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Article

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RESEARCH

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The effects of corporate governance on environmental sustainability reporting: empirical evidence from South Asian countries

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Abstract

Comparatively less research has examined the effect of corporate governance (CG) elements on environmental sustainability reporting performance (ESRP) in South Asian (SA) countries. Further, no study in literature documents a cross-country examination of CG and ESRP in this region. The study takes three SA countries (Bangladesh, India, and Pakistan) and 88 listed organizations' sustainability reports during the years 2009–2016 from the Global Reporting Initiative (GRI) database. The study considers a variety of mixed theoretical frameworks—i.e., agency, resource dependency, stakeholder, legitimacy and political cost theories—to indicate which ownership (foreign, institutional, director and family) and board characteristics (independence, size, diversity and committee) affect ESRP practices in the world's most environmentally vulnerable region. Our empirical results indicate ESRP has a positive association with foreign and institutional ownership, board independence, and board size. Moreover, we find director share ownership significantly relates with ESRP. In contrast, our results also reveal no association between ESRP and family ownership, female directorship, and CSR and environmental committees. We conclude that more family control, a lack of female participation, and the unavailability of resourceful management personnel primarily impedes ESRP practices in the SA countries' organizations. These findings have both theoretical and practical implications for academia, policy-makers, and corporate managers in this region.

Keywords: Environmental sustainability reporting, Corporate governance, South Asia, Bangladesh, India, Pakistan, Disclosure, GRI

Introduction

Broad research has been conducted in the environmental sustainability reporting field due to the continuing magnitude of environmental problems and an emphasis on the triple bottom line approach to business management (Elkington 1998; Baral and Pokharel 2017; Albertini 2013; Perrault and Clark 2016; Delgado-Márquez et al. 2016; Cheng et al. 2014). To date, the associations between environmental sustainability and corporate governance have been empirically analyzed as to developed countries such as Australia, the United Kingdom, Canada, the United States, and other European countries (de Villiers et al. 2011; Ortiz-de-Mandojana et al. 2016; Perrault and Clark 2016; Delgado-Márquez et al. 2016). However, developing countries linger far behind

this research, and especially in the South Asian region. South Asia (SA) consists of eight countries—Afghanistan, Bangladesh, India, the Maldives, Nepal, Pakistan, Bhutan, and Sri Lanka—with a population of 1.75 billion, equivalent to 24.89% of the world's population (World Bank 2017). SA is the fastest-growing region worldwide, with economic growth forecast at 7.3% in 2017 (World Bank 2017). Among SA countries, Bangladesh, the Maldives, and Nepal are mostly affected by global warming as sea levels and temperatures rise (Nurunnabi 2016). A 2017 pollution index portrayed the deepest concerns of SA countries' environmental situation, as six major cities in six different countries are ranked in the top ten (NUMBEO 2017).

Environmental sustainability reporting is an important means of accelerating transparency and informing stakeholders about organizations' short- and long-term strategies and policies regarding the natural environment (Comyns 2016; Perrault and Clark 2016; Chang et al. 2017; Oh et al. 2011). It is also evident that environmental issues have become an important parameter for firms to gain a competitive business advantage and reputation (Lu et al. 2015; de Villiers et al. 2011). Further, de Villiers et al. (2011) identified two reasons for increased environmental sustainability performance in the last decade. First, firms with environmental sustainability are more likely to gain better economic performance. Second, environmental sustainability reporting enhances organizations' internal and external legitimacy by implementing recognized standards, such as Global Reporting Initiative (GRI) and the ISO 26000. Moreover, corporate sustainability reporting has recently gained momentum with academics, managers, and government policymakers in three core values—economic, environmental, and societal—similar to the triple bottom line concept (Elkington 1998). Prior researchers have argued that disclosure practices for social and environmental information enhance not only organizations' reputations and management's decision-making capacity regarding environmental policies and strategies, but also their visibility to diverse stakeholders regarding pollution, energy conversion, human rights, and community development issues (Perrault and Clark 2016; de Villiers et al. 2011; Comyns 2016). Moreover, Dahlsrud (2008) noted that the CSR concept and definition has been used 37 ways to explain economic, social, and environmental dimensions. Alternatively, Moon (2002) argued that CSR's meaning, explanation, and concept are always debatable. Therefore, our study focuses on environmental sustainability reporting performance (ESRP).

Corporate governance has ultimately become a major issue in the corporate organization field for researchers, journalists, and managerial and public policy-makers since the 1970s (Aras and Crowther 2008). The corporate governance field addresses a variety of subjects with environmental and financial performance. Now, corporate financial and non-financial irregularities and failed environmental performance have led to the introduction of new rules and standards for corporate accountability and transparency, such as environmental committees and reporting, and an environmental expert's inclusion in a company's board (Amran et al. 2014; de Villiers et al. 2011). Therefore, a corporate governance structure play active role to change ownership, and board structure has refocused the scene to add social and ecological issues to the corporate management plan. The current business world is vulnerable in terms of climate issues, such as global warming; thus, strong and creative corporate governance structures and applications are crucial to solve the prevailing environmental challenges. Additionally, the great administration is clearly imperative in each circle of the general

public, whether it be corporate or political environments or general society (Aras and Crowther 2008). A strong board engages with more CSR activities because of its desire to mitigate external as well as internal pressures (Khan et al. 2013; Chang et al. 2017; Oh et al. 2011). Environmental reporting is a bridge between management and society to reduce the pressure from environmental activist groups and the government. Moreover, environmental information disclosures reduce the information asymmetry between stakeholders and organization.

Corporate governance elements have a comparatively weaker presence in SA companies because: 1) Most of these companies are controlled by family members or majority shareholders (Masud et al. 2018; Majeed et al. 2015; Farooque et al. 2007; Mukherjee-Reed 2002; Malik and Kanwal 2016). 2) These countries lack effective regulation and have high corruption, an absence of transparency, and a heavy dependence on international grants and loans (Mahmood et al. 2018; Masud et al. 2017; Shirodkar et al. 2016). 3) There are little external pressures from non-governmental organizations (NGOs), environmental activist groups, or the international community (Lone et al. 2016; Shamil et al. 2014; Ganapathy and Kabra 2017; Hoque et al. 2016; Subramaniam et al. 2017; Sharif and Rashid 2014). Additionally, the ESRP in SA firms is also negligible, and few empirical researches exist on the subject (Ali et al. 2017; Dienes et al. 2016; Shirodkar et al. 2016; Khan et al. 2013). Moreover, recent studies have discovered that SA companies' CSR and ESR performance has rapidly improved (Mahmood et al. 2018; Lone et al. 2016; Shamil et al. 2014; Ganapathy and Kabra 2017; Masud et al. 2017, 2018; Yadava and Sinha 2016; Malik and Kanwal 2016). Recent SA governments' initiatives and modifications of company laws and corporate governance regulations, as well as national policies and strategies on climate change and global warming issues, are consistent with the previous research findings (Masud et al. 2018; KPMG 2015, 2016; Law Ministry 2017; SEC 2017; Bose et al. 2017). Major changes in CG structures lie in board characteristics such as board independence, female participation, and CSR committees as they have gained the highest momentum (see Table 1). These elements of CG are very influential to determine the firm level and the country level decision on environmental and social performance (Desender and Epure 2015; Ioannou and Serafeim 2012). Different institutional factors along with organizational factors motivate management incorporating stakeholders and shareholders driven CG strategy (Desender and Epure 2015; Ioannou and Serafeim 2012; El Ghouli et al. 2017).

Despite a scarce empirical evidence on the effect of CG on ESRP, a substantial amount of literature addresses the issue in the developing countries' perspectives (Mahmood et al. 2018; Chang et al. 2017; Khan et al. 2013). Environmental sustainability with a conceptual ESRP framework is a comparatively new practice and dimension

Table 1 Comparative CG and CSR Characteristics of SA Countries

CG Characteristic	Bangladesh	India	Pakistan
Ownership Structure	Mixed (majority share held by sponsor group)	Mixed (majority share held by parent company)	Mixed (majority share held by associate company)
Board Size	5 < 20	3 < 15	> 7
Independent Director	1 / 5	1 / 3	> 2
Female Board Director	No provision	> 1	> 1
CSR Committee	No provision	Mandatory	Voluntary

Source: Author's compilation from the various sources of CG rules

in south Asian organizations. Chang et al. (2017) found only 6 of 32 studies on the linkage between CSR and board characteristics in Asian countries from 1990 to 2014. Among these six studies, only one (Khan et al. 2013) used SA countries as its context. The most recent CSR determinants literature review of Ali et al. (2017) documented only 7 studies of Bangladesh and one study from India. Moreover, Dienes et al. 2016 studies a longitudinal literatures review of CSR drivers and mentioned only two studies from Sri Lanka, one from Bangladesh and Pakistan respectively. This exemplifies the literature gap regarding SA countries in the study of CG and ESRP. Thus far, research of CG and its effect on ESRP have provided concrete ideas for a developed economy, but the question is whether SA companies' CG structures have any effect on ESRP. In summary, no study to the best of our knowledge documents corporate governance's effect on ESRP in south Asian countries. Thus, our study aims to: first, investigate how ownership structure drives ESRP in SA corporations; and second, determine what board characteristics influence SA companies' management of ESRP practices.

Theory, literature review, and hypothesis development

Theoretical discussion

Many theories have defined and explained the relationship between CG and ESRP. Following prior research of Khan et al. 2013; Oh et al. 2011; de Villiers et al. 2011; Comyns 2016; Ntim et al. 2013; Gamerschlag et al. 2011 the study deployed mixed theoretical approach.

Agency theory

Agency theory explains the relationship between the owners (shareholders) and management, in which owners appoint management to serve best on their behalf (Jensen and Meckling 1976; Harjoto and Jo 2011; Hillman and Dalziel 2003). However, a conflict exists regarding the goals of the owner and agent due to managers' inclination toward controlling business policy and strategy to enhance their short-term interests, rather than to make long-term decisions. Further, de Villiers et al. (2011) define agency theory in terms of monitoring and incentives, a board is responsible for monitoring the top management's environmental policy, strategy, investments, and reporting. Thus, the ESRP significantly relates to the firm's long-term decisions and investments in environmental initiatives as enacted by top management. However, this management may be reluctant to incur expenses, such as R&D expenditures, unless these ensure an immediate financial benefit; management more commonly focuses on short-term investments that will enhance both financial and nonfinancial opportunities (Chan et al. 2014; Hillman and Dalziel 2003). Moreover, ESRP is considered as an opportunistic, transparent and credible mechanism to reduce information asymmetry between agents and owners. Existing agency conflicts regarding environmental decision can be mitigated by ESRP practices as well as utilizing stakeholder's advocacy by the management (Cespa and Cestone 2007). Therefore, managers' incentive to engage in ESRP would be larger when corporate governance is stronger.

Prior literature also indicates that owners with significant shares of a firm are more likely to spend their time on managerial performance evaluations (Desender and Epure 2015; Ioannou and Serafeim 2012; Oh et al. 2011). Alternatively, a board's outside directors represent shareholders as well as varied stakeholders by closely monitoring the firm's

environmental policy, regulations, and performance (de Villiers et al. 2011; Oh et al. 2011). Thus, the strong presence of a board of directors can reduce the agency problem by the monitoring, supervising, and controlling of management's short- and long-term interests and goals regarding ESRP (Ntim et al. 2013; Chang et al. 2017; Hillman and Dalziel 2003). Therefore, ESRP is the process of social and organizational engagement that differ across the country and organizational management uses it communicating with any circumstances mitigating agency conflicts as well as cost.

Resource dependency theory

A board must consider many policies and regulations to make decisions regarding a firm's short- and long-term environmental strategies and its daily operations. As a result, the board should have more experienced directors to provide advice and suggestions, exchange information with outsiders, counsel insiders, and access to outside resources for organizational success (Hillman et al. 2009; Hillman and Dalziel 2003; de Villiers et al. 2011; Oh et al. 2011). Experienced directors in a board are likely to act as business and technical experts and specialists. Pfeffer and Salancik (1978) in the resource dependence theory explain the influence of outside resources of the firms decisions making. Moreover, Frooman 1999 and Hillman et al. 2009 indicates influential stakeholders have control over outside resources and could exercise their influence over management decisions. Further, Ntim et al. (2013) suggest that a company with risk-related disclosures can gain different competitive advantages because of their potential resources, and prior literature proves that resource-based directors possess this quality (Hillman et al. 2009). A resourceful board with expert directors creates strong relationships with various stakeholders, and understands their demands, interests, and concerns. Therefore, engaging, monitoring, controlling and, accordingly, the success of ESRP of firms depends on the directors' experience and diverse qualities and backgrounds (Hillman et al. 2009). Moreover, supporting and managing ESRP is costly relative to its many implicit and explicit factors, such as political, legal, financial, tax, and regulatory factors, but this may ensure many benefits that enhance management's expertise and the quality of their decisions and decrease capital costs (Cheng et al. 2014; Dhaliwal et al. 2014; El Ghoul et al. 2011). Therefore, ESRP could be viewed as efforts to reduce the risks associated with critical resource acquisition-in this case is to attract talented board.

Stakeholder theory

Stakeholder theory explains the relationship between management and other stakeholders, including creditors, employees, suppliers, auditors, regulators, the media, NGOs, investors, the government, customers, activist groups, national and international donor agencies, and shareholders (Freeman 1984; Freeman and Reed 1983). As different stakeholders pressure firms for better environmental performance, investment, policies, and strategies, ESRP can bridge stakeholders and management (Masud et al. 2017; Comyns 2016). Organizations' financial and nonfinancial performances assure sound and faithful relationships between stakeholders and management. Further, ESRP reporting has been used as a significant medium for organizations reporting an ecological responsibility to society and various stakeholders in both general and specific formats (Comyns 2016). Baral and Pokharel (2017) and Perrault and Clark (2016) suggest that social and environmental disclosure increases

corporate transparency, reputation, and trust to the stakeholders. Alternatively, national and international environmental activist groups encourage firms to invest in the pollution technology, environmental technology transfer, and environmental diversity fields; in environmental management systems; and in the proper utilization of natural resources (Hoque et al. 2016; Albertini 2013). A strong board mitigates these pressures by ensuring ESRP in their communications with stakeholders through annual or integrated reports, standalone sustainability and CSR reports, websites, and brochures. As suggested by GRI (2016) and KPMG (2015, 2016), CSR and ES reporting is rapidly increasing, and researchers (Dissanayake et al. 2016; Comyns 2016) note this occurs because of different stakeholder group pressures. Therefore, ESRP practices reduce information gap regarding environmental policy among the stakeholders.

Legitimacy theory

Legitimacy theory explains that the organization and society closely work for each other, and this relationship is based on the notation of a “social contract” (Deegan 2002; Nurunnabi 2016; Gray et al. 1996). According to Suchman (1995), on the one hand, two types of legitimacy exist: strategic and institutional. Strategic legitimacy focuses on the organization’s motives and desires. Neu et al. (1998) argue that legitimacy is a way of communicating and representing an organization’s image. Moreover, Clarkson et al. (2008) suggest that legitimacy is a combination of reactive and proactive strategies. On the other hand, Comyns (2016) defines legitimacy as the degree to which stakeholders claim immediate and urgent action. Generally, an organization operating in society receives direct and indirect pressures from various stakeholders toward its diversified social and economic functions. Consequently, management engages with different socially beneficial programs, or at a minimum, attempts to avoid behaviors detrimental to society and its expectations (Khan et al. 2013). Organizations use ESRP as a tool to communicate with society and legitimize its environmental performance to diverse stakeholders (Comyns 2016; Lu et al. 2015). As legitimacy is threatened when companies breach their social contracts (e.g., environmental protections), environmental reporting can be used to mitigate these pressures (Comyns 2016). Management believes that legitimacy not only increases opportunities to attract economic resources and reduce threats from external pressures, but also to ensure social and political support.

Political cost theory

The political cost theory suggests that organizations operating in a political environment must consider different types of political costs in their decision-making (Gamerschlag et al. 2011; Han and Wang 1998; Watts and Zimmermann 1978; Milne 2002; Roe 2004). According to the political cost theory, socio-political factors and different interest groups push management into making decisions on behalf of their benefits (Watts and Zimmermann 1978; Gamerschlag et al. 2011; Shirodkar et al. 2016). In a weak economy, the government will attempt to control management, and its representatives will put pressure on corporations’ boards of directors. The high political costs—such as taxes, regulations, subsidies, antitrust measures, tariffs, duties, and charges—will compel management to provide more information regarding environmental expenditures, investments, policies, and strategies to minimize political costs (Watts and Zimmermann 1978; Han and Wang 1998; Milne 2002). Further, Gamerschlag et al. (2011) studied listed companies in Germany to argue

that management can mitigate anticipated political costs by engaging in more natural and societal environmental activities and disclosing more social and environmental information. The disclosing of ESRP information is one of many options to reduce political costs, as it serves many stakeholders and helps firms raise more capital in anticipation of negative events (Milne 2002; Roe 2004). In addition, Shirodkar et al.'s (2016) study of CSR in Indian multinational companies (MNCs) revealed that MNCs engage with more political CSR to save their investments from government regulations and restrictions. Masud and Hossain (2012) also report that Bangladeshi banking companies increasingly engage in CSR to receive tax rebates. The level of political cost highly depends on the firm's size and visibility (Watts and Zimmermann 1978); SA countries also have significant political costs due to high corruption that results from poor corporate governance. Shirodkar et al. (2016) discovered a significant relationship between political CSR and managerial roles, and argued that MNCs increasingly engage in CSR activities to mitigate political costs, consistent with Gamerschlag et al. (2011).

Prior research and hypothesis development

Foreign ownership

Agency theory suggests that increased ESRP practices reduce the agency problem between managers and foreign shareholders, as they hold a high proportion of shares and possess different values and knowledge (Jensen and Meckling 1976; Harjoto and Jo 2011; Khan et al. 2013; Oh et al. 2011). The resource dependency theory also posits that foreign shareholders with diversified experience from different cultures to play pivotal roles in nominating board representatives, and thus, require more information disclosure (Khan et al. 2013; Oh et al. 2011). As an influential group of diverse shareholder groups, foreign investors also act as company watchdogs and maintain relationships with national and international environmental activist groups. Moreover, home (or foreign) countries' legal and ethical regulations also influence their legitimization with foreign (or home) countries' social values and expectations (Faller and Zu Knyphausen-Aufseß 2016). Additionally, foreign investors concerned with environmental issues will influence domestic companies' management to comply with environmental regulations and disclose more ESRP information to minimize political costs (Gamerschlag et al. 2011; Delgado-Márquez et al. 2016).

Prior researchers have also discovered a positive, significant relationship between foreign ownership and disclosure (Jeon et al. 2011; Haniffa and Cooke 2005; Oh et al. 2011; Khan et al. 2013). Further, Khan et al. (2013) and Khan (2010) discovered a positive relationship between foreign ownership and the CSR disclosure of listed companies in Bangladesh, and concluded that foreign owners are more proactive in their CSR disclosure and the study is consistent to Ganapathy and Kabra 2017 (India). Prior literature indicates that foreign investors can force domestic companies to establish and maintain transparent, strong corporate governance codes of conducts, and push them to disclose ESRP information (Oh et al. 2011; Khan et al. 2013; Katmon et al. 2017; Sharif and Rashid 2014). Moreover, prior literature also documents that foreign investors compel management to invest in socially responsible projects and disclose all related environmental information to avoid the risk of losing—or to attain—profit maximization (Oh et al. 2011; Haniffa and Cooke 2005; Harjoto and Jo 2011). Based on the above discussion, we anticipate foreign ownership's significant relationship with ESRP in SA countries. Therefore, we hypothesize:

H1: Foreign ownership has a positive relationship with ESRP.

Institutional ownership

Institutional shareholders are considered powerful stakeholders because they generally hold large shares, and thus, large voting rights. Agency theory suggests that an institutional owner can closely monitor management and encourage them to disclose more information, including environmental information (Ntim et al. 2013). An institutional owner's increased power characteristics influence the board's decision-making from an environmental perspective, as any disclaimer against such a perspective may destroy firms' investment opportunities and increase operating expenses, such as Exxon's 1989 oil spill and BP's 2010 spill in the Gulf of Mexico (de Villiers et al. 2011). Institutional investors can control the board and appoint experienced, resource-based directors to be more attentive to the organization's strategic decisions regarding its environmental policies and strategies. Shareholders pressure institutional owners to increase the value of their shares; consequently, they are keenly interested to participate in management and reduce political costs by issuing more and comprehensive CSR and ESRP information. We considered mutual fund, financial companies fund, venture capital and central government investment as institutional ownership.

Many researchers suggest that institutional owners significantly influence organizational decisions with social and environmental impacts, and find a significant, positive relationship among institutional ownership, voluntary CSR, and corporate risk disclosures (Oh et al. 2011; Harjoto and Jo 2011). Further, Oh et al. (2011) found a positive, significant relationship between institutional ownership and CSR disclosure in Korean companies. Institutional shareholders consider ESRP disclosures as they increase long-term reputation and corporate image, protect against loss and damage, and reduce potential risk and mitigate pressures from external activist groups (Faller and Zu Knyphausen-Aufseß 2016; Oh et al. 2011). They consider risk and return trade-offs in their investments, and disclose more information on the environment because they believe low disclosure may increase investment risks. Additionally, Ganapathy and Kabra 2017 document no relationship between institutional ownership and environmental reporting of Indian Companies, whereas Majeed et al. 2015 finds positive relationship of Pakistani Companies. Therefore, we anticipate institutional ownership's significant relationship with ESRP due to revised corporate governance rules and environmental reporting initiatives in SA countries. Hence, our second hypothesis is:

H2: Institutional ownership has a positive relationship with ESRP.

Director ownership

The agency problem can be reduced by directors' shareholdings, as they consider themselves the company's owners and try to maximize the firm's long-term value. Prior literature posits that shareholding directors tend to make CSR-friendly decisions to demonstrate their contribution to societal and environmental issues, and to gain different stakeholders' attentions (Khan et al. 2013). Further, they delegate power to resourceful personnel (Oh et al. 2011). Directors provide information on social and environmental performance to attempt to legitimize their policies and strategies with society's norms and

expectations. Moreover, directors in a complex political climate are influenced by institutions, activist groups, and governments. Thus, they are likely to disclose more CSR and environmental information to mitigate political costs (Shirodkar et al. 2016).

In contrast, some prior studies find a negative relationship between director ownership and disclosure practices (Khan et al. 2013). Generally, non-western countries' stakeholders may not be able to influence directors as in western countries, in which case directors are more likely to engage in short-term decisions to increase their own benefits and compensation (Faller and Zu Knyphausen-Aufseß 2016; Oh et al. 2011). A lack of transparency and accountability also make directors more powerful than stakeholders. Previous studies find that directors' larger shareholding encourages them to exercise greater power for their own financial benefits and interests, rather than to maximize shareholder wealth. Oh et al. (2011) found a significant negative relationship between managerial ownership and CSR in Korean companies. This indicates that managers are not interested in providing more disclosure on environmental issues, as this negatively affects their compensation and benefits. Moreover, Khan et al. (2013) found a negative, significant relationship between director ownership and CSR disclosure in Bangladeshi-listed companies. Directors may be reluctant to disclose social and environmental information because it may reduce their stock value (Wang and Coffey 1992). As an insider part of management directors has conflicts with different stakeholders that lead for information asymmetry and ESRP can reduce the gap providing credible environmental information. Based on the above discussion, we anticipate that director ownership in SA countries has a negative relationship with ESRP. Therefore, our hypothesis is

H3: Director ownership has negative relationship with ESRP.

Family ownership

Decisions in a family-owned organization come from its central family members. No dominating group exists on the board, and family members are keenly interested in enhancing financial performance rather than considering the environmental impacts of their decisions (Faller and Zu Knyphausen-Aufseß 2016; Oh et al. 2011; Nekhili et al. 2016). Agency conflicts may decrease as family members focus on the family's long-term reputation and social engagement with different stakeholders, in which they tend to disclose more environmental information (Ding and Wu 2014). Moreover, family members as stakeholders are concerned with long-term financial and non-financial opportunities based on their family ties, long-term orientation, and market visibility (Bingham et al. 2011). Family ownership influences long-term decision making and supports social values and norms in the family's decision to legitimize with social and ethical awareness. Thus, they are motivated to disclose more information to reduce potential political and socio-emotional costs (Ding and Wu 2014).

Generally, a family-dominated management exhibits mixed behavior regarding disclosures, as CSR and environmental expenditures and investments consider long-term motivations. On the one hand, Bingham et al. (2011) discovered a positive relationship between CSR and family ownership, and attributed their findings to the enhancing of the company's image and reputation. Block (2010) and McGuire et al. (2012) also support this result. On the other hand, Shaukat et al. (2016) noted a negative association

between family ownership and social and environmental performance, interpreting the result to determine that family ownership holding more power were only influenced by self-interests rather than pressure from outside stakeholders. Moreover, Atkinson and Galaskiewicz (1988) did not find any relationship between social and environmental disclosures and family ownership and the findings is consistent with Majeed et al. 2015 (Pakistan). Most SA companies are family-owned, and management decisions are controlled by the family's elders. Consequently, these companies lack public accountability and visibility, and tend to be relatively less active in social and environmental activities (Khan et al. 2013) like to believe us that;

H4: Family ownership has negative relationship with ESRP.

Board independence

Independent directors are generally treated as experts to monitor, control, and supervise management, and provide effective suggestions and advice for management's decisions on environmental performance (de Villiers et al. 2011; Chang et al. 2017; Oh et al. 2011). They play a moderating role between management and different stakeholders to solve agency conflicts. As experts and resourceful representatives, other stakeholders have significant expectations and trust because of their personal reputation and engagement (Ntim et al. 2013). The presence of more independent directors on the board reduces the gap of legitimacy between the firm and society as they work for corporate stakeholders (Freeman and Reed 1983; Ntim et al. 2013). Independent directors work on behalf of all stakeholders and for their own reputations, engagement, and acceptance in society, as they attempt to disclose and provide more information about the organization's environmental strategies to reduce costs, both agency and political (Desender and Epure 2015; Ioannou and Serafeim 2012; El Ghouli et al. 2017).

Prior studies suggest that the presence of higher independent directors on the board ensures management's higher effective monitoring, controlling, and disclosing of environmental initiatives. This is because a board dominated by more independent directors reduces the power of top management, such as CEOs, as independent board members' recruitment and benefits do not depend on the CEO (de Villiers et al. 2011). Prior research finds a significant, positive relationship between board independence and social and environmental disclosures (Khan et al. 2013; Sharif and Rashid 2014; de Villiers et al. 2011; Ntim et al. 2013; Chang et al. 2017). The management of companies in SA countries is controlled by different factors, including majority share ownership. Consequently, family-nominated independent directors more often occur in SA companies' management, in which they favor all the board's decisions, rather than argue (Sobhan and Werner 2003). Independent directors tend to be appointed based on personal and family connections, and political and bureaucratic affiliations, rather than skills and experience (Khan et al. 2013; Sobhan and Werner 2003). Further, Khan et al. (2013) find a positive, significant relationship between independent directors and CSR reporting in Bangladeshi-listed companies, the result supported by Mahmood et al. 2018; Sharif and Rashid (2014) Pakistan and Shaukat et al. (2016) India. Based on the above discussion and empirical results, we anticipate a positive, significant relationship between independent directors and ESRP:

H5: Independent directors have a positive relationship with ESRP.

Board size

A strong, effective, and efficient board will enhance an organization's resources, reputation, and performance by decreasing risk and opportunism. Thus, a board with active experts may lead to proactive managerial behavior regarding social and environmental issues, and reduce managerial risk and opportunism by disclosing more information. A large board may help management by ensuring its access to skills, experiences, and resources in specific areas, and by better advising management (Katmon et al. 2017; Khan et al. 2013; Amran et al. 2014). A large board can also reduce agency conflicts (Ntim et al. 2013; de Villiers et al. 2011), as more directors can work for the interests of different stakeholders. Additionally, a larger board offers greater access with diverse stakeholders, and reduces risks and uncertainties by facilitating the better disclosure of financial, social, and environmental information (Chang et al. 2017). Moreover, more members on a board ensures greater diversity and resources (Katmon et al. 2017) to fit with social norms, expectations, and values, thereby enhancing legitimacy (Suchman 1995; Ntim et al. 2013). Finally, a large board is likely to have more experienced members who can easily handle many critical issues, such as pollution, biodiversity, and media exposure; and communicate with various stakeholders, including activist groups and regulators. For example, lobbying with the government for any breach of regulations may mitigate political costs and pressures. Prior literature indicates that board size is positively associated with social and environmental performance and disclosure (de Villiers et al. 2011; Ntim et al. 2013; Kiliç et al. 2015; Lu et al. 2015). A large board can mitigate agency conflicts as well as information asymmetry. The most recent study of Mahmood et al. 2018 found positive and significant relationship between board size and total sustainability disclosure of Pakistan and the finding is also consistent to Ganapathy and Kabra 2017 (India); and Shamil et al. 2014 (Sri Lanka). Prior evidence also documents that more directors on a board may create problems of management relative to communications and coordination in decision-making due to a lack of unanimity and director independence, and lower-quality financial disclosures (Amran et al. 2014; Kiliç et al. 2015). Based on the above discussion and empirical results, we anticipate a positive, significant relationship between board size and ESRP.

H6: Board size has positive relationship with ESRP.

Board diversity

Board diversity refers to a diverse composition of board members, which can affect management's decision-making process and contribute knowledge, skills, and experiences (Hoang et al. 2016; Nekhili et al. 2016; Katmon et al. 2017; Ntim et al. 2013). Variables measuring board diversity can be categorized into two groups: those that are directly observable (e.g., gender, age, and ethnicity) and less visible (e.g., occupation, education, religion, and work experience) (Katmon et al. 2017; Ntim et al. 2013). A diversified board encourages management to make quality decisions; and facilitates a quick problem-solving capacity, strong corporate competitive strategy, innovative social and environmental decisions, and social and environmental disclosures (Chang et al. 2017; Katmon et al. 2017; Ntim et al. 2013). Considering social norms and values, a diversified board displays its

influence on and acceptance in the society that enhances an organization's reputation, and can mitigate political pressure in any situation or political cost.

Prior studies suggest that female directors have a positive association with financial performance (Carter et al. 2003), as well as CSR and social disclosure (Katmon et al. 2017; Ntim et al. 2013). Further, Carter et al. (2003) discovered a positive relationship to argue that board diversity may help management's decision-making, as heterogeneous board members will ask different types of questions. According to Huse and Solberg (2006), female directors on a board have more wisdom and capacity than male directors. Adams and Ferreira (2009) found that female directors' increased participation on a board may increase the board's effectiveness and competitiveness. Gul et al. (2011) assert that female directors not only influence by reducing risk and ethical behavior, but also support the disclosing of voluntary information, which may minimize information asymmetry between female directors and the remaining board members. Female directors can effectively manage the boardroom environment due to softer values and higher morality (Gul et al. 2011; Huse and Solberg 2006).

In contrast, prior research also notes mixed relationship between female directors and social, environmental, and sustainability reporting (Khan 2010; Amran et al. 2014). Khan (2010) finds no relationship between female directors and the CSR reporting of Bangladeshi-listed banks, and argues that female participation is new in the country's executive environment and the finding is consistent to the most recent study of Mahmood et al. 2018 (Pakistan). Additionally, Majeed et al. 2015 (Pakistan) and Shamil et al. 2014 (Sri Lanka) documents negative relationship whereas, Lone et al. 2016 (Pakistan) documents positive relationship. Women in SA countries are less empowered economically and socially than those in western countries, and have very little room to participate in corporate management because of male dominance in economic resources, a lack of education and social awareness, and the inability to make decisions. Based on the above discussion and mixed empirical findings, we anticipate no significant relationship between gender diversity and ESRP in SA countries:

H7: Gender diversity has no relationship with ESRP.

Board committee

The establishing of independent board committees ensures a decentralization of power and responsibility, thereby reducing agency conflicts. Management may establish different types of committees to enhance board efficiency and effectiveness by appointing resourceful members equipped with skills, knowledge, experience, and reputation (Lu et al. 2015; Amran et al. 2014). A board committee is assigned to a specific task and objective that can enhance communication with diverse influential stakeholders (Subramaniam et al. 2017). A particular committee may work with a specific group of people to improve society and increase the organization's reputation and legitimacy. Considering social value and expectations may create legitimate opportunities and reduce the gap between the organization and society (Lu et al. 2015; Amran et al. 2014). Moreover, special committees aiming to regulate and observe the organization's financial and non-financial opportunities and barriers (i.e., carbon tax) can mitigate political costs.

Research has been limited on the relationship between CSR, environmental committees, and environmental reporting performance in developing countries (Amran et al. 2014).

Prior research argues that CSR and environmental committees have a positive relationship with disclosure (Amran et al. 2014). Moreover, Amran et al. (2014) found a positive relationship between CSR committees and the quality of sustainability reporting in Asia-Pacific organizations, the result is also consistent to Mahmood et al. 2018. Additionally, CSR and environmental committees motivate management to inform the public, not only voluntarily, but also for greater visibility and reputation (Amran et al. 2014; Lu et al. 2015).

Alternatively, Lu et al. (2015) report that no relationship exists between the CSR committee and CSR reputation because of decreased stakeholder engagement. Environmental reporting is incredibly scarce in SA organizations because of the weak enforcement of laws; corruption; and a lack of experts, stakeholder pressure, and engagement (Subramaniam et al. 2017; Belal et al. 2015). Based on these mixed results, we test the following hypothesis:

H8: CSR and environmental committees have no relationship with ESRP.

Research methodology

Sample selection

Samples for this study were collected from the GRI database, which is the most widely accepted and used database on sustainability reporting (Hoang et al. 2016; Comyns 2016; Dissanayake et al. 2016). Among the eight SA countries, we found that four countries (Bangladesh, India, Pakistan, and Sri Lanka) have reports available in the GRI database. However, we have excluded Sri Lanka because of ownership information inconsistent with other countries. Moreover, Sri Lankan companies ownership information has given resident and non-resident types that is non similar with other three countries ownership data. The GRI database has different types of reports, such as the GRI G1, G2, G3, G3.1, G4, GRI standard, Citing GRI and non-GRI. Among these, our empirical study only uses the G3, G3.1, and G4 reports from 2009 to 2016, leaving us with 169 organizations and 499 firm-year reports as a starting sample. We included the three types of GRI report because of very limited availability of other types of GRI reports. Additionally, SA countries GRI reporting are getting more formalized since 2012 (Masud et al. 2017; Masud et al. 2018; Yadava and Sinha 2016; Dissanayake et al. 2016). Moreover, GRI G3, G3.1 and G4 guidelines are more precise, generalized and stronger in data presenting than other GRI guidelines (Masud et al. 2018).

Next, we excluded non-listed companies because of non-available information. Moreover, listed companies are more regulated and accountable, and disclose more quality information (Masud et al. 2017). We ultimately gained 326 firm-year observations for the years 2006 to 2016 from 88 listed companies in the three countries. Table 2 illustrates the sample selection criteria and resulting number of firm-years. We used the listed companies' annual reports—found on all sample firms' websites—to collect ownership structures, board characteristics, and financial data. All financial variables are converted to dollar value (USD) for comparison among the three different countries using the World Bank's foreign currency rates. Specifically, we used the annual average exchange rate and year-end rate for the translation of the income statement and balance sheet variables, respectively.

Table 2 Sample description

Table 2 Sample description				
Panel A: Sample size				
Sample Selection Criteria		No. of Firms	Total Observations	
Total listed and non-listed firms		169	499	
Less: Non-listed firms		(72)	(153)	
Total listed firms		97	346	
Less: Non-availability of report		(9)	(20)	
Final Sample		88	326	
Panel B: Yearly sample size by countries				
Sample Year	Bangladesh	India	Pakistan	Total Observations
2009	0	2	1	3
2010	0	7	3	10
2011	1	23	4	28
2012	2	33	7	42
2013	3	44	6	53
2014	4	52	7	63
2015	4	58	6	68
2016	2	52	5	59
Total	16	271	39	326

Model specification

We used an ordinary least squares regression analysis to test the hypotheses. All eight variables of interest were regressed using the Environmental Sustainability Reporting Performance Score (ESRPS), a dependent variable. The other variables were then included in the model as control variables.

$$\begin{aligned}
 ESRPS = & \alpha + \beta_1 FOROWN + \beta_2 INSTOWN + \beta_3 DRTOWN + \beta_4 FAMOWN \\
 & + \beta_5 BDIND + \beta_6 BDSIZE + \beta_7 BDFEM + \beta_8 SUSCOMM + \beta_9 GRI LEV \\
 & + \beta_{10} FSIZE + \beta_{11} MB + \beta_{12} ROA + \beta_{13} LEV + \epsilon
 \end{aligned}$$

Variable measurement - dependent variable

ESRPS: This is measured by how many indicators are reported by each company in the environmental indicator category according to GRI guidelines. G4 has covered 34 environmental indicators whereas, G3 and G3.1 has 30 environmental indicators. This study uses a dichotomous procedure to note either zero or one for each item reported in the environmental information category, following the works of Clarkson et al. (2008) and Lu et al. (2015). Accordingly, the ESRPS is derived by accumulating all reported items. Considering the variable represents a frequency, we transform the raw data by taking the natural log to secure normality. This ESRP-measuring technique is consistent with prior research (Hoang et al. 2016; Lu et al. 2015; Ntim et al. 2013).

Variable measurement - independent variables

Independent variables, or the governance structure variables, comprise two groups: ownership structure and board characteristics. Share ownership variables are measured as follows, consistent with prior research (Ntim et al. 2013; Khan 2010; Khan et al. 2013; Oh et al. 2011; Haniffa and Cooke 2005).

FOROWN: Foreign share ownership is measured by the total percentage of shares held by a company's foreign institutional investors.

INSTOWN: Institutional share ownership is measured by the total percentage of shares held by a company's domestic institutional investors.

DRTOWN: Directors' share ownership is measured by the total percentage of shares held by a company's board of directors.

FAMOWN: Family share ownership is measured by the total percentage of majority shares held by family members or family associate investors.

The second group of independent variables represents board characteristics. The measurement of these variables is consistent with previous studies (de Villiers et al. 2011; Lu et al. 2015; Khan et al. 2013; Amran et al. 2014; Katmon et al. 2017; Ntim et al. 2013).

BDIND: The independent board member is measured by the natural log of the percentage of total board members who are independent (i.e., outside directors).

BDSIZE: Board size is measured by the natural log of the percentage of total board members.

BDFEM: Female board members, measured by the natural log of the percentage of total board members who are female.

SUSCOMM: The sustainable committee is measured by using a dummy variable; if a firm has CSR or an environmental committee, then we coded this as one, and zero otherwise.

Variable measurement - control variables

We control for several variables that prior literature has linked with environmental sustainability reporting performance.

GRI_LEV: The GRI level is measured using a dummy variable. If a firm follows the G4 environmental aspect of reporting, we coded this as 1 and 0 if it follows G3 or G3.1. This provides the best possible reasons why a company follows a particular guideline among several other guidelines. The GRI's G4 environmental guidelines are the robust disclosing guidelines of environmental information linked with the preparation of integrated reporting (Hoang et al. 2016; Dissanayake et al. 2016; Comyns 2016). This also considers the differences in the numbers of environmental indicators between the G3 and G4 guidelines.

FSIZE: Market capitalization determines company size, and is calculated by the natural log of the total dollar value of shares outstanding at the end of the year (Dissanayake et al. 2016). Larger firms are more inclined to disclose environmental information because of high visibility and social reputation (Lu et al. 2015; Comyns, 2016; Khan et al. 2013).

MB: The market to book value ratio is calculated by the natural log of (the market capitalization dollar value divided by the equity dollar value). This is controlled because environmental disclosure performance will improve if management observes future investment opportunities. The market value reflects firms' future returns (de Villiers et al. 2011).

ROA: The return on assets is calculated by dividing the net income by total assets, as noted by Khan et al. (2013) and de Villiers et al. (2011). Further, McKendall et al. (1999) found that profitable firms disclose more environmental information.

LEV: Leverage is calculated by the natural log of (the total liability divided by total assets), as noted by Clarkson et al. (2008), who discovered that higher leverage firms intend to disclose more environmental information.

Empirical results

Table 3 displays the descriptive statistics for the variables used in the analysis. The average environmental disclosure score was 21.40, or sample companies report 21.4 indicators for a total of 36 on average. The mean value of the ESRPS (3.022) is a natural log of 21.4; the standard deviation and median are 0.4593 and 3.1568, respectively. The average share ownership for foreign (FOROWN), institutional (INSTOWN), director (DIROWN), and family (FAMOWN) ownerships are 15.25, 11.41, 0.05 and 44.56%, respectively. The descriptive results indicate that family members hold the maximum share ownership in SA companies. The average board size (BDSIZE), independent board member status (BDIND), and female director (BDFEM) presence scored as 11.26, 5.19, and 1.09, respectively.

Table 4 presents the correlation matrix for the variables used in the study. Environmental sustainability reporting performance (ESRP) score is positively associated with foreign share ownership (FOROWN) ($p = 0.081$), board independence (BDIND) ($p = < 0.001$), and board committee (SUSCOMM) ($p = 0.008$), while the other independent variables indicate no significant associations. The highest correlation coefficient among independent variables is found between board independence (BDIND) and board size (BDSIZE) (correlation coefficient = 0.517). However, the VIF (variance inflation factor) value between any independent variables is less than eight, indicating no multi-collinearity concerns. Further, all the coefficients are well below the critical value of 0.80, ensuring no evidence of multicollinearity (Nurunnabi 2016; Judge et al. 1985).

Table 3 Descriptive statistics

	N	Mean	Std. Dev.	Min	1Q	Median	3Q	Max
Dependent variable: Environmental Sustainability Reporting Performance Score								
<i>ESRPScore</i>	326	3.0222	0.4593	1.6094	2.7726	3.1568	3.4012	3.5553
Independent Variable: Ownership and Board Characteristics								
<i>FOROWN</i>	326	0.1525	0.1270	0	0.0482	0.1351	0.2236	0.4882
<i>INSTOWN</i>	326	0.1141	0.0870	0	0.0470	0.0971	0.1554	0.3611
<i>DRTOWN</i>	326	0.0005	0.0025	0	0	0	0	0.0174
<i>FAMOWN</i>	326	0.4456	0.2499	0	0.2954	0.4965	0.6317	0.8965
<i>BDIND</i>	326	1.7420	0.4452	0	1.6094	1.7918	2.0794	2.3979
<i>BDSIZE</i>	326	2.3893	0.2557	1.7918	2.1972	2.3979	2.5649	2.9957
<i>BDFEM</i>	326	0.6499	0.4065	0	0.6931	0.6931	0.6931	1.6094
<i>SUSCOMM</i>	326	0.7454	0.4363	0	0	1	1	1
Control variables								
<i>GRI_LEVEL</i>	326	0.5828	0.4939	0	0	1	1	1
<i>FSIZE</i>	326	21.3064	1.9287	17.0616	19.7096	21.5911	22.7639	24.9125
<i>M/B</i>	326	0.6171	1.0197	-2.4629	0.0734	0.6359	1.2680	3.1855
<i>ROA</i>	326	0.0828	0.0925	-0.0161	0.0200	0.0557	0.1112	0.5800
<i>LEV</i>	326	0.5209	0.2293	0.0790	0.3430	0.4924	0.7000	0.9385

Note: For firm i and year t

ESRPScore environmental sustainability reporting performance score, *FOROWN* total percentage of share held by foreign institutional investors, *INSTOWN* total percentage of share held by domestic institutional investors, *DRTOWN* total percentage of share held by board of directors, *FAMOWN* total percentage of majority shares held by family members, *BDIND* natural log of percentage of total independent board members, *BDFEM* natural log of percentage of total female board members, *BDSIZE* natural log of percentage of total board members, *SUSCOMM* dummy variable; CSR/ environmental committee = 1; otherwise = 0, *GRI_LEVEL* dummy variable following G4 = 1; otherwise = 0, *FSIZE* natural log of market capitalization, *M/B* natural log of market capitalization divided by equity, *ROA* net income divided by total assets, *LEV* natural log of total liability divided by total assets

Table 4 Correlations between variables

Variable	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
<i>ESRSCORE</i>	(1)	1	0.096 (0.081)	0.042 (0.440)	-0.084 (0.128)	-0.019 (0.727)	0.292 (<.001)	-0.036 (0.513)	0.013 (0.804)	0.145 (0.008)	0.168 (0.002)	0.1333 (0.016)	0.154 (0.005)	0.083 (0.130)
<i>FOROWN</i>	(2)	1	0.028 (0.604)	-0.186 (<.001)	-0.451 (<.001)	0.430 (<.001)	0.224 (<.001)	0.025 (0.659)	0.139 (0.012)	-0.010 (0.860)	-0.010 (0.860)	0.427 (<.001)	0.141 (0.011)	0.077 (0.168)
<i>INSTOWN</i>	(3)	1	1	0.195 (<.001)	-0.257 (<.001)	0.164 (0.003)	0.258 (<.001)	-0.417 (<.001)	-0.082 (0.139)	-0.139 (0.012)	0.216 (<.001)	0.023 (0.680)	0.002 (0.975)	-0.002 (0.975)
<i>DIROWN</i>	(4)	1	1	1	-0.026 (0.635)	-0.143 (0.010)	-0.216 (<.001)	0.050 (0.364)	0.015 (0.790)	0.051 (0.358)	-0.171 (0.002)	0.019 (0.736)	-0.029 (0.598)	-0.124 (0.025)
<i>FAMOWN</i>	(5)	1	1	1	1	-0.085 (0.125)	-0.127 (0.022)	-0.103 (0.063)	-0.028 (0.610)	0.010 (0.856)	-0.111 (0.045)	-0.037 (0.508)	0.033 (0.558)	0.021 (0.712)
<i>BDIND</i>	(6)	1	1	1	1	1	0.362 (<.001)	0.517 (<.001)	0.030 (0.585)	0.028 (0.611)	0.480 (<.001)	0.035 (0.523)	0.135 (0.015)	-0.103 (0.064)
<i>BDFEM</i>	(7)	1	1	1	1	1	1	0.372 (<.001)	-0.049 (0.381)	-0.120 (0.030)	0.305 (<.001)	0.023 (0.684)	0.110 (0.048)	0.104 (0.060)
<i>BDSIDE</i>	(8)	1	1	1	1	1	1	1	0.196 (<.001)	-0.014 (0.806)	0.346 (<.001)	0.026 (0.634)	0.092 (0.099)	-0.140 (0.011)
<i>SUSCOMM</i>	(9)	1	1	1	1	1	1	1	1	-0.280 (<.001)	0.215 (<.001)	0.036 (0.513)	0.086 (0.120)	-0.097 (0.080)
<i>GRL_LEVEL</i>	(10)	1	1	1	1	1	1	1	1	1	-0.127 (0.022)	-0.131 (0.018)	0.075 (0.179)	-0.078 (0.160)
<i>FSIZE</i>	(11)	1	1	1	1	1	1	1	1	1	1	0.480 (<.001)	0.393 (<.001)	-0.197 (<.001)

Table 4 Correlations between variables (Continued)

Variable	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
<i>M/B</i> (12)												1	0.437 (<.001)	-0.165 (0.003)
<i>ROA</i> (13)													1	-0.449 (<.001)
<i>LEV</i> (14)														1

Note: Numbers in parentheses are *p*-values
Refer to Table 3 for definitions of variables

Table 5 presents the hypothesis testing results, which empirically indicate that ESRP is positively and significantly related with FORWON. This implies that greater foreign investor ownership (FORWON) leads to higher disclosure performance (ESRP), consistent with the findings from previous studies of Ganapathy and Kabra 2017 (India); Khan et al. 2013 (Bangladesh), Oh et al. 2011 (Korea) and Haniffa and Cooke 2005 (Malaysia). We also find a significant, positive association between ESRP and institutional ownership (INSTOWN), which implies that institutional shareholding (INSTOWN) encourages management in SA countries to disclose more environmental information. Moreover, our finding is consistent with prior results from Majeed et al. 2015 (Pakistan); Oh et al. (2011), and Harjoto and Jo (2011). The result of testing Hypothesis 3 reveals that ESRP has a negative, significant relationship with director ownership (DIROWN), which indicates that as directors own more shares, they tend to be reluctant to disclose environmental information and the findings is consistent with prior evidence of Khan et al. 2013 (Bangladesh); Oh et al. 2011; Chang et al. 2017; Harjoto and Jo 2011. The final ownership structure variable (FAMOWN) is found to have a negative but insignificant relationship with ESRP. This result implies that directors in SA organizations that are less diversified, family concentrated (with an average shareholding by family of 45%), and more interested in personal benefits (Sobhan and Werner 2003) are less motivated toward ESRP. Moreover, less stakeholder engagement and market visibility enable family owners in SA organizations to enjoy more controlling power on the board, and they are less willing to make

Table 5 Effect of Corporate Governance on the Environmental Reporting Score

Variable	Pred. Sign	Dependent Variable: ENVSCORE		
		Coefficient	t-stat.	
Intercept	?	2.1153	4.36	***
FOROWN	+	0.5395	2.21	**
INSTOWN	+	0.8353	2.58	**
DIROWN	–	–22.6636	–2.08	**
FAMOWN	–	–0.0852	–0.81	
BDIND	+	0.3529	4.10	***
BDFEM	+/–	–0.0105	–0.16	
BDSIZE	+	0.4017	2.96	***
SUSCOMM	+/–	0.0226	0.38	
GRI_LEVEL	+/–	0.1282	2.66	***
FSIZE	+	0.0187	0.96	
M/B	+	0.1028	3.61	***
ROA	+	0.5263	1.78	*
LEV	–	–0.1020	–2.12	**
Σ Year Dummy	?	Not Included		
Σ Country Dummy	?	Included		
Adj. R ²		0.2981		
F-value		10.20	***	
No. of Obs.		326		

Note: Refer to Table 3 for variable definitions

Results for dummy variables are not reported

***, **, and * indicate significance at the 1, 5 and 10% levels, respectively (two-tailed)

social and environmental disclosures (Mukherjee-Reed 2002; Malik and Kanwal 2016). Our findings are consistent with prior results from Mackenzie et al. (2013).

Hypotheses 4 to 8 focus on how board characteristics in SA countries influence ESRP, including board independence (BDIND), size (BDSIZE), diversity (BDFEM), and committees (SUSCOMM). This result indicates that ESRP is positively and significantly associated with (BDIND) board independence, accepting H5. The rationale behind this association is that good environmental disclosure performance increases business reputation and competitive advantage (de Villiers et al. 2011; Lu et al. 2015). Our empirical finding is consistent with the most recent results of Mahmood et al. 2018 and Lone et al. 2016 (Pakistan); Khan et al. 2013 (Bangladesh).

Table 5 also indicates that ESRP is positively and significantly associated with board size (BDSIZE), consistent with prior studies of Mahmood et al. 2018; Lone et al. 2016 and Majeed et al. 2015 (Pakistan); Khan et al. 2013 (Bangladesh); Ganapathy and Kabra 2017 (India) and Shamil et al. 2014 (Sri Lanka). On the one hand, this result implies that a larger board size supports more diversified decisions and increased greater monitoring power, compelling SA corporations to engage in more active ESRP. On the other hand, ESRP displays negative but insignificant relationship with female directorship (BDFEM) as anticipated in Hypothesis 7 and consistent with prior results of Mahmood et al. 2018 (Pakistan); Khan 2010 (Bangladesh); Amran et al. 2014 (Malaysia). Additionally, Majeed et al. 2015 documented negative relationship with women directors and CSR disclosure in Pakistan and argued women are likely sleeping or dormant member. The average number of female directors in a company was less than two (1.09), indicating that females clearly fall behind in corporate engagement and decision-making processes in SA countries. Moreover, our finding is consistent with the observation of Fernandez-Feijoo et al. (2014) and Konrad et al. (2008) that fewer women on management are outnumbered by men and might have a token effect and therefore one or a few women directors may have little or no influence in the corporate governance decision-making process. Our last board characteristic variable, board committee (SUSCOMM), indicates a positive but insignificant relationship with ESRP, consistent with prior results found by Lu et al. (2015). This result indicates that CSR and environmental committees in SA organizations cannot influence management regarding CSR and environmental disclosures. This is also consistent with recent government initiatives in Bangladesh, India, and Pakistan, where governments have strengthened regulations by amending company laws, corporate governance rules, and stock exchange listing procedures, and have provided specific, mandatory provisions for CSR and environmental expenditures, committees, and disclosure (Masud et al. 2017; KPMG 2015, 2016; Law Ministry 2017; SEC 2017; Bose et al. 2017). Moreover, our findings is not consistent with the recent results of Mahmood et al. 2018, where they documented positive and significant relationship to the CSR committee and sustainability disclosure of Pakistani listed organizations.

These control variables indicate that the GRI's environmental aspect (GRI_LEVEL), market to book ratio (MB), and financial performance (ROA) are positively associated with ESRP. This indicated that the GRI G4 better supports environmental disclosure quality than the G3 and G3.1. On the one hand, these results and discussions are consistent with results by Dissanayake et al. (2016), Khan et al. (2013), de Villiers et al. (2011), McKendall et al. (1999), and Haniffa and Cooke (2005). On the other hand,

leverage (LEV) is negatively and significantly associated with ESRP, which is consistent with findings by Khan et al. (2013), Ntim et al. (2013), and Haniffa and Cooke (2005). Moreover, we find company size (FSIZE) has no significant relationship with ESRP and our result is consistent with Dissanayake et al. 2016.

Discussions

Corporate governance and its effects on environmental strategic decisions, including the disclosing of environmental information to stakeholders, has been a negligible topic in SA countries' corporate arena. A substantial research gap exists regarding environmental disclosure performance of listed corporations in SA countries. This study aimed to investigate how the elements of corporate governance can actively influence ESRP in the region. Thus, we examined listed companies in SA countries that followed GRI guidelines and filed deposited reports in the GRI's database from the years 2009 to 2016.

Prior research investigated different elements of corporate governance and disclosure practices from a developing country's perspective. The results indicate that companies in Asian and SA countries are closely dominated by family members or groups (Reed 2002b; Reed 2002a; Khan et al. 2013). Further, SA countries also experienced British colonial rule for 200 years, which left a legacy of mixed western corporate governance structures (Reed 2002a, 2002b) that may be an important impediment to individual corporate governance systems in the region. The ownership structure in SA countries is generally mixed, and boards are controlled by family-nominated male members. Prior research questioned the effectiveness of corporate governance when the boards are controlled by families (Khan et al. 2013). A duality exists in SA organizations' management, but often both the chairman and CEO are from the same family, which discourages management to consider environmental initiatives and reporting according to agency and stakeholder theory (Khan et al. 2013). According to the underpinnings of the agency, resource dependency, stakeholder, legitimacy, and political cost theories, an active and efficient management highly concerned for long-term social interests and benefits will consider different initiatives regarding social and environmental investments to pacify different stakeholders, enhance social reputation, and reduce agency and political costs. Prior researchers argue that SA companies disclose CSR information for individual benefits and incentives rather than from different social, political, and stakeholder pressures (Mahmood et al. 2018; Ganapathy and Kabra 2017; Shamil et al. 2014; Khan et al. 2013; Shirodkar et al. 2016; Masud and Hossain 2012).

Our study documents that foreign and institutional share ownership is positively and significantly associated with ESRP. This result has important implications, in that most SA companies are family-based, and therefore, a higher presence of foreign and institutional investor's forces management to consider proactive environmental strategic performance and provide more environmental information to stakeholders. Moreover, resource dependency theory implies that resourceful, diversified boards may encourage disclosing more environmental information because they are more likely to work on behalf of stakeholders.

Our study's results indicate that director ownership is negatively and significantly related to ESRP, demonstrating that high director shareholding discourages directors to engage in ESRP. This result has a particularly significant application in the SA region, as directors are motivated toward short-term benefits and are likely to be reluctant to

make long-term investments in environmental projects and voluntary environmental information disclosures. Moreover, we find an insignificant relationship with family ownership and ESRP, for which prior research reveals mixed results. Generally, family-owned companies prioritize their own profit maximization rather than wealth maximization for all stakeholders, as they are self-motivated and less diversified. Our result is consistent with arguments of agency and stakeholder theories, in that SA stakeholders' engagement is comparatively lower than that in developed economies (Malik and Kanwal 2016; Hoque et al. 2016; Subramaniam et al. 2017).

Our results regarding board characteristics indicate that SA countries' board independence and size are positively associated with ESRP, as we document a strong relationship between the two variables. This study explained five separate theories, and we discovered evidence to support all theories regarding the board's role in environmental information disclosure. Specifically, and consistent with agency theory, we discovered evidence that more ESRP is associated with more independent directors. Additionally, and consistent with resource dependency theory, we illustrate that greater ESRP lies in the greater number of directors. Our result parallels those from prior literature indicating that more independent directors actively monitor stakeholders' interests and opportunities, and a larger board size with a more diverse expertise and experience more highly pressures and advises management to enhance ESRP. Moreover, the stakeholder, legitimacy, and political cost theories affirm that more independent directors and a greater board size positively work for society and the organization by encouraging more disclosure of information on environmental strategies, policies, and actions. For example, Coca-Cola India used a CSR strategy to save their investment in Kerala from the government's decision to close one of their bottling plants (Shirodkar et al. 2016).

Therefore, in the study we did not find any significant relationship between female directors and ESRP. This result is expected, as female participation in SA countries' board decisions is very limited compared with developed countries. Our sample distribution reveals that on average, the proportion of female directors on a board ranges from 0 to 33%, with an average of 9%. This result is consistent with Adams and Ferreira (2009) and Amran et al. (2014), who discovered 8% of female directors' board presence, with results ranging from 0 to 33%. This implies that women are experiencing less visibility in SA countries' management because of a male-dominant corporate culture and a lack of freedom and female empowerment. Subsequently, female directors' board presence has no significant influence on ESRP. One possible explanation may be that female directors in family controlled companies, as a cultural tradition, are not likely to be interested in contradicting family decisions, and do not have sufficient knowledge and experience on ESRP issues because the issue is not considered important in the SA region. Prior research argues that having three or more female directors on a board can significantly influence CSR disclosure (Fernandez-Feijoo et al. 2012; Fernandez-Feijoo et al. 2014; Konrad et al. 2008). However, our sample indicates that the number of female directors is less than two (1.09); these practices will change as a result of recent initiatives by the Indian and Pakistani governments, which mandate female participation in the countries' corporate management effective from 2015 and 2017, respectively (Law Ministry 2017; KPMG 2015, 2016; SEC 2017).

Similarly, we find that CSR or an environmental committee has no significant relationship with ESRP, which indicates that SA countries' CSR and environmental committees

are not in a role-playing position. While data reveals that 75% of companies have CSR or an environmental committee, one possible reason for the result may be that the CSR or environmental committee is less powerful in influencing the board toward ESRP; further, family members with a lack of sufficient ESRP experience may be dominant in the committee. These committees are generally established by the chairman and CEO, who may not be especially interested in ESRP. Moreover, firms may decide to have a CSR or environmental committee but these board members may not have enough voice to represent non-investing stakeholders because their presence is outnumbered by other board members. The recent SA government initiatives imply these findings, as establishing a CSR committee is mandatory in India (Law Ministry 2017; KPMG 2015, 2016) and CSR department in Bangladesh (only mandatory for financial companies), effective from 2015 and 2013, respectively (Bose et al. 2017; Masud et al. 2017).

Conclusions

Collectively, this study's findings provide strong empirical evidence that ownership structures (foreign, institutional, and director ownerships) and board characteristics (independence and size) impact environmental sustainability reporting performance. Our findings suggest that most corporate governance elements can help management monitor, control, and promote environmental sustainability reporting by 1) strategic decisions on social and environmental investments, technological innovation for pollution control, and compliance with international environmental regulations; and 2) supporting long-term environmental initiatives by providing suggestions and directions based on expertise and experience.

Our study has both theoretical and managerial contributions, as it contributes to the diverse stakeholders as well as management in SA countries relating to environmental investment decisions and policy regulations. Theoretically speaking, we used different sets of theories to connect corporate governance with environmental information disclosure decisions. Prior studies generally used agency and resource dependency theories to better explain corporate governance and stakeholders, and legitimacy theories to discuss disclosure practices. The political cost theory also was used in the explanation of corporate ESRP. As a theoretical contribution, this study is the first to document five sets of theories to describe the relationship between corporate governance and ESRP. Specifically, we find that companies are engaging more in ESRP to reduce political costs and increase their competitive advantage.

As the first three countries examination in the SA region, this study has managerial implications for ESRP in emerging countries. Namely, a strong management team should consider balanced share ownership to support ESRP. This study's results also indicate that policymakers must consider how to reduce family-based investments or make family owners active to provide more ESRP initiatives. The implication for management involves adopting a combined environmental strategy; further, this study also encourages diverse stakeholders and activist groups to aggressively demand ESRP activities.

Despite its aforementioned contributions, our study has several limitations. We developed ESRP scores based on GRI guidelines, but these reporting guidelines may not reflect the proper disclosure performance for companies' environmental sustainability. Finally, future research can pursue a longitudinal study that considers all SA countries.

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Availability of data and materials

The study is based on secondary data. Data have been collected from Global Reporting Initiative database and annual report of each company.

Authors' contributions

MAKM carried out the empirical studies, the literature review, and drafted the manuscript. MN helped to check the overview of the paper including referencing. SMB participated in the statistical analysis and communicates with the editor of the journal. All authors read and approved the final manuscript.

Competing interests

The authors declare that they have no competing interests.

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