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Inclusivity at the Helm: The Influence of Diverse Boards on Sustainability Reporting

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Abstract
Sustainability disclosures are essential for fostering accountability, transparency, and ethical company conduct. This research is carried out to examine the effect of board diversity on the sustainable disclosures of a firm measured. Environmental Reporting Score (ER Score) and Social Score (S Score) measure the sustainability disclosures. At the same time, board diversity is measured concerning gender, religion, and independence. To get precise results, we also included some control variables that could have impacted the disclosures, like auditor type, size, profitability, growth, and a firm's financial leverage. We used a sample of the KSE100 index companies, and Tobit regression analysis was applied. The study's results postulate that firms with a larger board of directors, lesser religious diversity, employing big audit firms, and lower financial leverage tend to have more environmental disclosures.
Keywords: Environmental Reporting Score, Sustainability Reporting, Sustainability Disclosures, Social Scorez

1. Introduction
While sustainability emerged as a term of note in the late 20th century, its roots can be traced back to earlier movements and philosophies that acknowledged the essentiality of prudent resource management and safeguarding environmental equilibrium (Hecht, 2007; Nguyen & Tran, 2019). For ages, Indigenous cultures and traditional practices have extolled the harmony between human societies and the natural world, advocating for enduring relationships with the environment. These viewpoints have profoundly impacted current conceptions of sustainability and the critical need to honor ecological boundaries (Goni et al., 2015).
One contemporary phenomenon of sustainability is sustainability reporting (SR), which divulges details concerning an entity's financial, ecological, and societal achievements to its stakeholders (Dienes et al., 2016). Sustainability Reporting is a concept wherein the costs of the environmental assets being used by the Company and the social activities the Company is involved in are recorded in the financial statements and operations of the Company (Gallardo-Vázquez et al., 2021). Sustainability reporting aims to provide transparency and accountability while simultaneously serving as a catalyst for organizational improvement and decision-making (Khan et al., 2021).
Since a significant part of sustainability is closely connected with the environmental aspect, it is evident that the environment is in severe danger and getting harmed daily by the emissions of businesses. This situation calls for taking charge of all the activities that can harm the environment and eventually harm us. The sustainable development goals (SDGs) given by the United Nations are mandates for economic players now. Campaigns towards sustainable economic development have gained popularity and are seeking the attention of many corporations. This quest has led various organizations to introduce social and environmental standards, and governments actively participate. And also to disclose social wellness activities like donations and training of staff (Alazzani et al., 2017; Ezeagba et al., 2017)
Humans are both a part of and apart from the natural world, and through the changing technology, we have been making changes in the environment for our support and benefit. This has caused many destructions like global warming, melting of glaciers, soil erosion, human-induced processes acting upon the land, deforestation, and various other pollutions Jones, 2010; Omnamasivaya & Prasad, 2016a). Che Ahmad et al. (2015) says that by accounting for environmental and social disclosures, a nation can compute how much natural resources it consumes and what amount is considered. In this era, industries need to report their environmental costs and make a production process that does not include anything unfriendly to the habitat. (Homan, 2016). Various things can fall under the umbrella of environmental disclosures, like, as any sustainability mention, tree plantations, reduce, reuse, and recycle initiatives, environmental awards, quantitative disclosure of environmental expenses, etc. It may be in a diagram, numeric, or qualitative format. (Latif et al., 2020)
Moreover, although the world is socially active today and several standards have been imposed on organizations by many regulatory authorities, some firms still fail to exhibit this information in their reports, such disclosures are termed social disclosure (Veronica Siregar & Bachtiar, 2010). The term Social Disclosure is a wide concept that not only incorporates donations or societal benefit work but also includes under its umbrella, the factors of having a workforce and and maintaining diversity of religion and gender. (Alazzani et al., 2017) Says that having female employees in the workforce can increase the social disclosures of the firm, while the environmental

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reporting standard does not get affected as much due to the increase in women employees. Whereas having employees with different religions and cultural backgrounds is equally as important as gender diversity. (Sidibé, 2016) outlines the fact that there are organizations that are attached to their faith and follow its prescribed guidelines religiously, such workplaces can be termed faith-based organizations, as individuals cannot be separated from his or her religion, we need to create a workplace that respects these sentiments and allow employees to carry their identities freely without being questioned.

Another critical factor of board diversity that leads to more sustainable reporting and social disclosures of a firm is the board size and the independent directors. Veronica Siregar & Bachtiar, (2010) found out in their research that a large board of directors group can add to better overseeing and reporting disclosures. However, it is even stated that a much larger board would have a communication and monitoring problem, which is why a very small or extensive board is not said to be ideal for better sustainable reporting practices of a firm, whereas the profitability leverage of a firm is said to have no impact on it. (Barako & Brown, 2008) have found that including a non-executive board of directors in corporate governance increases the amount of disclosure being made. Since the non-executive directors know the world outside the organization and the latest trends they can prove to be, they greatly help firms implement such disclosures that can benefit future profitability.

Where several pieces of research have been made in both developed and developing countries to explore the different dimensions of sustainability (Arif & Tuhin, 2013; Che Ahmad et al., 2015; Mitchell Williams, 1999; Nguyen & Tran, 2019; Omnamasivaya & Prasad, 2016b), lesser are found in Pakistan, this article precisely focuses on this research gap and will provide an increase in literature in the context of Pakistan, a country of significant sustainability issues and the increasing loss of its wellness needs. This research has used an Index of KSE 100 companies registered at Pakistan Stock Exchange (PSX), taking the content analysis of their annual reports for the period of 5 years (2016-2020) and then giving scores to the environmental and social disclosures. We have taken into account, the auditor type and firm size to see their impact on the financial and sustainability performance of a firm. This research provides a view on how much of these disclosures the Pakistani listed firms make in their annual statements and what factors affect these disclosures.

The basic objectives of this research are to see to what extent sustainable reporting practices are adopted by Pakistani firms and specifically note how social and environmental reporting standards affect the performance of a firm and what difference this inclusion makes to such firms. Some questions that we aim to find answers through this research are given below:

1. Does board diversity, firm size, and firm growth have a positive impact on the environmental and social disclosures of a firm?
2. Does the firm size and auditor type influence the environmental scores?
3. How do the environmental and social disclosures of a firm affect its financial and sustainable performance?

The research findings can be used by regulators and policymakers to guide decisions about board diversity and sustainability reporting requirements. It emphasizes the potential advantages of encouraging diversity on corporate boards for the benefit of society at large. Investors and asset managers may deliberate on board diversity as a component in their investing strategies, recognizing its potential impact on a company's sustainability disclosures, particularly and, by large, long-term performance and reputation.

The rest of the paper is structured as follows: chapter two pertains to the literature review, followed by the methodology part. Chapter 4 is related to the discussion, and Chapter 5 with results. Chapter 6 concludes the paper.

2. Literature Review:

The main purpose of this literature is to study, explore, and identify the various scholarly data accessible and related to our research topic. This topic contains scholarly information related to the ideas of sustainability and its connection with its three major pillars.

2.1. Sustainability

The concept of sustainability ranks back to the early 1970 wherein it was merged with many other concepts and gradually gained importance after 1987 when more researches were made in this field. Today it has become a hot topic of discussion(Goni et al., 2015) Sustainability is a concept that tells us not only to see the benefit of the current time but also plan for the long run, in other words, we should not compromise on our needs tomorrow by putting everything or the current time.(Kuhlman & Farrington, 2010)

Globally it was CSR to make the first reach to the companies and now this trend is followed by sustainable reporting practices or as we may call them, environmental disclosures. (Gallardo-Vázquez et al., 2021)All of this has happened due to the initiatives of the United Nations Sustainable Development Goals, however, the sustainable reporting goals are aimed to be achieved by 2030 but we can see the work has gradually paced up and firms are taking an active part in such disclosures. All of this is done to achieve greater market share for the Company so that it eventually becomes profitable (Gallardo-Vázquez et al., 2021)

Several globally recognized platforms have made it mandatory for all countries to make the inclusiveness of environmental and social disclosures necessary in all their firm's annual sheets. Like the International Federation of Accountants (IFAC) in 2005 and the United Nations Commission on Sustainable Development (UNDSD) in 2001 but it gained popularity after some researchers proved this concept need of the hour through their research work (Nguyen & Tran, 2019). Developed countries have already implemented this concept while developing are still working on it. Today we are said to be in the boom period of studies related to this concept(NI, 2017).
This research focuses on the broad concept of sustainability and then the major dimensions that it holds within itself. This concept has been prevailing for quite several years now, but organizations have not thoroughly analyzed and implemented it due to a lack of knowledge of indicators of sustainable reporting. (Mukherjee et al., 2016) According to (Kuhlman & Farrington, 2010) sustainability has 3 major pillars, also called the 3Ps

- Environment
- Economy
- Society

2.2. Environment

Under this system, the environmental resources are to be used in a way that the rate of being used by humans can be repaid. The major examples here lie in the initiatives taken by the companies to plant more trees reduce their waste and build solutions for the water shortages faced by society, as compensation for their usage.(Kuhlman & Farrington, 2010)
Environmental disclosures influence the decisions of foreign investors and their ability to assess the firm's profitability based on the timeliness, reliability, and completeness of the information provided (Nguyen et al., 2017). In addition, due to the pressure put in by the customers and suppliers on the organization to disclose such information, it provides them with the information necessary for decision-making and reflects the true value of the organization so that future generations can enjoy the benefits of the sustainable environment. It is also found that suppliers tend to help their purchasers with the selling of their environmentally friendly products and when a negative environmental event occurs to an organization, the supply will get affected due to the reputation of the Company being affected and because the suppliers are more concerned with the organization's ability to return the credit owed (Xin et al., 2020) as the stakeholder theory suggests that all the stakeholders (financial or non-financial) are affected by the decisions made by the behaviors of the business which include shareholders, suppliers, customers, employees, competitors, the government, etc. they control the business and can find a way to satisfy their needs and will eventually withdraw their interests from that organization that is not doing environmentally well (Che Ahmad et al., 2015; Ezeagba et al., 2017; Nguyen et al., 2017)

2.3. Economy

Another theory named cost-benefit theory suggests that the costs of environmental reporting should be recorded in the financial sheets as well as the benefits that this reporting brings to the organization. (Nguyen et al., 2017)
Sustainability also gives sources of livelihood to a man, which helps him economically to fulfill his needs (Kuhlman & Farrington, 2010). Goni et al., (2015) point out that environmental costs that a company incurs are mainly included under this head, among which water and pollution control have been the main focus in recent research.
As we talk about sustainable reporting, (Goni et al., 2015) point out that environmental costs that a company incurs are mainly included under this head, among which water and pollution control have been the main focus in recent research. Being a "hot topic," the number of researches made on this topic is increasing day after day, while the researches have been made on this topic since 1989. He further adds that the researchers must make their focus oriented towards green manufacture or engineering, as it has a major impact on sustainable reporting
A company's performance is first analyzed financially by using ROA (return on assets), ROE (return on equity), ROIC (return on invested capital), price earning per share, etc. to measure the profitability of the firm. We see the disclosure's effect on the firm on its financial and sustainability performance with the help of the aforementioned variables. (Latif et al., 2020). Whereas (Basalamah & Jermias, 2005) found that according to the legitimacy theory, the management of the company can use the disclosures and numbers in a way that shows a forged profit for the firm, which is why independent directors and auditors play a very important part in foreseeing any misconduct.

2.4. Social

From the social perspective, CSR has been the focus of all organizations for several years now, and there are hardly any organizations that do not provide details regarding welfare donations, employee benefits and training, women's education, etc. in their annual reports in Pakistan. United Nation's 2030 agenda points out 17 sustainable development goals that are very closely related to corporate social responsibilities. Since the UN says that it is the responsibility of each company that impact are leaving on society, hence these SDGs are necessary to be implemented. It not not only good for society; rather it makes the firms more competitive and feasible as the researchers have found that such disclosure does not need much cost and hence firms of all scales and sizes can implement it. They have also found that the companies that do such disclosure must also include environmental disclosures to obtain better results in terms of performance, moreover, it can also prove to be a better initiative for risk management for a firm.(Gallardo-Vázquez et al., 2021; Kuhlman & Farrington, 2010)

We aim to measure all of these in this research by looking at the environmental disclosure to see the environment perspective, and social scores for the society perspective and then analyze the effect of the on the performance of the firm. In this research, we also have incorporated another very important variable that can impact the disclosures of a firm board diversity wherein all the major aspects of the board independence, inclusion of female employees and directors, and religion are taken under consideration.

2.5. Board Diversity

Board diversity is also a big concept that adjoins the social disclosures and sustainability performance of a company, as many researchers have found that the different types of board characteristics, e.g. religion, age, and gender influence the level of environmental disclosures, which ultimately contribute to the sustainability performance of a firm. (Barakat et al., 2015; Latif et al., 2020; Mohammad Rabi, 2019)

(Arif & Tuhin, 2013) found that in Bangladeshi banks, the operational years and annual profitability dominate the amount of non-financial information disclosures made by them. (Barakat et al., 2015) Explain that the characteristics of the board of directors have a positive relationship with the disclosure of environmental information of the firm among which the factor of "age" influences the necessary disclosures. In contrast, the firm's profits and size do not have a major impact in this regard. (Shafi et al., 2020)

Diversity is aimed at creating such a working environment that the employees can easily carry their culture and ultimately have a positive mindset for the organization so that they can contribute happily. (Sinicropi & Cortese, 2021) Tell us that only 42.5% of the research articles are focused on the diversity variables that include religion, gender, culture, age, and mental and physical ability. Some organizations however want to go beyond the minimum law requirements of diversity prescribed by the enforcing bodies.

2.6. Gender

Alazzani et al., (2017) have highlighted that female board directors are leaner toward maximizing the shareholders' value for long-term and social issues but do not care much about environmental issues. Bayeh, (2016a) points out that women are still thought of as a weaker gender and yet due to gender roles a large part of the positions are reserved for men only he also adds that the contribution of women in the development of the country is still thought to be very less. The use of women workforce is not very much since many of the seats are already reserved by men. Gender equity may be defined as individuals being able to make choices in their lives regardless of their gender(Bayeh, 2016b). Sidibé, (2016) says that it is impossible to attain sustainability without having gender equality in the organizations. Moreover, having women equally employed can also benefit the country's development because according to the researchers, inequality is a leading cause of higher economic costs and it is unthinkable to achieve economic development with no women being involved, aiming for economic growth with the only male employee will be like clapping with one hand (Bayeh, 2016a).

H1: Female directors only influence social reporting and not environmental reporting.

2.7. Religion

Sidibé, (2016) says it will be unjustified if we separate the religious perspective from a human and ultimately from the sustainable performance of a firm he adds that religion serves as a medium of inclusiveness for faith-based organizations. Likewise, Islamic organizations in Pakistan have a Sharia Board regulating the board of directors. We need to see the role of such faith-based organizations since they are made of such communities that think of their religion as a very important binding force. As globalization has changed several concepts of cultural inclusiveness (Wulf, 2013) define the diversity of human beings in a workspace as an important source of growth for the organization as all the individuals are different from each other and can bring different ideas to the table hence inclusiveness of various cultures can be profitable for the organization.

H2: The religion of the directors has a positive impact on social disclosures

2.8. Board Independence:

Latif et al., (2020) define independent directors as ones who prove to be strong leaders and have great leadership qualities as they are not a part of the family of the Company, they are non-executive bodies and are not in any way related to the people of the board, they maintain an unbiased view in the organization that the operations are well managed and no one tries to involve in unethical practices as these directors act as the representation and power of authority for the general shareholders and make sure that no injustice is done by to them.

H3: Independent directors positively impact the environmental disclosures of a firm

3. Methodology

This research comprises of two models of Sustainable reporting; Firstly we have checked the impact of board diversity on Environmental Reporting (eq 1) and secondly on Social Reporting (eq 2). Firm size and firm growth, profitability, leverage, and auditor type have been used as control variables in both models. This research seeks references from Latif et al. (2020) and Alazzani et al. (2017)and uses the content analysis method and has used Tobit regression analysis. It is also known as a censored or dependent variable regression model. This type of regression is used for the sample that has missing data for some observations which is the case in this research as well as mentioned above we have some companies that have been given a score of "0" due to no disclosure of environmental or social reporting in their annual reports.

3.1. Data

This paper has taken a sample of the Karachi Stock Exchange (KSE)- 100 index, considered the benchmark of Pakistan's equity market. These 100 companies are part of the Pakistan Stock Exchange (PSX) and selected based on the highest performance sector-wise and the highest free float capitalization. This list of companies is revised semi-annually each year to ensure the changes in the rankings and the inclusion of newly listed firms are incorporated. The re-composition list used in this research is dated March 15, 2022, and was carried out to review the changes in the index from September 2021 to February 2022. The period used in this research is five years (2016-2020)

The annual reports of all 100 companies were downloaded from either the official website of the Pakistan Stock Exchange (www.psx.com) or the official websites of the Company itself, out of which some firms' annual reports were unavailable. Hence, the final data excluded the firm whose data was unavailable, and the final data sample comprised ninety-three (93) companies. However, the ratios used in the analysis were taken from the Financial Statement Analysis (FSA) provided by the State Bank of Pakistan and the Company's financial data in their annual reports.

Variables:

Table 1: Variable Summary

Variables	**Definition**	**Symbol**
Environment Reporting	The presentation and reporting of a company's interactions with the natural environment.	ER score
Board size	A total number of board of directors present in a company's board.	BSize
Board independence	It represents the number of boards of directors that do not relate to the Company.	BInd
Board religion	The religion that a particular board of directors belongs to.	BMuslim
Board gender	It defines the gender of the board of directors.	BGender
Company size	The threshold of turnover calculated by assets determines the size of a company.	Size
Leverage Ratio	Total debt to total assets ratio	Leverage
Profitability	The degree of a business to make profits.	Profit
Growth	The ability of a business to expand in all terms and explore more options to generate more profits.	Growth
Auditor type	The type of firm that oversees a company's operations and approves.	Auditor
Social	The disclosures that a company makes for the benefit of the society.	S Scores

Note: This table represents the variables used in this research, their definitions, and the symbols used throughout this paper.

3.2. Variables

In this study, sustainability reporting, the dependent variable, is measured through two dimensions Environmental Reporting (ER), depicted in Model 1, and Social Reporting (SR), depicted in Model 2. Board diversity is the independent variable and is measured through four dimensions, i.e., board size (BSize), board independence (Bind), board religion (BReligion), and board gender(BGender). The study has also incorporated a few firm-level control variables, which may affect Social Reporting (SR) and Environmental Reporting (ER). Such Variables include firm profitability (Profit), firm growth (Growth), Firm size (Size), Firm's Leverage (leverage), and auditor's type of the firm (Auditor). Summary of Variables are shown in Table 1.

Model 1:

$$\text{ER score} = \alpha + \beta 1 \text{ BSize} + \beta 2 \text{ BInd} + \beta 3 \text{ BMuslim} + \beta 4 \text{ BGender} + \beta 5 \text{ Size} + \beta 6 \text{ Profit} + \beta 7 \text{ growth} + \beta 8 \text{ leverage} + \beta 9 \text{ auditor} + \varepsilon \quad \text{(eq1)}$$

Model 2:

$$\text{Social score} = \alpha + \beta 1 \text{ BSize} + \beta 2 \text{ BInd} + \beta 3 \text{ BMuslim} + \beta 4 \text{ BGender} + \beta 5 \text{ Size} + \beta 6 \text{ Profit} + \beta 7 \text{ growth} + \beta 8 \text{ leverage} + \beta 9 \text{ auditor} + \varepsilon \quad \text{(eq2)}$$

3.3. Measurement

The above-mentioned variables have the following measurements; board size (BSize) is the total number of board of directors, board independence (Bind) is the number of independent directors divided by the total number of directors of a company, board religion (Brel) is the percentage of Muslim directors on board and board gender (BGender) is the percentage of women directors on board.

Whereas the control variables can be calculated as; company size (Size) is the natural log of total assets owned by the Company; leverage ratio (leverage) is total debt divided by total assets; profitability (Profitability) is calculated by taking the proxy of Return on capital invested of the firm; Growth of the firm (Growth) is seen by it market to book value; and lastly auditor type (Auditor) is measured by giving a number "1" if the Company is audited by one of the Big Four audit firms and "0" if otherwise. The big four companies are KPMG, Deloitte, PWC (AF Fugerson), and EY (Ernst & Young).

The measurement of the ER and SR are done based on specific factors that were included in each of them. The details are provided in Appendix I at the end. A score of "1" for the companies that had any qualitative or quantitative disclosures made in their annual reports of all five years, "2" for both quantitative and qualitative information, and "0" for the ones having no disclosures.

We further implicate this information in our research models given as

4. Results

4.1. Univariate Analysis

Table II given below, represents the descriptive statistics of our exploratory, explanatory, and control variables. The results indicate that ER SCORE disclosure made in Pakistani firms on average is "1.2" which means most of the sample companies report only the qualitative part of their disclosure and very less quantitative which is where we need to work and improve. In the case of S SCORE, we find an average of "1.7" which represents that a great number of the sample firms have been reporting social disclosures in both, qualitative and quantitative terms. In both ER score and S score cases the highest value is "2" which represents both, qualitative and quantitative disclosures and the lowest was "0" which signifies no reporting at all. The standard deviations for these variables are 54% and 45% respectively. The mean of the board size (BSIZE) is 8.5 which represents a fair number of boards of directors to regulate a firm, the least number of directors found in the sample companies is 3 and goes all the way to 14. Board independence (BIND) indicates an expected value of 26% with a 13% range of deviation from its mean, which is very low as the minimum requirement of MCCG 2012 says that the board independence must be at least b 33%. The sample mean of the Muslim board of directors (BMUS) is found to be 0.9 represents that on average only a few of the directors in the Pakistani firms belong to a religion other than Islam and only 0.6 women on average are included in the board of directors (BGEN). The auditors in the sample are mostly one of the big four firms with a mean of 0.8 which is close to 1(based on our scores). The log of assets representing the size of the firm has an average of 17.63 with a maximum log of 22.01 and a minimum log of 10.62. The findings also show that on average the Pakistani organizations have 58% of debt in their capital structure. The growth of the sample companies is given by their average market-to-book value as 2.9 and the average profitability of a firm is given by ROIC as 13% which in both cases is very low.

Table 2: Descriptive Statistics

Measurement	**ER**	**S R**	**B size**	**BInd**	**BMUS**	**BGender**	**Auditor**	**Size**	**Leverage**	**Growth**	**Profit**
Mean	1.267	1.792	8.571	0.261	0.920	0.658	0.811	17.63	0.583	2.947	0.134
Median	1	2	8	0.272	1	1	1	17.46	0.594	1.39	0.105
Maximum	2	2	14	0.75	1	3	1	22.016	1.460	129.724	5.420
Minimum	0	0	3	0	0.142	0	0	10.629	0	-45.593	-1.808
Std. Dev.	0.547	0.453	1.791	0.132	0.152	0.703	0.391	1.958	0.282	10.554	0.329

Note: This table represents the results of descriptive statistics for all the variables used in this research wherein the mean is the average, the median is the middle value, minimum maximum shows the highest and lowest figures of all the observations. Whereas the standard deviation shows the difference of each variable from its average. The number of observations is taken 483, Jarq ue-Bera test results tell us whether or not the sample data represent a normal distribution based on the skewness and kurtosis.

Table 3: Correlation Analysis

Measurement	Profit	Growth	Size	LEVERAGE	BInd	BMUS	BGender	Audit	ER score	S score
Profit	1	0.279	-0.131	0.034	-0.135	-0.077	-0.009	-0.056	0.051	0.158
Growth	0.279	1	-0.030	0.080	-0.064	-0.191	-0.002	0.072	0.125	0.039

Size	-0.131	-0.030	1	0.482	0.280	0.019	-0.155	0.285	0.074	0.058
LEVERAGE	0.034	0.080	0.482	1	0.183	0.046	-0.072	0.054	0.109	0.064
BInd	-0.135	-0.064	0.280	0.183	1	0.138	0.074	0.168	0.009	-0.160
BRel	-0.077	-0.191	0.019	0.046	0.138	1	0.040	-0.150	-0.109	0.050
BGender	-0.009	-0.002	-0.155	-0.072	0.074	0.040	1	-0.100	0.026	0.077
Auditor	-0.056	0.072	0.285	0.054	0.168	-0.150	-0.100	1	0.130	-0.081
ER	0.051	0.125	0.074	0.109	0.009	-0.109	0.026	0.130	1	0.197
SR	0.158	0.039	0.058	0.064	-0.160	0.050	0.077	-0.081	0.197	1

Note: this table represents correlation among all the variables that have been used in this research, since there are no answers above 0.7 we can say there's no multi-collinearity issue in this data sample, the cases denoting "1" are the same variables on that particular row and column which is an exception.

To find out if the data has any multi-collinearity we have run a correlation test. Table III shows that there is no multi-collinearity effect as such in the results. Hence, we can move to multivariate analysis.

4.2. Multivariate Analysis:

In this research, we have used Tobit Regression Analysis as some of our data was found to be not reported by the sample organizations and because we know that ER or Social disclosures cannot only be dependent on the board diversity, which is why we have used some of the control variables that might influence these scores. The results of this analysis are given in Table IV and Table V.

In Table III, Column I shows that the variables like board gender, firm size, and profitability of a firm are positively significant for Environmental Reporting (ER). To get more precise, stepwise regression was done we removed a few of the insignificant control variables like growth, leverage, and auditors. Column ii of Table III showed the results where found that board gender, board religion, board independence, firm size, and profitability are positively significant with the S score.

In Table IV, Column I depicted the relationship of only two variables i.e. auditors and leverage with Social Reporting (SR) Scores, which is slightly significant. After removing a few insignificant control variables like growth, profit, and firm size column ii of Table IV showed that Board religion is negatively significant while auditor type and firm's leverage showed a positively significant impact on the social reporting (SR) score.

Our results relate with some of the previous literature findings, (De Masi et al., 2021; Mohd-Said et al., 2018) found that a greater number of female directors influence the corporate social responsibility disclosures of a firm. That is also the case in our research because increasing female qualified workforce is itself falls under the umbrella of social disclosures as it benefits the society. (Mohd-Said et al., 2018) Says that the number of independent directors has no impact on environmental disclosures, which is also related to our findings as independent directors in contrast belief to our results (Basalamah & Jermias, 2005) found that independent directors and auditors are the ones that can foresee any misconduct in the Company as according to the legitimacy theory management may use these disclosures in a way that could falsely profit their firm. However, our results are even consistent with (Andrikopoulos & Kriklani, 2013; Veronica Siregar & Bachtiar, 2010) having a positive impact on board size, profitability, and firm size with social disclosures of a firm as a bigger board can regulate a firm more effectively. Larger and profitable firms have more resources to report their activities and a negative impact of financial leverage as the more debt a company takes the less amount it will have to put into activities that are environment or society-friendly, with what amount is left after the basic operations of the Company because this amount will then be used to pay back the debt. However (Asika, 2022) found that leverage had a significant impact on the environmental reporting practices which also is consistent with our results because after meeting the sole purpose of the borrowed amount the proceeds may be used for environmental betterment activities, but for that a firm needs to first work on lowering its cost of borrowing. (Latif et al., 2020) provides a contrasting belief to our results that more Muslim directors on the board influence the environmental disclosures of a firm whereas our results interpret that the religion of the board does not affect the disclosure. Based on this and our results we can say that H1 and H2 can be accepted while we reject H3.

Table 4: S score

Column i			**Column ii**		
Variable	Coefficient	p-value	Variable	Coefficient	P value
C	0.991	(0.000)	C	0.955	(0)
BSIZE	0.010	(0.394)	BSIZE	0.009	(0.431)
BMUS	0.227	(0.099)	BMUS	0.269	(0.043)
BGEN	0.071	(0.014)	BGEN	0.074	(0.011)
BIND	-0.075	(0)	BIND	-0.078	(0)
AUDITOR	-0.078	(0.157)	SIZE	0.034	(0.002)
SIZE	0.035	(0.005)	PROFIT	0.219	(0.000)
PROFIT	0.217	(0.000)			
GROWTH	0.000	(0.922)			
LEVERAGE	0.034	(0.679)			

Note: this table represents the results for our eq 2, wherein the effects of the independent and control variables are seen on S score. We interpret this using the p-values in parenthesis. We have run the second model to get more accurate results

Table 5: ER score

Model 1			**Model 2**		
Variable	Coefficient	Probability	Variable	Coefficient	Probability
C	0.979	(0.001)	C	1.191	(0)
BSIZE	0.018	(0.247)	BSIZE	0.021	(0.171)
BMUS	-0.264	(0.130)	BMUS	-0.362	(0.028)
BGEN	0.0504	(0.176)	BGEN	0.048	(0.17)
BIND	-0.020	(0.367)	BIND	-0.020	(0.335)
AUDITOR	0.160	(0.021)	LEVERAGE	0.201	(0.059)
PROFIT	0.054	(0.507)	AUDITOR	0.160	(0.021)
GROWTH	0.004	(0.102)			
SIZE	0.005	(0.712)			
LEVERAGE	0.201	(0.059)			

Note: this table represents the results for our eq 1, wherein the effects of the independent and control variables are seen on the ER score. We interpret this using the p-values in parenthesis. We have run the second model to get more results that are accurate.

5. Conclusion and Discussion

This study seeks reference from (Latif et al., 2020) and (Alazzani et al., 2017) examining the effect of board diversity taken by board size, board gender, board religion, and board independence on the sustainable disclosures of a firm measured by two separate equations of ER score and S score. To enhance the precision of the results, this study has also included some control variables that possibly could have had an impact on the disclosures like auditor type, size, profitability, growth, and financial advantage of a firm. We used a sample of KSE100 index companies according to the Pakistan Stock Exchange's re-composition. After this, we allotted scores to each firm based on its disclosure level and gathered financial data from the Financial Sector Assessment Report.

Upon further work, we found that some data and annual reports were not available on the Pakistan Stock Exchange website or the Company's website. Hence, we used Tobit regression to get the results. The results found that firms having less than just a nominal percentage of Muslim directors, one of the big four auditors, and more financial leverage are said to have more environmental disclosures. Whereas bigger and more profitable firms having more females, Muslims, and independent directors have a positive impact on the social disclosures of the firm. Bigger firms have more investors and bigger audit firms as they have goodwill in the market which is why they have higher profitability and also hold a good debt turnover ratio. Moreover, they also focus more on diversity and inclusion. However, our results were found to be consistent with previous literature findings (Andrikopoulos & Kriklani, 2013; Basalamah & Jermias, 2005; De Masi et al., 2021; Lima Ribeiro & Aibar□Guzman, 2010) and our base articles (Alazzani et al., 2017; Latif et al., 2020).

However, some limitations of this research might be that it is intended for Pakistani firms but only comprises of a sample of 100 leading companies on the Stock Exchange. Therefore, in further research, the sample can be broadened to get a fairer view. Sustainability is a vast phenomenon and can be affected by many other variables that may or may not be included in this research, which is why more variables can be included to see their impact on such disclosures. Moreover, the time interval for the research may be broadened to get a greater number of observations and refined results.

5.1. Future Directions

To gauge board diversity, the study takes into account a wide range of factors, including gender, religion, and independence. However, future research can include other operationalizing variables like age, ethnicity, or educational background to further assess their impact on sustainability disclosures. Researchers can also incorporate further control variables.

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