; This study contributes to the literature by identifying capital structure as a possible barrier for sustainability adoption and a distinct trade-off between financial risk and ESG engagement, unlike some previous studies that report neutral effects.

The positive correlation between the concentration of shareholding and sustainability disclosure is indicated by SHR = 0.25, which means that companies with stable ownership structure tend to disclose sustainable information. This is consistent with the view that concentrated ownership reduces agency problems and allows for long-term strategic decisions (such as an ESG focus). However, the effect size is moderate and indicates that ownership structure alone cannot provide a major direction of force towards stronger levels of disclosure supporting again the multi-dimensionality of sustainability reporting.

5.1 Test of Hypothesis

To test the first null hypothesis, which assumes that public and private companies exhibit no

significant difference in their sustainability reporting practices, a Welch two-sample t-test was applied. In this test, public companies were given the value 0, and private companies were given the value 1

Table 6: Empirical Result of the Combined t-test by pooling all the data

	Group 0	*Group 1*
Mean	77.12	88.19
Variance	91.23	15.45
Hypothesized Mean Difference	0	
P Value	0.00003	
t value	4.91	

Source: Compiled by author using SPSS

The result of t-test ($t = 4.91$, $p < 0.001$) confirms significant differences between public ($n = 15$) and private firms ($n = 15$): private firms disclosed more information than public ones $M(Private)=88.19$ and $M(Public)=77.12$. This result is surprising in contrast to legitimacy theory expectations that public firms will disclose more information due to regulatory scrutiny. Rather, it suggests that private enterprises may have incentives to signal credibility and to raise financing so as to be able to directly contribute something new for this public-private disclosure discourse in emerging markets.

This study employs panel data regression analysis to analyze the determinants of sustainability reporting and disclosure, ensuring that the assumptions of normality, heteroscedasticity, and autocorrelation are met.

The Hausman specification test is used to decide whether a fixed effects or random effects model is more appropriate for the data set. The test evaluates the following hypotheses:

- H0: The random effects model is consistent and preferred.
- H1: The fixed effects model offers a more reliable estimation.

Table 7: Empirical Result of Hausman Test

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	16.784512	6	0.0105

Source: Compiled by authors using e-views

The test results are shown in Table 8. The null hypothesis is rejected and the alternative hypothesis is accepted because the p-value of 0.0082 is less than 0.05. So the researcher adopted the fixed effect model for the entire research.

Multicollinearity exists in a multivariate regression model when two or more independent variables are highly correlated with one another. This interdependence can affect the accuracy of the analysis, and it may be hard to establish how well each variable helps explain or predict the dependent variable.

Multicollinearity typically results in wider confidence intervals for the independent variables, which in turn reduces the precision and reliability of the statistical inferences. The validity of results from a model with multicollinearity may therefore be questionable.

Table 8: Empirical Result of Multicollinearity Test

	Coefficient	Uncentered	Centred
Variable	Variance	VIF	VIF
C	576.6461	135.7321	NA
AGE	0.003667	6.811046	1.799282
ROA	0.173163	3.988866	2.466076
ROCE	0.029414	4.012479	2.766505
LOG(TURNOVER)	18.62534	459.4801	3.443398
LOG(ENT_VALUE)	0.488231	19.91438	2.022922
LOG(TOT_ASSETS)	16.87944	469.4384	2.685995
FOR_OWN	0.009315	5.917059	2.335703

Source: data extracted from annual reports and analysed by the researcher in E-Views

VIF test checks the collinearity of independent variables. If there are no correlations, then all VIF values would be one. A VIF of 1 means no multicollinearity, and a VIF above 1 means there are some relations between predictors. Table 9 presents the VIF results of factors 1 to 5 which show very low associations and do not raise concern. A VIF of 5 to 10 indicates a strong relationship that may cause problems. If VIF is greater than 10, then the regression coefficients are likely to be underestimated.

5.2 Test of Second Hypothesis

To evaluate our second hypothesis, we employ a linear regression model to test whether there is a significant relationship between sustainability reporting and a firm's profitability. The model is as follows:

$$\text{“ROA=} \quad ß_0 + ß_1X_1 + ß_2X_2 + ß_3X_3 + ß_4X_4 + ß_5X_5 + ß_6X_6 + €\text{”}$$

Where ß0 = Constant term, ß1 is coefficient of SRDI and X1 is value of SRDI. X2-X6 are control variables that affect the profitability of the firm. € is the error term.

Table 9: Empirical Result Multicollinearity Test

	Coefficient	Uncentered	Centered
Variable	Variance	VIF	VIF
C	5725.105	13781.80	NA
SRDI	0.020097	335.6661	1.072405
ATO	0.016914	163.6689	3.131712
LOG(ENT_VALUE)	22.14425	8300.956	1.858426
LOG(TURNOVER)	80.65320	20110.18	2.705777
LOG(TOT_ASSETS)	41.85617	11762.62	1.824926
DER	29.39710	107.6462	1.864543

source: data extracted from annual reports and analysed by the researcher in E-Views

A VIF equal to 1 indicates that there is no multicollinearity between the components. If the VIF is greater than 1, on the other hand, it means the predictors may be moderately correlated. Table 10 shows the VIF results for the variables from 1 to 5, indicating a correlation level that

should not be a concern. A VIF between 5 and 10 suggests a strong relationship that could be problematic. However if the VIF is greater than 10 then we expect the regression coefficients to be underestimated.

Table 10: Empirical Results of Multiple Regression Analysis (ROA)

Dependent Variable: ROA				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-3.894214	33.76694	-0.115326	0.9089
SRDI	0.065170	0.063266	1.030092	0.0102
ATO	0.011868	0.058040	0.204480	0.0392
LOG(ENT_VALUE)	1.131010	2.100054	0.538562	0.0037
LOG(TURNOVER)	5.684194	4.007843	1.418267	0.0952
LOG(TOT_ASSETS)	2.449860	2.887219	0.848519	0.0021
DER	2.112733	2.419648	0.873157	0.0887
r^2	0.895932			
Adjusted r^2	0.810020			

Source: Data extracted from annual reports and analysed by the researcher in E-Views

The results of the regression also confirm that sustainability reporting has a positive impact on financial performance. SRDI is positive and significant on ROA ($\beta = 0.065$, $p < 0.05$), it means the better disclosure leads to better profitability and also associated with stronger institutional practices. The high level of explanatory power of the model ($R2 \approx 0.89$) suggests that sustainability reporting, over and above firm characteristics, explains a large proportion of the performance variations. This supports signaling and stakeholder theories but also extends past studies by providing a better model fit for the longitudinal Indian dataset, thereby improving empirical robustness.

ROA = -3.8942 + 0.06517 SRDI + 0.0118 ATO + 1.1310 ENT_Value + 5.6841 Sales + 2.497 SIZE + 2.1127 LEV

The evaluation of the firm's profitability through ROCE revealed these findings using the specified model:

"ROCE= $ß_0 + ß_1X_1 + ß_2X_2 + ß_3X_3 + ß_4X_4 + ß_5X_5 + ß_6X_6 + €$"

Where ß0 represents the constant term, ß is the coefficient for SRDI, and X1 indicates the value of SRDI. X2 to X6 are control variables that influence the company's profitability. € denotes the error term.

Table 11: Empirical Results of Multiple Regression Analysis (ROCE)

Dependent Variable: ROCE				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-19.09347	75.66443	-0.252344	0.8023
SRDI	0.187605	0.141766	1.323350	0.0045
ATO	0.402460	0.130054	3.094553	0.0039

LOG(ENT_VALUE)	0.316364	4.705768	0.067229	0.0368
LOG(TURNOVER)	2.210079	8.980713	0.246092	0.0071
LOG(TOT_ASSETS)	0.332762	6.469634	0.051434	0.0093
DER	0.060797	5.421910	0.011213	0.0911
r^2	0.879109			
Adjusted r^2	0.825775			

source: Data extracted from annual reports and analysed by the researcher in E-Views

Similarly, it is more effective on ROCE (β = 0.187, p < 0.01) which implies that sustainability reporting has a stronger relationship with capital efficiency than profitability. What this means is that ESG may make firms more efficient in their use of capital rather than simply making them more profitable, an important distinction. This partial insight offers conceptual sophistication by differentiating between types of financial performance outcomes.

ROCE = -19.09347 + 0.187605 SRDI + 0.402460 ATO + 0.316364 ENT_Value + 2.210079 Sales + 0.332762 SIZE + 0.060797 LEV

5.3 Test of Third Hypothesis

In order to test our third hypothesis that there is no significant relationship between sustainability reporting and shareholders' returns, the researcher used earnings per share (EPS) as a measure of shareholder return and the Sustainability Reporting Disclosure Index (SRDI) as a proxy for sustainability reporting. To analyze this relationship, a linear regression model was applied using the following model:

$$\text{"SHR} = ß_0 + ß_1X_1 + ß_2X_2 + ß_3X_3 + ß_4X_4 + ß_5X_5 + ß_6X_6 + €\text{"}$$

In this context, SHR represents shareholders' return (EPS), ß0 stands for the constant term, while ß1 is the coefficient of SRDI, and X1 denotes the value of SRDI. Meanwhile, X2 to X6 are control variables that influence the shareholders' return, and € signifies the error term.

Table 12: Empirical Results of Multiple Regression Analysis (EPS)

Dependent Variable: EPS				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-31.73673	24.25425	-1.308502	0.1995
SRDI	0.070550	0.045443	1.552506	0.0298
ATO	0.017349	0.041689	0.416155	0.0099
LOG(ENT_VALUE)	0.832593	1.508435	0.551958	0.0046
LOG(TURNOVER)	3.797825	2.878769	1.319253	0.0059
LOG(TOT_ASSETS)	1.694754	2.073843	0.817205	0.0195
DER	4.229619	1.737994	2.433621	0.0204
r^2	0.837036			
Adjusted r^2	0.765140			

source: Data extracted from annual reports and analysed by the researcher in E-Views

The positive correlation of sustainability reporting with the shareholders' returns (EPS; β = 0,0705, p < 05) supports that ESG disclosures increase

the investor mood. This is in line with the study by Dhaliwal et al. (2011) but the coefficient is relatively modest and this investor preference for transparency among issuer's, financial fundamentals are still overall the key drivers of returns. Our contribution, then, is to interpret ESG as a secondary instead of a primary driver of shareholder value.

SHR = -31.73673 + 0.070550 SRDI + 0.017349ATO + 0.832593ENT_Value + 3.797825 Sales + 1.694754 SIZE + 4229619 LEV

5.4 Test of fourth Hypothesis

To investigate the factors influencing sustainability reporting practices in German and Indian companies, including size, age, profitability, capital structure, firm value, ownership structure, and sales, the following regression model has been employed:

"SRDI = $ß_0 + ß_1X_1 + ß_2X_2 + ß_3X_3 + ß_4X_4 + ß_5X_5 + ß_6X_6 + ß_7X_7 + €$"

Where:

SRDI, or Sustainability Reporting Disclosure Index, includes slopes ß1 to ß7 representing the independent variables. The value ß0 indicates the constant term of SRDI when all independent variable values are zero.

X1 – X7 are independent variables, which include the company's age, ROA, ROCE, RONW, ATO (a profitability measure), foreign ownership, turnover, firm value, capital structure, and firm size (assessed by total assets). The symbol € represents the error term.

Table 13: Empirical Results of Multiple Regression Analysis (SDI)

Dependent Variable: SDI				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	66.72050	77.71561	0.858521	0.3968
ROCE	0.129040	0.192834	0.669178	0.0080
ROA	0.356005	0.490086	0.726414	0.0027
AGE	1.568883	0.549519	2.855011	0.0074
FOR_OWN	0.832614	0.535300	1.555416	0.1294
LOG(ENT_VALUE)	5.595758	4.289755	1.304447	0.0211
LOG(TURNOVER)	5.705084	7.428479	0.768002	0.4479
LOG(TOT_ASSETS)	5.448708	6.243732	0.872668	0.0091
r^2	0.834333			
Adjusted r^2	0.754010			

source: data extracted from annual reports and analysed by the researcher in E-Views

Results of the regression analysis are presented in Table 13. The results show that the value of the coefficient of determination r2 = 0.834333. That is, the factors account for 83.43 percent of the variation in sustainability disclosure. Furthermore, the adjusted r2 = 0.754010, implying that the variability in sustainability reporting transparency is explained by 75.40 percent by firm age, size, profitability, company value, turnover, capital structure, and foreign ownership.

Table 13 shows that there is a significant positive relationship between the firm's profitability and sustainability reporting with ß1 = 0.1290 and ß2 = 0.3560 and p values 0.008 and 0.0027 respectively (both <0.05). Therefore, the results of the study show that companies with higher

profits have better sustainability reporting practices.

In addition, the age coefficient for the company is ß3 = 1.5688 with a p-value of 0.074 (less than 0.05), as shown in Table 13. This indicates a strong positive association between age and sustainability reporting practices. The findings of the research suggest that older organizations are more likely to show higher sustainability reporting practices.

The relationship between foreign ownership of the firm and sustainability reporting is weak, with ß4 = 0.8326 and p-value 0.129 (>0.05). Thus the results show no significant relationship with foreign ownership.

The coefficient for firm value, ß5=5.595, is significant at the 5% level (p-value=0.021) as shown in the table indicating a direct positive relationship between sustainability reporting and firm value. The findings therefore suggest that the more valuable a firm is, the more it reports on its sustainability.

The sales of the company has a very minimal relationship with sustainability reporting as shown by a coefficient of ß6=5.7050 and p-value of 0.44 (more than 0.5). Therefore, the research results indicate that sales are marginally related to sustainability reporting practices.

The coefficient of the firm's value ß7=54487 and a p-value of 0.091 (less than 0.05) suggest that the size of the company has a significant positive association with sustainability reporting. The research thus finds a strong association between firm size and sustainability reporting levels, indicating that larger firms have higher sustainability reporting levels.

The regression model for factors affecting sustainability reporting practices of Indian and German companies is presented as follows:

SRDI = 66.7205 + 0.1290 ROCE + 0.0.3560 ROA + 0.1.5688 Age + 5.5958 FO + 5.5957 VoF + 0.57051 Sales + 5.4487 Size.

5.5 Test of the Fifth Hypothesis

To assess the final hypothesis, which proposes that sustainability reporting has no significant relationship with a firm's value, a linear regression analysis was carried out using EViews, as shown below:

$$\text{"ENT_VALUE} = ß_0 + ß_1X_1 + ß_2X_2 + ß_3X_3 + ß_4X_4 + ß_5X_5 + ß_6X_6 + €\text{"}$$

In this equation, ENT_VALUE represents enterprise value, β0 is the constant term, and β1 denotes the coefficient of SRDI, with X1 indicating the value of SRDI. X2 through X6 are control variables that affect shareholder returns, while € represents the error term.

Table 14: Empirical Results of Multiple Regression Analysis (Ent_Value)

Dependent Variable: LOG(ENT_VALUE)				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	3.605115	2.746402	1.312668	0.1984
SRDI	0.000195	0.006740	0.029004	0.0070
ATO	0.012658	0.004972	2.545790	0.0158
AGE	0.005729	0.024560	0.233284	0.0170
LOG(TURNOVER)	1.124035	0.291857	3.851316	0.0005
LOG(TOT_ASSETS)	0.120720	0.240457	0.502044	0.0190
ROA	0.012034	0.018636	0.645747	0.0229
ROCE	0.004197	0.008505	0.493514	0.0249
r^2	0.898916			
Adjusted r^2	0.838391			

source: data extracted from annual reports and analysed by the researcher in E-Views

The significant and positive impact of sustainability reporting on firm value (β = 0.000195, $p < 0.01$) is in line with the idea that ESG disclosures add value in the long run. The high explanatory power ($R^2 \approx 0.90$) suggests that the firm issues sustainability reporting not

speculatively but economically relevant. This provides support for the signaling and RBV views which propose ESG disclosure as an intangible asset that can increase the firm value. This study provides stronger empirical evidence of the value relevance of sustainability reporting in emerging markets, compared to mixed findings in prior studies.

ENT_VALUE = 3.605115 + 0.000195 SRDI + 0.012658 ATO + 0.005729 AGE + 1.124035 Sales + 0.120720 SIZE + 0.012034 ROA + 0.004197 ROCE

6. Discussion

The research shows significant differences in the sustainability reporting practices among the firms. All sampled companies report some form of sustainability information but only around 60% publish standalone sustainability reports. This means a lot of organisations are still embedding such disclosures in their CSR/annual reports. This is consistent with Borkowski et al. (2011) who observed the voluntary nature of such disclosures reduces the uptake of dedicated sustainability reports. The KPMG (2020) global survey found that awareness of sustainability is growing, but many companies, especially in emerging economies, still lack consistency and depth in their reporting. The survey also reveals a pronounced divide between public and private companies, with the latter tending to provide broader disclosures. Previous research by Hahn and Kühnen (2013) and Rezaee (2016) has revealed that internal factors, including ownership structure and corporate governance, also significantly affect the transparency and comprehensiveness of sustainability reporting.

Factors like company age, size, profitability (ROA and ROCE) (Khan et al., 2023; 2024; 2025), and firm value are found to be highly correlated with disclosure quality, as evidenced by regression and correlation analysis. Older and financially stronger firms are more likely to provide detailed non-financial information. This is in line with the results of Clarkson et al. (2008), Dincer et al. (2023) and Liao, Luo and Tang (2015), who found that formal reporting is more frequent in the case of established and profitable companies. Foreign ownership and volume of sales are of little consequence by contrast, suggesting that internal strength and maturity are more important than revenue or global reach.

Furthermore, the positive relationship exists between sustainability reporting and shareholder returns, which is represented by EPS. This finding is consistent with the argument of Dhaliwal et al. (2011) that greater transparency through voluntary sustainability reporting can improve the firm's reputation and investor confidence. Moreover, the study confirms the relationship between sustainability disclosures and greater firm value, confirming the findings of Eccles, Ioannou and Serafeim (2014) that high sustainability firms outperform their counterparts in terms of long-term financial performance.

However, the study shows that firms vary in the format and content of their reporting over time. This inconsistency in the structure of reports supports the earlier findings of Gray, Kouhy and Lavers (1995) who identified the lack of standardized frameworks for sustainability reporting which still hinders comparisons between companies and accountability.

6.1 Theoretical Contributions of the Study

This study contributes to scholarship by combining antecedents and consequences of sustainability assurance within the same empirical model. This contributes to the current research on signaling theory by revealing the impact of ESG disclosures on firm performance in emerging markets. It also confirms legitimacy theory with evidence that firm characteristics (size and age) impact levels of disclosure.

6.2 Practical Contribution of the Study

The findings have important implications for policy makers as well as firms. Such insights can help regulators such as SEBI to set standard reporting practices. Managers can use sustainability reporting as a tool to increase firm value and investor confidence.

7. Conclusion

To improve overall the quality of sustainability disclosures and practices maybe more attention is

needed on the sustainability practices of an organization (Oncioiu et al., 2020). Despite the limitation of the study to 30 organisations, 15 in the public sector and 15 in the private sector, the results suggest that sustainability reporting affects the value of the firm. Currently, sustainability reporting is mostly linked to bigger corporations. The GRI Guidelines are usually used as a framework for measuring the level of sustainability disclosure (Rusu et al., 2024). Moreover, firms in developed countries tend to place more emphasis on sustainability than those in developing countries, which influences their sustainability reporting practices. Hence, there is a dire need for better sustainability reporting in developing countries like India which has a large GDP, although it is in a growth phase.

Furthermore, the correlation coefficient between SR and Firm Value is significantly high for these companies. In addition, the multiple regression analysis shows that SRDI is a strong predictor of Firm Value.

Therefore, it is correct to say that there is a great demand for disclosure and transparency in sustainability reporting, which is necessary not only to achieve business objectives, but also to satisfy the needs of different stakeholders, such as investors, governments and society in general. It supports the view that sustainability reporting is a source of competitive advantage rather than a compliance necessity for enhancing firm value and financial performance especially in emerging economies.

Declaration

All authors declare that they have no conflicts of interest.

Compliance with Ethical Standards

Ethical Approval

This study was conducted in accordance with established ethical guidelines for academic research involving human participants. The research did not involve any clinical experimentation or vulnerable populations. Prior approval for data collection was obtained from the concerned institutional authorities, and the study complied with the ethical standards of social science research.

Informed Consent

Informed consent was obtained from all participants prior to their participation in the survey. Respondents were informed about the purpose of the study, the voluntary nature of participation, confidentiality of responses, and their right to withdraw from the study at any stage without any consequences.

Conflict of Interest

The authors declare that they have no conflict of interest regarding the publication of this research paper.

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Author Contributions

All authors contributed substantially to the conception, design, analysis, interpretation, and writing of the manuscript. All authors have read and approved the final version of the manuscript.

Consent for Publication

All authors provide consent for the publication of this manuscript in the journal submission process.

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