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Does Corporate Governance Affect Sustainability Disclosure? A Mixed Methods Study

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Abstract: This research paper aims to understand the impact of corporate governance (CG) on economic, social, and environmental sustainability disclosures. This paper adopted an explanatory sequential mixed methods approach. The data regarding corporate governance and sustainability disclosure were collected from top 100 companies listed on the Pakistan Stock Exchange (PSE) for the period ranging from 2012 to 2015. In addition to the quantitative data, we collected qualitative data through interviews with five board members of different companies. Overall, our results indicate that CG elements enhance sustainability disclosures. This study concludes that a large board size consisting of a female director and a CSR committee (CSRC) is better able to check and control management decisions regarding sustainability issues (be they economic, environment, or social) and resulted in better sustainability disclosure. This paper, through quantitative and qualitative analysis, provides a methodological and empirical contribution to the literature on corporate governance and sustainability reporting in emerging and developing countries.

Keywords: corporate governance; corporate sustainability; sustainability reporting; mixed methods; global reporting initiative; developing countries; Pakistan

1. Introduction

This research study stems from an interest in exploring the relationship between the elements of corporate governance (CG) and different dimensions of sustainability disclosure. Corporations, these days, are increasingly under pressure for good governance and sustainability. Corporate governance and corporate sustainability (CS) are contemporary business issues and an emerging research area. Existing research on these topics missed the interlinkages that exist between them [1]. In this context, there is a need for research that explores the potential linkages between the different elements of corporate governance and sustainability reporting. This research aims to fill up this gap through investigating the impact of corporate governance elements on the different dimensions of corporate sustainability reporting.

Corporate governance is the structure by which the companies can be directed and controlled [2]. The issue of corporate governance was highlighted after the East Asian financial crisis and collapse of Enron and WorldCom in the United States. Corporate governance has emerged out of the need to strengthen mechanisms for corporate control [3–5]. Not only developed countries but also developing countries have initiated various programmes for corporate governance by developing and initiating codes of corporate governance [6]. The impact of CG elements on firm performance has been a major research question in accounting research. However, the impact of CG elements on the different dimensions of corporate sustainability reporting is a relatively unexplored area.

Corporate sustainability is another concern of modern day corporations. A growing number of writers over the last few decades have argued that corporate activities have an impact on the external environment, and that is why they should be held accountable to a wider audience than simply its shareholders. According to Blowfield and Murray [7], corporate sustainability includes intra-generational and inter-generational equity and the notions of "eco-justice" and "eco-efficiency." According to Christofi, Christofi and Sisaye [8], the concept of business sustainability, in general, is the result of previous concerns expressed in corporate social responsibility, environmental regulation, sustainable development, and stakeholder theory [9]. In the management sciences literature, the concept of corporate sustainability refers to the ability of the company to create value and continue working over a long period of time [10]. Companies publish sustainability initiatives in the form of sustainability reports, which is considered an integral part of the communication process between business enterprises and the various stakeholders [11].

Aras and Crowther [1] argues that both corporate governance and sustainability is essential for the continuous operation for any corporation and that therefore much attention should be paid to these concepts and their applications. They also pointed out that the concept of sustainability is less clear than the concept of corporate governance, which is well established. They call for the empirical research that explores the relationship between these two concepts. According to them, these two concepts are fundamentally related to each other. Good corporate governance is generally expected to have a positive impact on the sustainability performance and disclosure [12]. These days, corporations put CG and CS into business practice in order to achieve competitive advantage over rivals[13]. Various countries and policy makers have also started promoting these concepts together. According to Elkington [14], CG and CS are converging through consideration of the "triple bottom line" in the corporate boardroom. Through sustainability disclosures, organizations are demonstrating their sustainability governance and performance. However, given the recognition of the existence of the relationship between these two concepts and given the fact that policy makers are recommending new mechanisms (e.g., CSR committee) for ensuring better governance and sustainability, there is a lack of research that empirically examines the impact of different corporate governance elements on the different dimensions of corporate sustainability reporting. In order to fill these gaps, this research sets the following objectives:

1. to empirically examine the impact of corporate governance elements (board size, board independence, board diversity, audit committee, and CSR committee) on different dimensions of corporate sustainability (economic, social, and environmental) reporting;
2. to explore the perceptions of the corporate managers about the effect of corporate governance on sustainability disclosure.

In Pakistan, sustainability reporting is emerging. Like many other developing countries, the contextual settings of Pakistan are characterized by a unique socio-economic and political context. These include dependence on foreign aid, a lack of education, a lack of political will, a lack of resources, a lack of enforcement capabilities, and weak government structures [15–17]. Family is the dominant institutional order in a Pakistani society, followed by religion. State institutions are weak, are controlled by elites, and lack interest in sustainability matters. There is inequality and divide in the social development of various communities, and in general there is a lack of awareness, participation, and influence. The institutional context of Pakistan has some serious implications for concepts like corporate governance and sustainability. Because of this institutional context, there is a lack of sustainability awareness and interest among different stakeholders, which is why sustainability reporting is lacking in Pakistan [18].

According to Husted and Filho [19], the degree to which governance affects sustainability performance varies because of the institutional context. Their research demonstrated that countries with a high level of stakeholder orientation facilitate sustainability performance. As the institutional differences between different country contexts matter, this paper examines the relationship between CG and CS in the contextual settings of Pakistan. The rest of the paper is structured as follows: The next section presents a review of the literature and development of hypotheses, which is followed by a description of our research methods. The main empirical findings of this paper are then reported, and the results are discussed. Concluding remarks follow.

2. Literature Review and Hypotheses Development

2.1. Board Size and Sustainability Reporting

An efficient and effective board is vital for better performance [20]. An ideal board size varies between 5 and 16 depending upon the size, industry, complexity, and nature of the organization. Larger boards are considered to obtain a variety of resources at low cost and result in better performance. The decisions of aboard of directors also play an important role in determining the level of voluntary disclosure. Laksmana [21] established a positive connection between board size and the level of voluntary disclosures. A large board offers diverse knowledge and expertise that acts to mitigate agency–principle conflict and bring different perspectives into the organization [22,23]. According to Janggu [24], large boards have more influence on sustainability issues. Similarly, according to Shamil and Krishnan [25], large companies have large boards, and such companies want to increase their sustainability reporting.

The existing literature is conflicting and inconclusive with respect to the relationship between board size and sustainability disclosure. For example, a weak association between board size and CSR disclosures was observed by Said, Zainuddin and Haron [22]. Some researchers [26] found a negative relationship between board size and the level of CSR reporting. However, the majority of extant studies establishes a positive relationship between board size and corporate sustainability disclosure [27]. According to Majeed, Aziz and Saleem [28], the level of CSR disclosure was found to be high in those Pakistani companies with a larger board size. Similarly, Rao, Tilt and Lester [29] suggest that board size can increase the level of environmental reporting. Therefore, we hypothesize the following:

Hypothesis 1 (H1). *There is a positive relationship between board size and the extent of sustainability reporting.*

Previous studies have established a link between board size and overall sustainability reporting. However, we are also interested in examining the relationship between board size and different dimensions (economic, social and environmental) of sustainability reporting. Therefore, we further hypothesize:

Hypothesis 1 (H1a). *There is a positive relationship between board size and the extent of reporting on economic sustainability.*

Hypothesis 1 (H1b). *There is a positive relationship between board size and the extent of reporting on social sustainability.*

Hypothesis 1 (H1c). *There is a positive relationship between board size and the extent of reporting on environmental sustainability.*

2.2. Board Independence and Sustainability Reporting

The representation of independent directors on a board is considered a key element of corporate governance. A director who has no business and family linked to the top management of a company is generally considered independent [30]. Independent directors act as a scrutinizer and play an imperative role to ensure that the company is appropriately managed [22]. Independent directors strengthen the board and ensure that the interests of investors and stakeholders are protected. A board with a high percentage of independent directors is assumed to be more effective in monitoring and controlling management [31,32].

Independent directors are likely to take more initiatives to enhance the sustainability performance of the company [33]. Independent directors also act as a monitoring instrument for management activities on voluntary disclosure. Many researchers [34] found a positive connection between the percentage of independent directors and voluntary disclosures. This suggests that the presence of more independent directors in the board enhances the likelihood of providing more voluntary disclosure in the companies' annual reports. Independent directors have a greater tendency to encourage companies to publish a broader range of information to stakeholders. Haniffa and Cooke [35] state that independent directors can put pressure on companies to participate in sustainability disclosure.

The existing literature is conflicting and inconclusive with respect to the relationship between board independence and sustainability disclosure. Some researchers [36,37] found a positive connection between independent director and CSR disclosures. However, some researchers (e.g., [22,35] found a negative association between board independence and CSR disclosures. In a Pakistani context, a study of Javaid, Ali and Khan [38] revealed that the presence of more independent directors on the board has a positive effect on CSR disclosure. Therefore, we hypothesize:

Hypothesis 2 (H2). *There is a positive relationship between board independence and the extent of sustainability reporting.*

Previous studies have established a link between board independence and overall sustainability reporting. However, we are also interested in examining the relationship between board independence and different dimensions (economic, social and environmental) of sustainability reporting. Therefore, we further hypothesize:

Hypothesis 2 (H2a). *There is a positive relationship between board independence and the extent of reporting on economic sustainability.*

Hypothesis 2 (H2b). *There is a positive relationship between board independence and the extent of reporting on social sustainability.*

Hypothesis 2 (H2c). *There is a positive relationship between board independence and the extent of reporting on environmental sustainability.*

2.3.Women on a Board and Sustainability Reporting

Board diversity enhances board independence, as individuals of different ethnicities, genders, and cultural backgrounds ask questions that might not have been asked by a board of directors with more traditional backgrounds [39]. Board diversity in an organization enhances management effectiveness and is an important mechanism for corporate governance. According to Post, Rahman and Rubow [40], board diversity plays an important role in better decision-making through the involvement of directors with diverse knowledge, perception, and ideas.

Over the period of time, gender became a widely recognized feature of board diversity. The role of gender in the boardroom is a significant aspect of corporate governance, as women are different, both ethically and socially, from men. According to Ibrahim and Angelidis [33],female directors are less economically oriented and more philanthropically driven than male directors. Female directors are less driven by self-interest. Women are also different from men in terms of "personality, communication style, education and professional experience and expertise"[41]. The participation of women in leadership can have a positive impact on a socially responsible behavior in the organization. However, it is important to note that the presence of a female on aboard does not ensure socially responsible behavior, as they do not have the same quota of power as males [42].

Female directors on aboard have been observed in disclosure literature. Terjesen, Sealy and Singh [43] found that companies with women on the board are more socially responsible. Bear, Rahman [44] found that the proportion of women on a board is positively related to CSR influence. According to Yaroson and Giwa [45], women are more inclined to meet social responsibility needs. Using data collected from 22 countries, Fernandez-Feijoo, Romero and Ruiz-Blanco [46] proved that women on boards were responsible for a higher quantity and quality of CSR disclosure. There is also evidence that the presence of female directors on a board increases corporate reputation and CSR ratings [44]. However, a study conducted in Bangladeshi banks could not show a relationship between female directors and CSR disclosure [47]. A study by Nadeem, Zaman and Saleem [48] revealed a significant positive relationship between women's representation on boards and corporate sustainability practices. This leads to our third hypothesis:

Hypothesis 3 (H3). *There is a positive relationship between women on boards and the extent of sustainability reporting.*

Previous studies established a link between women on board and overall sustainability reporting. However, we are also interested in examining the relationship between women on board and different dimensions (economic, social and environmental) of sustainability reporting. Therefore, we further hypothesize:

Hypothesis 3 (H3a). *There is a positive relationship between women on boards and the extent of reporting on economic sustainability.*

Hypothesis 3 (H3b). *There is a positive relationship between women on boards and the extent of reporting on social sustainability.*

Hypothesis 3 (H3c). *There is a positive relationship between women on boards and the extent of reporting on environmental sustainability.*

2.3. Corporate Social Responsibility Committee (CSRC) and Sustainability Reporting

These days, a number of companies' have a CSR committee, which assists the board in dealing with the corporate sustainability agenda [49]. A CSR committee is usually responsible for a review of the policy and performance with regard to social responsibility and sustainability issues. A CSR committee is also generally responsible for the reporting procedure for environmental and social information [40]. Creating a CSR committee is seen as an important governance mechanism for the organization. The experiences, knowledge, and skills of the CSR committee is expected to ensure that social responsibility and sustainability is embedded into the strategic management process of the organization. The construction of the CSR committee ensures that companies discharge their CSR obligation toward the stakeholders.

A CSR committee can be considered as human capital for responsible business practices. As such, a company with a CSR committee engages well with stakeholders and reports on various social responsibility and sustainability issues. The presence of a CSR committee indicates responsibility for sustainability issues at the board level. According to Amran, Lee and Devi [50], the presence of a CSR committee is positively related to the extent and quality of sustainability reporting. Similarly, Adnan, Van Staden and Hay [51] argue that a company with an environmental committee is expected to disclose more information about greenhouse gas emissions compared to organizations with no such committee. However, there are also studies where empirical results indicate a weak relationship or a moderately significant relationship between the presence of a CSR committee and social disclosure [52].

The presence of aCSR committee can be considered an effective tool to improve the extent and quality of sustainability disclosures. Consequently, this study expects that the presence of the CSR Committee, which is part of the governance mechanism, will enhance sustainability disclosure. Therefore, we hypothesize:

Hypothesis 4 (H4). *There is a positive relationship between the presence of a CSR committee and the extent of sustainability reporting.*

Previous studies have established a link between the presence of a CSR committee and overall sustainability reporting. However, we are also interested in examining the relationship between the presence of a CSR committee and different dimensions (economic, social, and environmental) of sustainability reporting. Therefore, we further hypothesize:

Hypothesis 4 (H4a). *There is a positive relationship between the presence of a CSR committee and the extent of reporting on economic sustainability.*

Hypothesis 4 (H4b). *There is a positive relationship between the presence of a CSR committee and the extent of reporting on social sustainability.*

Hypothesis 4 (H4c). *There is a positive relationship between the presence of a CSR committee and the extent of reporting on environmental sustainability.*

3. Material and Methods

This research paper relied on the use of mixed methods approach. Mixed methods research has a long history in the social sciences and very recently has gained wide recognition as a term to research designs that combine quantitative and qualitative methods for data collection and analysis in a single study. Both quantitative and qualitative methods have their own strengths and weaknesses. Mixed methods research design exploit the strengths of both methods in counter-balancing their weaknesses [53]. Out of various approaches for mixed methods research, we adopted the explanatory sequential mixed method approach. Under this approach the data collection and analysis proceeds in two phases. In first phase quantitative data was colleceted and analyzed. The results of the first phase was then used to plan the qualitative followup in the second phase. The qualitatve questions to ask from particpamts as well as the sampling procedure was determied by the quantitative results [54].

Following the explanatory sequential mixed methods approach, first quantitative data related to the different elements of corporate governance elements was collected from the annual reports of the companies as per the measurement basis mentioned in the next section. The data related to the different dimensions of sustainability reporting was collected with the use of content analysis technique. The technique involves coding the data into various categories based on selected criteria. For the purpose of this study, first corporate sustainability disclosure index based on the indicators provided by the Global Reporting Initiative (GRI) for sustainability reporting was developed. GRI was used in this study as it is considered as global benchmark for Sustainability Reporting [55] Number of companies using GRI guidelines for standalone Sustainability Reporting is also growing in Pakistan, like many other developing countries [56]. Content analysis was performed to capture the absence or presence of a particular disclosure in the annual and sustainability reports based on the disclosure index developed in the first step.

The sample for this study comprised top 100 companies listed on the Pakistan Stock Exchange. Based on the availability of data, companies were shortlisted to constitute the sample of the study. The final sample of this study consists of 85 companies. For the sample companies, data regarding corporate governance and sustainability reporting were collected from the period of 2012 to 2015 as during this period the Securities and Exchange Commission of Pakistan (SECP) and Pakistan

Institute of Corporate Governance (PICG) remains very active for encouraging and enforcing corporate governance and sustainability mechanisms.

Through regression analysis, the quantitative data was used to determine the impact of corporate governance dimensions with the dimensions of sustainability reporting. The results of the quantitative phase then informed the design of the second qualitative phase. We took interviews from five different board members (3 males and 2 females) and ask them about the significant and insignificant results in order to seek their opinion. The qualitative data was then analyzed to validate the results of the quantitative study and to provide more depth and more insight into the quantitative results. The purposive sampling technique was used to select interviewees. Purposive sampling techniques involves selection of units (e.g., individuals, groups of individuals, institutions) based on specific purposes associated with answering a research study's questions [57]. The focus of the interviews was on the perceived role and impact of different elements of corporate governance on different dimensions of sustainability reporting and to seek opinion on the significant and insignificant results. The main objective of qualitative study was to validate the finding of the quantitative study and to provide plausible explanations.

3.1. Independent Variables

Governance Related Variables

There are four governance related variables in our study. Their description and measurement basis is mentioned in Table 1. Annual reports of companies provided full information about the composition and structure of the board (including number of directors, their gender and a description of their role). The fourth governance related variable is whether a board has a separate CSR committee that is responsible for sustainability issues: the value 1 for the company who has a Social Responsibility Committee (CSRC) and 0 otherwise.

Table 1. Description and measurement of independent variables.

Sr. #	Symbol	Description	Measurement
1	BSIZE	Board Size	Total number of directors on the board
2	BIND	Board Independence	Percentage of independent directors to total directors
3	WOB	Women on Board	Percentage of female directors to total Directors on the board
4	CSRC	CSR committee	Existence of the CSR committee using Dummy

3.2. Dependent Variable—Coproate Sustainability Reporting (Economic, Social, Environmental) Index

This research used the Global Reporting Initiative (GRI) based indicators/items for economic, social and environmental sustainability disclosures. A disclosures Index for overall sustainability and three (economic, social and environmental) dimensions of sustainability disclosure was developed and then used for regression analysis. The Table A1, given in the Appendix A shows the GRI based performance indicators and their keywords which were used to determine the extent of sustainability disclosure. A content analysis technique was used to capture the presence or absence of keywords related to the different dimensions of sustainability.

3.3. Research Model

This research uses the regression analysis to test the association between the corporate governance variables and the corporate sustainability disclosure. The collinearity test was applied through EVIEWS 9. The regression model is presented below. In this model, i shows cross sections and t denotes time series data. This research proposes the use of panel data. CSRI (Sus) denotes overall corporate sustainability reporting index as a dependent variable, β shows as a coefficient in the regression model, and the detail of independent variables is mentioned in Table 1 above. Overall sustainability disclosure is further segregated into three dimensions and abbreviated as CSRI (Eco) for Economic Sustainability, CSRI (Soc) for Social Sustainability and CSRI (Env) for Environmental Sustainability.

$$\text{CSRI (Sus)}_{it} = \alpha + \beta_1\text{BSIZEI}_{it} + \beta_2\text{BIND}_{it} + \beta_3\text{WOB}_{it} + \beta_4\text{CSRC}_{it} + \varepsilon_{it} \tag{1}$$

$$\text{CSRI (Eco)}_{it} = \alpha + \beta_1\text{BSIZEI}_{it} + \beta_2\text{BIND}_{it} + \beta_3\text{WOB}_{it} + \beta_4\text{CSRC}_{it} + \varepsilon_{it} \tag{2}$$

$$\text{CSRI (Soc)}_{it} = \alpha + \beta_1\text{BSIZEI}_{it} + \beta_2\text{BIND}_{it} + \beta_3\text{WOB}_{it} + \beta_4\text{CSRC}_{\ it} + \varepsilon_{it} \tag{3}$$

$$\text{CSRI (Env)}_{it} = \alpha + \beta_1\text{BSIZEI}_{it} + \beta_2\text{BIND}_{it} + \beta_3\text{WOB}_{it} + \beta_4\text{CSRC}_{it} + \varepsilon_{it} \tag{4}$$

4. Results

The sample size consists of 85 registered companies on the Pakistan Stock Exchange. Descriptive statistics (mean and standard deviation)of all variables for 4 years are shown in Table 2. In 2015, the mean board size is 8.709302, and the mean value of the proportion of independent directors, CSRC and female directors is 0.222136, 0.116279 and 0.059965, respectively. Board independence (the proportion of independent directors on board) is 22.21% in 2015, while it is 18.80 in 2012. The percentage of women is low in 2012, only 4.50%. The overall representation of women on boards to report is low for all four years. Only 11.63% of Pakistani companies established a CSR committee in 2015, 10.7% in 2014, and 9.3% in 2013.

Table 2. Descriptive statistics.

Year	2012		2013		2014		2015	
Variables	**Mean**	**SD.**	**Mean**	**SD.**	**Mean**	**SD.**	**Mean**	**SD**
CSRI (Eco)	0.691861	0.350786	0.700581	0.34475	0.686047	0.356012	0.68314	0.356504
CSRI (Env)	0.371036	0.309693	0.375264	0.31144	0.369979	0.317008	0.382664	0.313097
CSR (Soc)	0.381137	0.214602	0.392765	0.208705	0.395995	0.213862	0.393411	0.237424
BIND	0.187988	0.154036	0.193016	0.123928	0.215546	0.140768	0.222136	0.13694
WOB	0.044974	0.08207	0.048993	0.092032	0.055536	0.095825	0.059965	0.102415
BSIZE	8.72093	1.806206	8.744186	1.873569	8.755814	1.933823	8.709302	1.90273
CSRC	0.081395	0.275045	0.093023	0.292169	0.107143	0.311152	0.116279	0.322439
CSRI (Sus)	0.313387	0.176361	0.320348	0.166132	0.327173	0.180191	0.332737	0.177405

In 2012, only 8% of companies had a CSR committee. In 2015, only 33.27% of Pakistani companies issued sustainability reports and disclosures about sustainability in annual reports according to GRI (Global Reporting Initiative). The level of total disclosure is 32.71%, 32%, and 31% in 2014, 2013, and 2012, respectively. The mean proportion of companies providing economic, environmental, and social disclosures in 2015 is 6.8%, 3.8%, and 3.9%, respectively.

4.1. Multivariate Analysis

Correlation Matrix

Table 3 provides results for the Pearson correlation matrix between the dependent and independent variables. Board size was found to be positively associated with all three aspects of sustainability disclosures (economic, social, and environmental), whereas board independence was found to be negatively associated with all three aspects of sustainability disclosures. Women on the board (WOB) have mixed effects on different dimensions of sustainability disclosures. A woman on the board was found to be positively correlated with economic and environmental sustainability. A WOB was found to be negatively correlated with social sustainability. CSRC, which is measured by the existence of a corporate social responsibility committee, was found to be positively related to all sustainability dimensions. The overall sustainability disclosure index is positively correlated with all corporate governance variables, except WOBs.

Table 3. Results for the Pearson correlation matrix between different variables.

Variable	CSRI (Eco)	CSRI (Soc)	CSRI (Env)	BIND	WOB	BSIZE	CSRC	CSRI (Sus)
CSRI (Eco)	1							
CSRI (Soc)	0.5943 *	1						
CSRI (Env)	0.6905 *	0.7680*	1					
BIND	−0.0559	−0.0084	−0.0711	1				
WOB	0.0656	−0.0507	0.0078	−0.0766	1			
BSIZE	0.1145 *	0.2116 *	0.1674 *	0.0801	−0.1892 *	1		
CSRC	0.2221 *	0.3499 *	0.3576 *	0.2856 *	−0.045	0.1364 *	1	
CSRI (Sus)	0.6435 *	0.8713 *	0.9339 *	0.3052 *	−0.0369	0.2091 *	0.4345 *	1

* 5% level of significance.

4.2. Estimation Results of Regression Analysis

4.2.1. CG and Economic Sustainability Disclosure

To avoid multicollinearity problems, we applied stepwise regression. The first dimension we used for sustainability disclosure is economic sustainability. We ran a regression analysis with dependent variable was economic sustainability and the independent variables were women on the board, board independence, board size, and a corporate social responsibility committee. Regression results of the relationship between governance related variables and economic sustainability are presented in Table 4. The relationship with board size and economic sustainability was positive and significant at the 5% level of significance. However, the governance variable board independence was negative and insignificant. The relationship between women on the board and economic sustainability was positive and insignificant. The relationship between corporate social responsibility committee and economic sustainability was positive and significant.

Table 4. Regression results of CG elements and economic sustainability disclosure.

Variable	Coefficient	Std. Error	*t*-Statistic	Prob.
WOB	0.267303	0.202306	1.321281	0.1873
BIND	−0.292048	0.137230	−2.128167	0.0341
BSIZE	0.019740	0.009994	1.975083	0.0491
CSRC	0.286854	0.063881	4.490409	0.0000
Constant	0.536004	0.094307	5.683629	0.0000

4.2.2. CG and Environmental Sustainability Disclosure

The second dimension we used for sustainability disclosure is environmental sustainability. Regression results of the relationship between governance related variables and environmental sustainability are presented in Table 5. The relationship between board size and environmental sustainability was positive and significant at the 5% level of significance. Board independence was negatively insignificant. There was a positive, but an insignificant relationship between women on the board and environmental sustainability. The relationship between board independence and environmental sustainability was negative and insignificant. The relationship between corporate social responsibility committee and environmental sustainability was positive and significant.

Table 5. Regression results of CG elements and environmental sustainability disclosure.

Variable	Coefficient	Std. Error	*t*-Statistic	Prob.
WOB	0.137881	0.175037	0.787725	0.4314
BIND	−0.070984	0.118732	−0.597850	0.5503
BSIZE	0.021853	0.008647	2.527158	0.0120
CSRC	0.364186	0.055271	6.589131	0.0000
Constant	0.156919	0.081595	1.923144	0.0553
R-squared	0.145546			

4.2.3. CG and Social Sustainability Disclosure

The third dimension we used for sustainability disclosure is social sustainability. Regression results of the relationship between governance related variables and social sustainability are presented in Table 6. The relationship between board size and social sustainability disclosure was positive and significant. The relationship of social sustainability disclosure with board independence was negative but significant. The relationship between women on the board and social sustainability disclosure was negative and insignificant. The relationship between the presence of a corporate social responsibility committee and the dependent variable was positive and significant.

Table 6. Regression results of CG elements and social sustainability disclosure.

Variable	Coefficient	Std. Error	*t*-Statistic	Prob.
WOB	−0.036523	0.120427	−0.303279	0.7619
BIND	−0.192021	0.081689	−2.350637	0.0193
BSIZE	0.019939	0.005949	3.351438	0.0009
CSRC	0.260405	0.038027	6.847942	0.0000
Constant	0.234764	0.056138	4.181907	0.0000
R-squared	0.164818			

4.2.4. Corporate Governance and Overall Sustainability Disclosure

Table 7 shows the results of a regression analysis between corporate governance elements and overall (economic, environment, and social) sustainability disclosure. The relationship between corporate governance and overall sustainability disclosure is positive. Women on board are positively correlated with overall sustainability disclosure, but the relationship is insignificant. The relationship between board independence and overall sustainability disclosure was positive and significant. The relationship between the presence of a corporate social responsibility committee and overall sustainability disclosure was also positive and significant. Table 8 below summarizes the overall hypotheses testing results.

Table 7. Regression results of CG elements and overall sustainability disclosure.

Variable	Coefficient	Std. Error	*t*-Statistic	Prob.
WOB	0.033786	0.091861	0.367796	0.7133
BIND	0.245665	0.062311	3.942529	0.0001
BSIZE	0.013931	0.004538	3.069688	0.0023
CSRC	0.208197	0.029006	7.177613	0.0000
Constant	0.130561	0.042822	3.048955	0.0025
R-squared	0.246907			

Table 8. Summary of hypotheses testing results.

Hypotheses	Studied Relationship	Result
Hypothesis 1		
H1a	BSIZE→CSRI(Eco)	Accepted
H1b	BSIZE→CSRI(Env)	Accepted
H1c	BSIZE→CSRI(Soc)	Accepted
Hypothesis 2		
H2a	BINDP→CSRI(Eco)	Rejected
H2b	BINDP→CSRI(Env)	Rejected
H2c	BINDP→CSRI(Soc)	Rejected
Hypothesis 3		
H3a	WOB→CSRI(Eco)	Rejected
H3b	WOB→CSRI(Env)	Accepted
H3c	WOB→CSRI(Soc)	Accepted
Hypothesis 4		
H4a	CSRC→CSRI(Eco)	Accepted
H4b	CSRC→CSRI(Env)	Accepted
H4c	CSRC→CSRI(Soc)	Accepted

4.3. Qualitative Findings

In order to validate these results, we sought opinions from members of boards of directors. All agreed with the impact of a large board size on sustainability reporting. However, in the case of board independence, the perception of interviewees contradicted the regression results. Almost all interviewees highlighted the positive role of independent directors in ensuring better sustainability performance and disclosure. Following quotes from the interviewees explains this position:

> "*... independent directors can provide a more intense focus on corporate responsibility and sustainability ... independent directors would strive more to direct the board [toward]those decisions that not only improve the long-term financial performance, but also focus on sustainability initiatives*" (Interviewee 1)

> "*The role of independent director is very important ... If [an][i]ndependent director really works independently, then he/she will surely take care all the stakeholder including society and environment*" (Interviewee 2)

> "*... If there is [a] proper percentage of independent directors present in [a] board meeting[, then]they are able to ensure [that] the companies [...]take initiative [on]sustainability and force [...][annual] sustainability [reporting]*" (Interviewee 3)

However, interviewees were of the opinion that the positive relationship may not be realized in the context of a country where there are more family-owned companies. In such case independent directors may still be influenced by the institution of family and may not perform the role of independent director in true spirit.

> "*... the role of [an] independent director in family-owned companies [is] limited. They are just nominees according to [the] code of corporate governance. They don't attend any board meeting[s] and they don't know [how the company operates].*" (Interviewee 3)

Another interviewee highlighted that we cannot generalize the positive role/value of independent directors on sustainability performance and reporting. He stated that the value of independent directors depends on the character and values of the director:

> *" ... but independence also comes from the character and values of the director. For instance, in practice are they committed to serving the shareholders and other stakeholders with integrity, concern and due diligence? And do they have sufficient confidence and recognition to stand up to the board for a different point of view?"* (Interviewee 4)

These observations from the interviews provide sufficient explanation for the results of the study. Although the role of independent directors is perceived as positive due to their focus on ethics, environment, and sustainability, the negative association between independent directors and sustainability reporting can be explained by the lack of independence in the case of family-owned companies and a lack of integrity, concern, and due diligence and confidence to stand up to the board for a different point of view.

We found that diversity on aboard enhances the environmental aspect of sustainability, but this contradicts findings of Hussain, Rigoni and Orij [58]. We found that diversity has no significant impact on social performance. Thus, having women on a board is related to environmental performance. Our findings support that women on a board are more concerned with the environment than their male counterparts. The relationship between the proportion of women on a board and overall sustainability disclosure was weak. This is because, in Pakistan, a limited number of companies have women on their boards. They mostly do not participate in governance matters and act as sleeping partners or nominees. This is explained by one of the interviewees:

> *"The role of a [female] director in the decision-making process varies from country to country. In Pakistan, the participation of [female] directors on boards is rare ... Pakistan has [...] gender discrimination. The male directors are involved in the decision-making process, [whereas female directors play] a minor role. So the impact of [female] director[s] in sustainability reporting is very limited."*

Differences of opinion exist among directors about the role of female directors in general and how they relate to sustainability performance and reporting in particular. For some of them, female directors play a role similar to that of male directors, whereas others believe that female directors play a unique role and bring diversity perspective:

> *" ... from a psychological perspective, [female directors] add a different perspective to the picture. Also, the presence of female members on the board has long been linked with greater commitment to corporate social responsibility ... Additionally, having women in a director's chair sometimes also means the firm is more likely to achieve gender parity in promotion, workers' welfare, etc. Women also tend to [empathize] more with the community, and can show greater commitment [toward] community service, such as [having the]firm donat[e] to children's hospitals, widows' welfare funds, etc."* (Interviewee 4)

> *" ... yes there is positive relationship between [female] directors and sustainability disclosures as there [are]difference[s between male and female members in] habits, attitude, skills, vision, personal values, approach, and more importantly how they respond to [certain]situations [...]female representation on the board brings unique and better ideas, insights, information, and fresh perspectives [that]will improve decision-making [on]the BOD. [...] Women also bring diversity, high qualification[s], and better relations with other organizations and different stakeholders within and outside the organization [,] which will result in better and improved sustainability disclosures."* (Interviewee 5)

> *"The role of [female] directors is [the] same as [that of] male directors. [Male directors] can [make] decisions about [a]company's progress and [... do]not [show]their interest in a specific field[. ...] [A] board [that has female] directors [makes]the same decision[s] as [one that does not] contain a [female] director. Somehow we can say women [...] are interested in social and environmental sustainability [,] but in reality in Pakistan women [... do their jobs just] like male directors [do]"* (Interviewee 3)

Interviewees also directed our attention toward the fact that the commitment toward sustainability and greater disclosure of sustainability are two different things.

> *" ... this is especially true in non-family businesses, as in family businesses [...][T]heir views may tend to be similar to the family orientation [toward]CSR."*

The presence of a CSR committee indicates an attempt to empower stakeholder management. These previous results provide weak support for the relationship between the presence of CSR committee and sustainability reporting. Our results, which are consistent with [58], indicate that the presence of a CSR committee is positively and significantly related to sustainability dimensions (H4a: economic H4b: environment: H4c: social). These results contradict Michelon and Parbonetti [52].

> *"I think the major social responsibility or sustainable development efforts definitely require a push from the board in the right direction. [...] In the long run, as a manager, you have to have these targets [on] your given list [...] of deliverables to achieve. Given how competitive today's environment is, managers cannot spend [a great deal of]time and [...] resources on, for example, ethical investing, caring about workers' rights, green energy[,] etc. if they are [never]held responsible for [them]. [...] In practice, [...] board committees [...]set sustainability targets that are then practically followed."*

5. Conclusions

This study investigates the impact of CG elements (board size, board independence, women on board, CSR committee) on sustainability reporting dimensions (economic, social, and environmental) in the top 100 companies listed on the Pakistan Stock Exchange. The empirical findings showed that board size is positively and significantly correlated with all three dimensions of sustainability reporting (H1a: economic, H1b: environment, and H1c: social). These findings are consistent with Shamil and Khrishnan [25] and Majeed, Aziz and Saleem [28], as they also found a positive relationship between board size and sustainability reporting in Srilankan and Pakistani companies, respectively. However, our results contradict with Hussain, Rigoni and Orij [58], who found no relevance between board size and sustainability dimension (economic, environment, and social) following GRI framework. The second hypothesis, that the percentage of independent directors tends to have a high degree of corporate sustainability reporting is rejected in all dimensions of sustainability (H2a: economic, H2b: environment, and H2c: social). The results are consistent with Majeed, Aziz and Saleem [28] and Michelon and Parbonetti [52], who found no relationship between independent directors and sustainability reporting. In addition, our interviews with different board members provided some interesting insight. Although all interviewees perceive a positive relationship between independent directors and better governance and sustainability, the empirical results show otherwise. The empirical results can be explained by the unique context of Pakistan, which is dominated by family-owned and -controlled companies. Family as an institution dominates in other affairs of Pakistani life as well. As a result of the dominance of family as an institution and its underlying role, the power of independent directors is limited. Independent directors, under familial influence, lack the confidence to stand up for a different point of view to the rest of the board.

Board diversity in terms of gender had a limited impact on sustainability disclosures in our study. In Pakistan, a very limited number of companies have women on the board. Additionally, female participation in decision-making is limited. Although women are more inclined toward sustainability, their power to influence board decisions is low and is dictated by the orientation of male directors toward sustainability matters. A CSR committee, which is recommended in CSR voluntary guidelines, is found to have good impact on all sustainability dimensions, as members of that committee have an exclusive focus on targets and deliverables.

Overall, our results indicate that CG enhances sustainability disclosure. This study concludes that a large board size that includes a female director and a CSR committee is better able to check and control management decisions about sustainability issues (economic, environment, and social) and result in better sustainability disclosure. This paper extends the literature on sustainability governance in the context of developing countries. The major contribution of this paper lies in the use of mixed methods. However, the results of the qualitative study cannot be generalized to the whole population, as the number of interviews is relatively small compared to the number of companies included in the quantitative study. As the focus of the qualitative study was to validate significant and insignificant findings and to determine reasons for those relationships, purposive sampling was used, and only those interviewees who could provide us with relevant insights were contacted. Future research shall extend these findings within-depth qualitative studies involving a large number of interviews. These findings have practical implications for both companies and policy-makers. CSR committees, as an important mechanism of sustainability governance, should be encouraged or made mandatory. The representation and participation of women on boards should be enhanced, and all directors (including independent directors) should be trained on sustainability matters.

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Appendix A

Table A1. Sustainability indicators (with keyword) derived from GRI (G4) for coding and content analysis.

Code	Performance Indicators	Key Words
Economic Performance		
ECO1	a. The direct economic value generated and distributed on an accruals basis b. Financial implications and other risks and opportunities for the organization's activities due to climate change c. Estimated values for plans liabilities, and separate funds to pay pension liabilities; the percentage of salary contributed by the employee or employer d. Financial assistance received from government	Revenue, cost, employee wages Retirement plans, pension fund Tax relief, subsidies, investment grants, Tax research and development grants
Market Presence		
ECO2	a. Ratio of standard entry level wages by gender compared to local minimum wage at significant location of operation b. The percentage of senior management at significant locations of operation that are hired from the local community	Local minimum wage rate by gender Senior management, local
Indirect Economic Impacts		
ECO3	a. Development and impacts of significant infrastructure investments and services supported b. Significant indirect economic impacts the organization including the extent of impact	Positive or negative impact of investment, local communities or local economies Economic development in areas of high poverty, economic impact
Procurement Practices		
ECO4	a. Proportion of spending on local supplier at significant locations of operation	procurement budget, local suppliers, spending
Environmental Performance		
Materials		
ENV1	a. Materials used by volume or weight b. Percentage of Materials used that are recycled input materials	Weight, volume, material, renewable, non-renewable, recycled.

Table A1. *Cont.*

Code	Performance Indicators	Key Words
Energy		
ENV2	a. Energy consumption within the organization b. Indirect energy consumption outside the organization c. Energy intensity d. Reduction of energy consumption e. Reductions in the energy requirements of products and services	Joules, watt-hours, electricity consumption, heating consumption, cooling consumption, steam consumption; electricity sold, heating sold, cooling sold, steam sold Intensity ratio reductions in energy consumption, fuel, electricity, heating, cooling, and steam Reduction in energy
Water		
ENV3	a. Total Water withdrawal b. Water sources significantly affected by withdrawal of water c. Percentage and total Volume of water recycled and reused	Surface water Ground water Size of water source Recycled or reused water
Biodiversity		
ENV4	a. Organization sites owned, leased, managed in, or adjacent to, protected areas and areas of high biodiversity value outside protected areas b. Description of significant impacts of activities, products, and services on biodiversity in protected areas and areas of high biodiversity value outside protected areas	Geographical location, biodiversity, protected areas, habitat, conservation, species.
Emissions		
ENV5	a. Direct greenhouse gas emissions b. Energy indirect greenhouse gas emissions by weight c. Reduction of greenhouse gas GHG emission d. Emissions of ozone-depleting substances e. NOx, SOx, and other significant air emissions	GHG emissions, Reduction, Reduce, Emissions, air, ozone.
Effluents and Waste		
ENV6	a. Total water discharge by quality and destinations b. Total weight of waste by type and disposal method c. Total number and volume of significant spill (leak)	Water discharge waste, reuse, recycling composting, recovery, energy recovery, spill
Products and Services		
ENV7	a. Extent of impact mitigation of environmental impacts of products and services b. Percentage of products sold and their packaging materials that are reclaimed by category	impact mitigation Percentage of reclaimed product
Compliance		
ENV8	a. Monetary value of significant fines and total number of non-monetary sanctions for noncompliance with environmental laws and regulations	Fines, sanctions, monetary value, non-compliance
Transport		
ENV9	a. Significant environmental impacts of transporting products and other goods and materials used for the organization's operations, and transporting members of the workforce	environmental impact, transporting, transport
Overall		
ENV10	a. Total environmental protection expenditures and investment by type	environmental protection expenditures
Supplier Environmental Assessment		
ENV11	a. Percentage of new suppliers that were screened using environment criteria b. Number of supplier subject to environment impact and assessment as potential negative environmental impact	New suppliers, environment criteria, screening, screened

Table A1. *Cont.*

Code		Performance Indicators	Key Words
Environment Grievance Mechanism			
ENV12	a.	Number of grievance about environment impact	Complaints, grievance,
Social Performance			
Employment			
SOC1	b.	Total number and rates of new employee hire and employee turnover by age group gender, or region	Total workforce by employment type, employment contract, or region
Labor/Management Relation			
SOC2	a.	Minimum notice period(s) about significant operational changes, including whether it is specified in collective agreements;percentage of employees covered by collective bargaining agreements	Notice period, collective bargaining, agreements
Occupational Health and Safety			
SOC3	a. b. c. d.	Percentage of total workforce represented in formal joint management-worker health and safety committees that help monitor or advice on occupational health and safety programs Total injury and rate of injury, occupational diseases, lost days or absenteeism and total number of work-fatalities, by region and by gender Workers with high incidence or diseases related to their occupation Health and safety topics covered in formal agreements with trade unions	Health and safety committee Injury, injuries, health and safety employee training wo rk-fatalities
Employees training and education			
SOC4	a. b. c.	Average hours of training per year per employee Training programs for skills management or lifelong learning that support the continued employability of employees and assist them in managing career endings Percentage of employees receiving regular performance or career development reviews	Types of program on upgrade skills Skill management Career development Lifelong learning
Diversity and Equal opportunity			
SOC5	a.	Composition of governance bodies and breakdown of employees per category according to gender, age group, minority group membership, or other indicators of diversity	Percentage of employee Gender, minority groups, diversity, equal opportunity
Customer health and safety			
SOC6	a. b.	Percentage of significant product and service categories for which health and safety impacts are assessed for improvement Total number of incidents of non-compliance with regulations or voluntary codes concerning health and safety impacts of products or services during their life cycle	impact of product on health and safety fines, penalties, warnings related to health and safety
Product and Service labeling			
SOC7	a. b. c.	Type of product or service information required by procedures or percentage of significant products or services subject to such information requirements Total number of incidents of non-compliance with regulations or voluntary codes concerning product or service information or labeling Practice relating to surveys measuring customer satisfaction	Components, safe use and dispose of product and environmental impact of product Fines or penalty and warnings in case of non-compliance of product labeling Surveys, customer satisfaction
Marketing communication			
SOC8	a.	Sale of banned or disputed products	Banned, disputed, products

Table A1. *Cont.*

Code		Performance Indicators	Key Words
Customer privacy			
SOC9	a.	Total number of substantiated complaints regarding breaches of customer privacy or loss of customer data	Complaints, breaches, customer privacy
Investment and procurement practices			
SOC10	a. b.	Percentage or total numbers of significant investment agreements that include human rights clauses or that have undergone human rights screening Total hours of employee training on policies or procedures about aspects of human rights that are relevant to operations or percentage of employees trained	investment agreements, human rights, training about human rights
Non-discrimination			
SOC11	a.	Total number of incidents of discrimination or actions taken and corrective action taken	Incidents, discrimination, corrective action
Child Labor			
SOC12	a.	Operations identified as having significant risk for incidents of child labor Measures taken to contribute to the elimination of child labor	Child labor
Forced and compulsory labor			
SOC13	a.	Operations identified as having significant risk for incidents of forced or compulsory labor, measures to contribute to the elimination of forced or compulsory labor	Risks, forced labor, compulsory labor
Local Community			
SOC14	a. b.	Percentage of operations with implemented local community engagement, impact assessments, and development programs Operations with significant actual and potential negative impacts on local communities	Social impact, environmental impact assessments, local community development programs
Anti-Corruptions			
SO15	a. b. c.	Percentage or total number of operations assessed for risks related to corruption Communications and training on anti-corruption policies or procedures Confirmed incidents of corruptions and actions taken	Risks, corruption employees training, anti-corruption policies Actions taken in response to incidents of corruption
Public policy			
SO16	a.	Total value of political contribution by country and recipient/beneficiary	Monetary value of financial or in-kind contributions to political parties, politicians
Anti-competitive behavior			
SOC17	a.	Total number of legal actions for anti-competitive behaviors, anti-trust, or monopoly practices and their outcomes	Legal actions, anti-competitive, monopoly practices

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