

Environmental disclosures and corporate attributes, from the lens of legitimacy theory: a longitudinal analysis on a developing country

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Abstract

Purpose – The study seeks to evaluate the extent and quality of environmental reporting following a longitudinal analysis and covering a wide spectrum of industries in a single frame. The study also attempts to identify the set of most favored environmental reporting items by firms and items which are least disclosed. Furthermore, the study attempts to test whether certain corporate attributes such as firm size, age of the firm, leverage ratio, profitability, presence of independent directors in the board and gender diversity have any influencing power over environmental disclosure practices. The whole study has been carried out from legitimacy theory setting.

Design/methodology/approach – The study follows longitudinal analysis to identify the extent and quality of environmental disclosures. A self-constructed checklist of 12 environmental reporting items has been developed analyzing the annual report and content analysis method is followed to measure the extent and quality of environmental disclosures and identify environmental reporting items which are mostly disclosed and which are least disclosed. The study further uses panel data regression analysis to investigate whether certain corporate attributes have any impact on environmental disclosures using multiple linear regression. Total of 345 annual reports of listed financial and nonfinancial institutions have been observed in this study ranging from 2015 to 2019.

Findings – The key finding suggests that strict enforcement of Green Banking Rules 2011 fosters country's commercial banks to invest more to protect the environment and commercial banks encourage nonfinancial institutions for environmental performance and related disclosures through finance. Therefore, almost 50% of sample firms disclose their environmental performance through reporting in either narrative, quantitative or monetary format which was only 2.23% in the last decade. Findings also reveal that tree plantation is the most



reported environment disclosure followed by investment in renewable energy and green infrastructural projects and the least reported items are fund allocation for climatic changes and carbon management policy. Further analysis shows that firm size and leverage ratio both have positive impact on environmental reporting.

Research limitations/implications – An in-depth analysis may be conducted to identify why certain environmental items are least disclosed such as fund allotment for climatic changes, carbon management policy, etc. and how corporations may earn social appreciation and motivation by investing in those least preferred items in legitimacy theory setting. Future research may also take into consideration other corporate attributes which are not considered in the study.

Originality/value – The study conducted an in-depth analysis to understand the most favored form of environmental disclosures (narrative/quantitative/monetary) and their extent after incorporation of regulatory guidelines, which is the first of its kind in the research of environmental disclosures. The study indeed contributes to the documentation of environmental reporting in the context of a developing country where there is a lack of longitudinal analysis from the lens of legitimacy theory. Moreover, a wide spectrum of industries has been taken into consideration which facilitates the generalized findings on the environmental disclosure practices of corporations in Bangladesh.

Keywords Environmental disclosures, Corporate attributes, Legitimacy theory

Paper type Research paper

1. Introduction

Due to radical climatic changes, the business world is going through tremendous pressure from various stakeholders to behave responsibly toward society (Liesen *et al.*, 2017). Within a very short span of time, climate change has gone from bad to worse (Benlemlih *et al.*, 2020; Bose *et al.*, 2018; Chowdhury *et al.*, 2020; Liesen *et al.*, 2017; Luo and Tang, 2014; Masud *et al.*, 2018; Nurunnabi, 2016). Society started realizing how important it is to disclose environmental activities performed by committed corporate citizens. Therefore, environmental reporting is gaining significant attention in today's globalized and competitive business arena than it had been in the past (Benlemlih *et al.*, 2020; Liesen *et al.*, 2017). Due to climate changes, natural disasters like drought, flood, cyclones and earthquakes have become common phenomena, and scientists identified changes in temperature and rainfall causes because of a growing amount of carbon emission and degradation of ecosystems (Lee, 2007; Becker *et al.*, 2020). This situation has affected people's livelihoods, society, culture and health worldwide and threatens global economic growth, sustainable development and poverty reduction. Nurunnabi (2016) mentioned that as per UN Framework Convention on Climate Change (UNFCCC), thousands of underprivileged people would face scarcity of fundamental needs such as food and water and are prone to critical diseases. Nurunnabi (2016) also stated that developed countries have already enforced a few laws where all the companies enlisted in Stock Exchange are bound to disclose their environmental activities where failure to comply may cause a considerable penalty. Developing countries also follow their footprints.

Like many other countries, climate change has become a significant concern for Bangladesh since, geographically, Bangladesh is located in the most vulnerable position. According to Masud *et al.* (2018), the country has to bear a heavy price if the situation remains stagnant. It is estimated that the annual loss would be 2–9.4% of the Gross Domestic Product by 2050 and 2100, respectively, while the country is itself responsible for less than 0.35% of global carbon emission. Therefore, it is high time that global leaders and corporate citizens work together toward “Green” and “Sustainability” (Masud *et al.*, 2018).

Ideally, companies are expected to disseminate carbon emission and other environmental-related information to the public (Li *et al.*, 2018; Liesen *et al.*, 2017) because companies can be both causes and solutions for carbon emission and other environmentally hazardous activities (Li *et al.*, 2018). Due to a wide range of information asymmetries, stakeholders will not get the actual environmental performance of a firm unless firms take measures to let them know (Belal *et al.*, 2015; Li *et al.*, 2018).

Environmental reporting refers to any financial or nonfinancial disclosure made by firms on their business's social and environmental effects and remains mostly a voluntary activity

(Hossain *et al.*, 2017; Parker, 2005). It has become increasingly relevant to enterprises. Environmental disclosure practices have become an essential issue in the development process to ensure environmental protection. The rapid growth of industries in our country has helped to raise economic development, but at the same time, it has brought many environmental problems, and these problems led to a conception on the natural well-being is in danger such as global warming, pollution of water, air, soil, etc. (Qureshi *et al.*, 2012).

Environmental reporting studies documenting Bangladesh fail to click a longitudinal picture of environmental disclosure practices of corporations after the enforcement of Bangladesh Bank Green Reporting Guidelines 2011. Nurunnabi (2015) found that Environmental Disclosure Practices of Bangladeshi Corporations at their naive stage (only 2.23% disclosure) and expressed expectations that strict enforcement of regulatory pressure may boost the disclosure trend.

Moreover, numerous studies have been investigated focusing on corporate social reporting practices from a legitimacy perspective. But the studies were limited either solely to the banking industry (Islam *et al.*, 2020) or manufacturing industries like tobacco (Tilling and Tilt, 2010), minerals (Deegan and Blomquist, 2006), chemicals (Milne and Patten, 2002), etc. Li *et al.* (2018) argued that there had been very scant literature focusing on the determinants of green disclosures integrating environmental legitimacy. Hardly any study investigated corporate legitimacy by analyzing environmental reporting covering a wide range of industries in a single frame which is essential to draw a generalized statement. Therefore, the study is an attempt to mitigate the research gap taking into consideration all financial, manufacturing and service-providing industries like cement industries, shipbuilders, steel industries, telecommunication industries, Internet service provider firms, power distribution companies, tobacco companies, agro-based industries, pulp and paper mills and jute processing companies.

The legitimacy theory sets the tone of the paper. The theory states that firms must have some accountability to society, and firms should act responsibly and maturely to meet investors' and the general public's expectations (Gregory *et al.*, 2016; Joshi *et al.*, 2011). To gain enormous social acceptability and credibility, firms should meet society's diverse needs and thus act as legitimate corporate citizens (Deegan, 2019; Li *et al.*, 2018).

More particularly, the strategic legitimacy perspective has been applied to focus on positive environmental disclosures while carrying out the research. The reason is embedded in the fact that the strategic legitimacy aspect sheds light on the desire and motivation of the firms to earn social support where firms spend resources and try to exert control to attain social acknowledgment (Comyns, 2016; Yingjun *et al.*, 2015). Such corporate citizens disclose positive environmental activities in their annual report as a *modus operandi* to communicate with vast social groups and are highly reluctant to disclose any adverse information; perhaps their reputation falls at stake.

The study follows annual reports as a data source and some industry-specific adjustments as a data coding method. Total of 345 annual reports with a span of five years ranging from 2015 to 2019 of listed financial and nonfinancial institutions of Bangladesh are used for data analysis in the legitimacy theory setting to answer the following research questions.

- RQ1. What extent and quality (narrative, quantitative and monetary) of green disclosures made by the listed financial and nonfinancial institutions from 2015 to 2019?
- RQ2. What are the items (content) of green disclosures made by listed Bangladeshi companies in the year 2019?
- RQ3. Which set of items are highly disclosed and which are neglected?
- RQ4. Do corporate attributes impact green disclosure practices made by listed financial and nonfinancial institutions in Bangladesh?

The present study investigates the extent and quality of environmental disclosures practiced by listed firms in Bangladesh. Furthermore, a self-constructed checklist of 12 green disclosure items has been prepared by analyzing annual reports and identified a list of green activities which are highly disclosed and are least disclosed both by financial and nonfinancial institutions. The study also seeks to test whether corporate attributes such as firm size, firm's age, human resource, leverage ratio, profitability, presence of independent directors in the board and gender diversity can influence green disclosures made by companies practicing in Bangladesh.

The novelty of the research stems from the fact that the study has taken into consideration the longitudinal trend of environmental disclosure practices after the enforcement of Bangladesh Bank Green Reporting Guidelines 2011, which is the first of its kind in the research of environmental disclosures. The study makes several contributions to the existing literature on environmental disclosures. First, the study will add a new dimension to the current literature by covering a wide array of industries in a single frame. [Ahmad \(2012\)](#) surveyed 40 Chartered Accountants of 40 publicly listed firms in the year 2010. He found that respondents strongly feel the need for a mandatory regulatory framework to enhance the environmental disclosure practices in annual reports. A similar study was conducted by [Nurunnabi \(2016\)](#) on 71 leading corporations for the fiscal year 2010–2011 and found an abysmal level of environmental disclosures (on an average 2.23%). [Ahmad \(2012\)](#) and [Nurunnabi \(2016\)](#) expressed deep expectation of the fact that enforcement of the first-ever mandatory regulatory framework, Bangladesh Bank Green Policy Guidelines 2011, will enhance the extent and quality of environmental disclosure practices of banks and other financial institutions and also indirectly boost up environmental disclosure practices of all nonfinancial publicly listed firms but studies to analyze the longitudinal trend of environmental disclosure practices after enforcement of the Bangladesh Bank Green Policy Guidelines 2011 has hardly been observed.

Thus a significant contribution of the present study is to demonstrate the effectiveness of Green Policy Guidelines 2011 in shaping corporate behavior toward environment disclosures through longitudinal analysis. Besides, the study conducted an in-depth analysis to understand the most favored form of environmental exposures (narrative/quantitative/monetary) and their extent after incorporating regulatory guidelines, which is the first of its kind in the research of environmental disclosures.

The study also addresses corporate attributes, which have influencing power for accelerating environment-related disclosures. Panel data regression analysis shows that both financial and nonfinancial institutions, which are larger in size and have higher leverage ratios, tend to disclose environmental information since they are confronted with legitimacy pressure from a diverse group of stakeholders and society. The paper is divided into six sections. [Section 1](#) introduces the paper, [Section 2](#) includes the underpinning theory, literature review and hypotheses development, [Section 3](#) contains the research methodology, [Section 4](#) presents analysis and findings, [Section 5](#) discussions, [Section 6](#) managerial and theoretical implications and [Section 7](#) sheds light on the future avenue for research.

2. Underpinning theory, literature review and hypotheses development

[Archel et al. \(2009, p. 4\)](#) consider that “the legitimacy theory is a mechanism that supports organisations in implementing and developing voluntary social and environmental disclosures in order to fulfil their social contract that enables the recognition of their objectives and the survival in a jumpy and turbulent environment”. Legitimacy theory has gained enormous acceptability in social accounting and disclosure-based research that has invaluable contribution to unearthing the goals and incentives of revealing environmental disclosures ([Chowdhury et al., 2020](#); [Islam et al., 2020](#); [Joshi et al., 2011](#)). The theory mandates

that organizations have some obligations toward society and firms' activities are affected by the behavior of community in which it operates (Comyns, 2016; Yingjun *et al.*, 2015). Therefore, to gain acceptability and credibility in society, firms should act responsibly and maturely (Gregory *et al.*, 2016; Li *et al.*, 2018). According to the legitimacy theory settings, organizations should not merely focus on meeting the expectations of investors. Instead, it should consider the rights of the general public (Joshi *et al.*, 2011). Joshi *et al.* (2011) also opined that organizations strive to build a strong congruence between social values offered by their behavior and the norms of expected behavior. Any mismatch between the two may create potential threats in the form of economic, legal or other sanctions. Recently, there has been a global concern for environmental issues, and as a developing country, Bangladesh is no exception. Economic liberation and deregulation of industries have created more awareness among the Bangladeshi nation concerning environmental issues; therefore, we may expect that there is increased disclosure of environmental information in companies' websites and annual reports to gain organizational legitimacy (Guillamon-Saorin *et al.*, 2017; Joshi *et al.*, 2011). Legitimacy theory can be categorized from two different perspectives: strategic and institutional. Strategic legitimacy includes resources and control that an organization exerts to attain social acknowledgment (Comyns, 2016; Yingjun *et al.*, 2015).

Furthermore, strategic legitimacy illustrates organizations' desire and motivation to earn social support. Legitimacy offers inspiration to the firms to maintain a reputed position and status in the society and to feel the reactions of observant from the society (Kaium Masud *et al.*, 2017) to legitimacy pressure; companies tend to disclose positive rather than negative information. As a part of legitimacy, environmental disclosures act as an influential catalyst of a company to share a strong and credible relationship with society (Comyns, 2016; Gregory *et al.*, 2016; Guillamon-Saorin *et al.*, 2017; Hossain *et al.*, 2020; Luo and Tang, 2014; Masud *et al.*, 2018; Nurunnabi, 2016). Therefore, both developed and developing countries are now reporting their environmental performance in their annual reports, websites and other forms of publications to mitigate legitimacy pressure vested upon them and to improve public perception (Gregory *et al.*, 2016; Hahn and Lülfs, 2014; Yingjun *et al.*, 2015). Institutional legitimacy is considered a set of fundamental beliefs. For instance, institutional dynamics, which stem from the industry environment in which a firm operates, generate external pressure on companies to behave in a perceived legitimate way by external institutions. In this sense, companies possess minimal control over society's perception (Hahn and Lülfs, 2014).

On the contrary, an interesting observation revealed by Hahn and Lülfs (2014) that disclosing adverse events by the firms does not necessarily mean that firm is gradually losing its credibility among stakeholders. Instead, it sends a positive message to the market, signaling proactive and honest disclosures and acts as a risk mitigation tool, whereas not reporting negative aspects might conversely lead to speculation that the report is overly optimistic, whitewashed and hence not a reliable source of information (Reimsbach, 2013). The legitimacy theory sets the tone of the paper. More particularly, the strategic legitimacy perspective has been applied to focus on positive environmental disclosures while carrying out the research.

2.1 Review of literature

Bangladesh took fourth place in terms of worst air quality (Masud *et al.*, 2018). The statement was given by WHO to visualize the vulnerability of the world environment, particularly in South Asian countries (Nurunnabi, 2016). Regulations related to environmental reporting foster the essence of accountability among corporate entities to protect the environment (Hubbard, 2009). Since organizations are doing business in society, they have to legitimize their actions and consider a wide range of stakeholders' information demands. Environmental disclosures may be monetary or nonmonetary, quantitative or qualitative,

or contain positive or negative information, indicating whether the particular entity is environmentally friendly or hazardous. The benefits offered by environmental reporting are manifold. Such disclosures create a positive impression among stakeholders, thus leading the board of directors to make decisions that favor the environment. Environmental reporting has become a leading parameter considered by investors and creditors. At the same time, they assess risks related to their investment (Belal *et al.*, 2015) and revise strategies while dealing with foreign investors. Entities intend to disclose environmental information not merely to save the environment but also to reduce the insurance premium, cut costs, uphold social profile and gain a competitive advantage (Alsaad *et al.*, 2021; Chowdhury *et al.*, 2020; Markard and Holt, 2003). Furthermore, Cho and Patten (2013) and Chowdhury *et al.* (2020) posit that firms display such information to show that they abide by government-imposed regulations and standards, avoid negative publicity and manage compliance costs (Benlemlih *et al.*, 2020). Few internal firm characteristics are also deeply connected to their environmental performance (McGuinness *et al.*, 2017).

The economy of Bangladesh is primarily dependent on the manufacturing and financial sectors (Masud *et al.*, 2018). The banking sector may play a pivotal role in influencing the corporate board's accountability for the environment. Since 2008, Bangladesh Bank (the central bank of Bangladesh) has issued circulars related to social and environmental issues. The guardian bank also played a significant role in recent years by giving a comprehensive circular regarding the implementation of green policies by financial institutions (Bank, 2011). At present, Bangladesh Bank's green policy guidelines provide the only mandatory framework in the history of Bangladesh's financial organizations. Bangladesh Bank also began publishing an annual Green Banking review report on the financial sector in 2013. Despite having so many regulatory attempts, the environmental disclosure practices by firms and related research are still in a naive stage in Bangladesh (Chowdhury *et al.*, 2020; Kaium Masud *et al.*, 2017; Masud *et al.*, 2018).

Chandok and Singh (2017) stated that the richness of environmental disclosures infers management's attitude toward social commitment and is appreciated by the information users. Chandok and Singh (2017) found significant differences between disclosures practiced among the firms. Ahmad (2012) reported that corporations are willing to disclose only positive environmental information and reluctant to publish bad news. The finding is consistent with the conclusions made by Chatterjee and Mir (2008). Sobhani *et al.* (2012) posited that all listed firms provide environmental disclosures in an unstructured manner in annual reports. A few of the most disclosed environmental items are waste management, energy conservation, water management and green policy for in-house management (Chandok and Singh, 2017; Kaium Masud *et al.*, 2017; Masud *et al.*, 2018). Carbon management policy should also be an integral part of environment disclosure due to excessive carbon emission, its adverse impact on the environment and local, and international pressure to mitigate the carbon emission (Yu *et al.*, 2020). Several nonprofit associations have discussed standards for environmental disclosure practices (e.g. the Global Reporting Initiative (GRI), the Federation des Experts Comptables Europeens, and the International Federation of Accountants) (Chandok and Singh, 2017). In 2011, Bangladesh Bank issued Green Banking Guidelines, mandatorily followed by all commercial banks operating in Bangladesh.

Moreover, Bangladesh Bank promises to incentivize the compliant banks of Bangladesh through various forms of sustainable environmental disclosure practices. Green Banking Guidelines 2011 and GRI standards facilitate commercial banks to encourage environmental sensitive nonfinancial institutions to practice green and sustainable initiatives through policies of Green Finance and Green Product, Green Strategies for In house management and other forms of environmental disclosures such as carbon management policy, climate change fund, investment in renewable energy, etc. (Kaium Masud *et al.*, 2017). The authors of the present study developed a checklist considering GRI environmental standards that are

matched with Bangladesh Bank Green Reporting Content and commonly disclosed in annual reports of all types of industries (Appendix 2).

2.2 Hypotheses development

2.2.1 Size of the firm and environmental disclosures. Legitimacy theory illuminates light that large firms are accountable to their stakeholders and responsible corporate citizens should disclose all relevant information (Chowdhury *et al.*, 2020). Islam *et al.* (2020), Michelin and Parbonetti (2012) and Gray *et al.* (2001) also opined that large firms tend to share more environmental-related information than small firms as they have enough funds to spend for the welfare of society. Similar findings were also obtained by Joshi *et al.* (2011). Brammer and Pavelin (2008) stated that firm size influence positively to disclose environmental information. Furthermore, such disclosures create a platform for big firms who run their businesses through a wide range of branches to obtain social appreciation for their activity (Chowdhury *et al.*, 2020; Hasseldine *et al.*, 2005; Islam *et al.*, 2020; Joshi *et al.*, 2011). The earned appreciation and credibility will attract more investors and help the firm to gain public support. Firm size commonly known for its visibility also represents firms' worthiness to be involved in social and environmental activities (Joshi *et al.*, 2011). Based on the discussion above, the following hypothesis is developed:

H1. There is a positive relationship between firm size and environmental disclosures.

2.2.2 Profitability and environmental disclosure. Legitimacy theory states that profitable firms are more accountable to society because they have to protect society by safeguarding the environment to retain profit and sustain in the long run. Stakeholders also have high expectations from profitable firms and will not allow them to engage in hazardous activities for the environment (Joshi *et al.*, 2011). Researchers revealed a significant positive relationship between profitability and environmental disclosures (Al-Tuwaijri *et al.*, 2004; Gray *et al.*, 2001; Rehman *et al.*, 2021; Said *et al.*, 2009). In a corporation with fewer economic resources, management will probably focus on activities that directly affect the corporation's earnings than the production of social and environmental disclosures (Tagesson *et al.*, 2009). On the contrary, profitable corporations are more exposed to political pressure and public scrutiny and use more self-regulating mechanisms, such as voluntary disclosure. Investors generally perceive that in the absence of disclosure of environmental information, there is an indication of bad news about the firm. Therefore, to maintain public impression and raise capital, most firms tend to disclose environmental information (Chowdhury *et al.*, 2020; Joshi *et al.*, 2011; Yusoff and Lehman, 2008). Companies are providing environmental information mainly to alleviate the concerns from the government (Hummel and Hürisch, 2020; Hutman *et al.*, 2021; Liu and Anbumozhi, 2009). Therefore, the following hypothesis is developed:

H2. There is a positive relationship between profitability and environmental disclosures.

2.2.3 Leverage and environmental disclosure. Companies with high debts tend to establish a good rapport with their interest groups and are more likely to reveal their environmental activities. Clarkson *et al.* (2008), Islam *et al.* (2015) and Al Arussi *et al.* (2009) found a positive relationship between leverage and level of environmental disclosures. Leverage depends on external debt financing and the loan borrower corporations must comply with environmental safety dimensions to get loans and grants. Therefore, levered companies are likely to disclose environmental information due to the regulations of financial institutions. With the increase of debt proportion in capital structure, the greater is expected to be the interest conflicts between shareholders, creditors and managers, the higher the agency cost, and the managers have an incentive to disclose more information. From the perspective of social and environmental responsibilities, companies with higher financial leverage (LEV) are more

inclined to establish good relations with stakeholders; therefore, they are more likely to disclose environmental information. The Central Bank of the country, Bangladesh Bank, has made a laudable effort since 2008 to issue circulars related to social and environmental performances and implementation of green projects (Masud *et al.*, 2018). Consequently, commercial banks impose environmental safety dimensions for issuing loans and grants to implement green policies by financial institutions (Bangladesh Bank, 2011). Based on the discussion above, this study proposes the following:

H3. There is a positive relationship between firms' leverage on environmental disclosure.

2.2.4 Age of the firm and environmental disclosure. Drawing on the legitimacy theory, "companies' societal existence depends on the acceptance of the society where they operate. Since the companies can be influenced by, and have influences to the society, legitimacy is assumed an important resource determining their survival" (Juhmani, 2014, p. 81). The interaction between the company and the community is deemed very important for the existence of the company and its competitiveness (Khan *et al.*, 2019). This provides the company which operates longer a wider interaction with the community an effective public image (Asif *et al.*, 2013; Samarah *et al.*, 2021). Age is considered an essential corporate attribute that can influence the level of environmental disclosures. Age also reflects the perceived stability, financial strength and strategic posture of a firm (Abubakar *et al.*, 2019; Akbas, 2014; Joshi *et al.*, 2011) and represents some aspects of stakeholders' power, strategic posture and financial performance (Liu and Anbumozhi, 2009). It is also argued that as a company matures, its reputation and involvement in discretionary activities, such as environmental protection activities and disclosure of environmental information, can become entrenched and more valuable to the company (Liu and Anbumozhi, 2009). In this sense, a positive relationship can be predicted between the level of environmental disclosures and the age of firms (Akbas, 2014; Joshi *et al.*, 2011). Therefore, the following hypothesis is developed:

H4. There is a positive relationship between firms' age on environmental disclosure.

2.2.5 Presence of nonexecutive directors in board decisions and environmental disclosures. Corporate boards with a more significant proportion of independent directors may monitor and influence board decisions for common interest (Fama and Jensen, 1983; Alnabsha *et al.*, 2018). Independent directors can also play an active role as an internal control mechanism and protect communities' rights. According to BSEC, at least one-fifth of any public listed companies' total board of directors must be independent. Terjesen *et al.* (2016) stated in their article that independent directors are entrusted with overseeing the board's activities and protecting the minorities. Their presence in board meetings will ensure lawful and transparent, and credible board decisions. But the finding revealed that the company of nonexecutive or independent directors does not contribute any effectiveness in board decisions. Instead, they have a very minimal role to play (Terjesen *et al.*, 2016). Few studies found a positive relationship between independent directors and the extent of environmental and other voluntary disclosures (Ntim *et al.*, 2012; Samaha *et al.*, 2012), while findings of few studies suggest negative association (Alnabsha *et al.*, 2018; Gul and Leung, 2004; Mohd Ghazali and Weetman, 2006) or no relation (Alhazaimeh *et al.*, 2014; Ho and Shun Wong, 2001). Based on the discussion that independent directors exert a positive influence on board decisions, the study conjectured that.

H5. There is a positive impact of the presence of nonexecutive directors on the level of environmental disclosures.

2.2.6 Gender diversity in board composition and environmental disclosures. According to legitimacy theory, an increasing number of female directors in the board can accelerate firms'

reputation by strengthening environmental responsibilities (Elmagrhi *et al.*, 2018; Gyapong *et al.*, 2016; Nasr and Ntim, 2018; Shahab *et al.*, 2018). Numerous prior studies navigate the behavioral aspects of women and found women are more law-abiding and sincere in terms of performing responsibilities as opposed to their male counterparts (Terjesen *et al.*, 2016). He also added that female directors enhance the effectiveness of the board. Although there is no compulsion from a legal perspective to aspiring gender diversity, it may be expected that the inclusion of more female directors in the board tends to boost boards' positive attitude toward all sorts of mandatory and voluntary disclosures (Gyapong *et al.*, 2016). Therefore, the study assumes the following:

H6. There is a positive impact of gender diversity in board composition on environmental disclosure.

2.2.7 Relationship between human resource cost and environmental disclosures. Human Resources is alternatively known as Human Capital, often termed as a value creator and strategic resource of an organization and a robust corporate attribute representing the organization's attitude toward its employees (Akhter *et al.*, 2021; Chen and Lin, 2004; Dinca *et al.*, 2019; Taamneh *et al.*, 2018). According to American Accounting Association, Human Capital Reporting refers to the recognition and measurement of organizational expenditure to maintain the organization's human resources. The purpose of disclosing human resource costs in the annual report is to provide relevant information for the intended users and ensure transparency in reporting (Said *et al.*, 2013; Ur Rehman *et al.*, 2021). Reporting human resource costs can increase the efficiency of human resource management to facilitate managerial decisions in important aspects (Aggarwal and Verma, 2020; Alnajdawi *et al.*, 2017; Said *et al.*, 2013).

The role of human resources in the organization's decision-making and value creation process can be measured by the level of costs in human resources (Aggarwal and Verma, 2020; Ur Rehman *et al.*, 2021; Vazakidis *et al.*, 2013). Human resource cost refers to the expenditures that an organization incurs to retain employees through salaries, organizing training programs and offering a reward to employees for professional excellence to attain economic goals and sustainability of the organization (Kaur *et al.*, 2014). The Human resource cost is the only quantifiable variable to measure how the organization values its employees (Elrehail *et al.*, 2020; Said *et al.*, 2013). The variable's value can be extracted from annual reports of listed companies of Bangladesh, which demonstrate the organizational expenditures on employee salaries, incentives, training and other personnel development programs, the reward for motivation, etc.

A study conducted by Guenther *et al.* (2016) explains that motivated and committed employee groups positively impact carbon disclosure which is part of environmental disclosure.

Such expenditures also provide an essential supplement to traditional income measurement and thus widen the coverage of the firm's financial well-being and financial success. Dinca *et al.* (2019) also claimed that Romanian companies, which spend more on development and retention of human resources, reported environmental issues elaborately than companies with minimum human resources investment. The higher human resource cost is an indicator that may help to reduce expected costs and negative impacts on firm value. It may also demonstrate to society and the company's stakeholders that individual firms are doing their part to help solve social and environmental problems through proper disclosures (Elrehail *et al.*, 2021; Said *et al.*, 2013). Based on the discussion above, it can be hypothesized that

H7. There is a positive impact of human resource expenditures on environmental disclosures.

3. Research methodology

3.1 Sampling strategy

The 69 listed companies ([Appendix 1](#)) have been selected from the Dhaka Stock Exchange (DSE) based on non-probability sampling. Out of 69 companies, 34 companies belong to financial industries including bank and nonbank financial institutions and 35 sample companies from manufacturing and service-oriented industries of varied nature such as cement industries, shipbuilders, steel industries, telecommunication industries, Internet service provider firms, power distribution companies, tobacco companies, agro-based industries, pulp and paper mills and jute processing companies. There were 47 scheduled banks under Bangladesh Bank (the central bank of Bangladesh) in 2013. Out of these 47 banks, 30 banks were listed in DSE until 2015. We studied 28 of all those listed banks to get relevant information. Our sample covers 93% of the listed banks. Besides, the study also takes six nonbank financial institutions such as leasing companies and insurance companies. Furthermore, to address the inter-rater reliability concerns, all data were collected by a single researcher.

3.2 Data collection procedures

This study uses annual reports as a source of data. The authors collected the data from the annual reports using a self-constructed checklist of 12 items (demonstrated in [Table 1](#)) under three thematic items. Authors considered a set of GRI codes matched with Green Reporting

	Items disclosed	Sources	Percentages (%)
Green finance (product-wise): A	Renewable energy and investment disclosure	Maama and Appiah (2019) , Chandok and Singh (2017) ,	79
	Tree plantation and forestry-related disclosure	Kaium Masud et al. (2017) , Masud et al. (2018) , Perez-Batres et al. (2012) , Global Reporting Initiatives (2016) , Bangladesh Bank (2011)	85
	Waste management disclosure		56
	Land and air pollution-related disclosures and investment in biogas/bio-fertilizer plants		69
	Water pollution and control related disclosures through effluent treatment plants		69
	Miscellaneous green infrastructure project		71
	Green office and green management disclosures: B	Green policy related disclosures	Maama and Appiah (2019) , Bose et al. (2018) , Masud et al. (2018)
	Energy savings and improvement disclosures		74
	Award and recognition for environmental initiatives		66
	Employee training and customer awareness related to environment disclosures		69
Other green disclosures: C	Climate change, fund allotment for climatic changes	Yu et al. (2020) , Global Reporting Initiatives (2016) , Bangladesh Bank (2011)	42
	Consumer awareness related to environmental disclosures		69
	Ecological and carbon management policy		56

Table 1.
Environmental disclosure checklist

Guidelines 2011; Bangladesh Bank (Appendix 2) and segregated the items into three themes based on homogeneity. The theme, Green Finance, addresses disclosures that institutions used to show their investment to promote eco-friendly projects such as investment in hydropower projects, solar energy generation, approving or borrowing loans for wastewater treatment, disposal of hazardous plants and innovation of technology for environmental safety. The second theme, Green Policy-related disclosures, focuses on GRI codes GR5, GR7 and GR11, demonstrating the internal office management policies and training initiatives to promote green culture. The third theme, Other Green Disclosures, covers GR2 and GR4 to illustrate institutional performance for climate change and environmental risk management.

The annual reports were collected from the banks, DSE library and company websites. The study carefully examines prior literature and annual reports published by listed firms to develop the environmental disclosure checklist. The author's compiled index was sent to two professors of Accounting who have research experience in the same field and two practicing Chartered Accountants to examine the relevance of the checklist. After receiving their feedback, any disagreement regarding any disclosure item is consulted and rechecked (Joshi *et al.*, 2011), and a final checklist has been prepared (exhibited in Table 1).

Data for corporate attributes such as firm size, age of the firm, human resource cost, leverage ratio, profitability, presence of independent directors in the board and gender diversity are collected from the annual report. To conduct the study, secondary data have been collected from annual reports for the years 2014–2015, 2015–2016, 2016–2017, 2017–2018 and 2018–2019. Total of 345 annual reports are analyzed in this study. To answer the first research question, a longitudinal analysis has been conducted for five years ranging from 2015 to 2019. For the second and third research questions, Environmental Disclosure Checklist (Table 1) has been evaluated only for the year 2019. For the fourth research question, again five years (2015–2019), annual report data are analyzed.

3.3 Analysis tools

The study follows the content analysis method to meet the answer of the first three research questions as the content analysis method is a popularly used method in earlier disclosure-based studies (Bose *et al.*, 2018; Chowdhury *et al.*, 2020; Guillamon-Saorin *et al.*, 2017; Kaium Masud *et al.*, 2017; Singh and Kansal, 2011). For the first research question, the space incidence method was used, taking a sentence as a unit of analysis for measuring environmental disclosures in measuring disclosures.

Every sentence reported on environmental disclosures in the annual report was further categorized into the narrative, quantitative or monetary, depending on the nature of the disclosure. Thus, the longitudinal analysis has been conducted using the following formula:

- (1) Narrative Disclosures: (Items disclosed in terms of sentences related to green activities in a year/Total number of companies in the sample) \times 100
- (2) Quantitative Disclosures: (Items disclosed in terms of numbers related to green activities in a year/Total number of companies in the sample) \times 100
- (3) Monetary Disclosures: (Items disclosed in terms of monetary value related to green activities in a year/Total number of companies in the sample) \times 100

The Environmental Disclosure Index (EDI) has been computed using a self-constructed green disclosure checklist of 12 items for the second and third research questions. The EDI has been measured in terms of how many companies reported a particular item of the self-constructed checklist in the year 2018–2019. R_p is the percentage of companies reporting specific items of green activities.

- (4) $R_p = (\text{Number of companies disclosing } i\text{th items} / \text{Total number of companies in the sample}) \times 100$

After having the value of R_p , the third question can be answered by showing the five most disclosed and five least disclosed green activities.

For the fourth research question, a regression model has been developed to investigate whether corporate attributes such as firm size, age of the firm, human resource, leverage ratio, profitability, presence of independent directors in the board and gender diversity influence the environmental disclosure practices.

3.4 Selection of variables

Dependent variable: The dependent variable of the study is EDI. The content analysis method is used to obtain the value of EDI. In examining each of these EDI values, a dichotomous procedure was followed. Each company was awarded a score of “1” if the company appears to have disclosed the concerned reporting variable and “0” otherwise – the total score obtained by the company was deemed to be the net score of the company. EDI is computed by using the following formula: $EDI = (\text{Total score of the individual company} / \text{Maximum score obtainable (12)}) \times 100$. In this study, the following independent variables are considered for the model such as FSZ = Size of the firm (Log of total assets), AG = Age of the firm (Number of years since its inception in DSE), HRC = Human resource cost (Investment for human resource retention and development), LEVR = Leverage ratio (Total debt/Total equity)*100, PROF = Profitability (Net income–Preferred dividend)/End of the period common shares outstanding, INDDR = Percentage of independent directors in a board (Number of independent directors/Total number of board of directors) and GENDI = Percentage of female directors in a board (Number of female directors/Total number of board of directors).

3.5 Model specification

$$\text{ENVDI} = a_0 + a_1 \text{FSZ} + a_2 \text{AGF} + a_3 \text{HR} + a_4 \text{LEVR} + a_5 \text{PROF} + a_6 \text{INDDR} + a_7 \text{GENDI} + E$$

Statistical Package of Social Science is used to analyze the relationship between EDI and firm attributes. Multiple regression analysis is used in analyzing the study.

4. Analysis and findings

To fulfill the first research question, “What is the trend and quality (narrative, quantitative and monetary) of green disclosures made by the Listed Financial and nonfinancial institutions from 2015–2019?”, the authors have analyzed the published annual report to usher the trends and quality of environmental disclosures which are projected in the following graph (see [Figure 1](#)).

The figure sheds light on the environmental disclosures trend of listed firms operating in Bangladesh for five years spanning from 2015 to 2019. The trend analysis shows a steady trend with a slight deviation meanwhile. From 2015 onward, almost 50% of the sample firms publish their contribution toward the environment either in the narrative, quantitative, monetary, or adopting three approaches simultaneously. The narrative approach is the most favored disclosure approach, followed by quantitative and monetary environmental disclosures. On the contrary, such disclosure practices in annual reports were scanty

before Green Banking Rules 2011. Therefore, it can be recapitulated that the enforcement of Green Banking Rules 2011 positively influences commercial banks' environmental or green disclosures. Simultaneously, commercial banks encourage other industries through green financing, green product and green policy to accelerate environmental disclosures in the annual report.

To satisfy the research question "What are the items (content) of Green disclosures made by listed Bangladeshi Companies in 2019?", the authors have reviewed the annual reports of 2019. The following graph presents the disclosed items.

Figures 2–4 show that tree plantation (85%) is the most favored environmental disclosure practiced by firms. Therefore, it can be implied that firms invest most in tree plantations to perform their ecological commitment. Furthermore, firms also showcase the use of renewable energy and green management policy through their disclosures to let the stakeholders know about their responsibility toward a greener world. As a result, 79% of sample firms publish their investment for renewable energy and 77% of firms prefer to reveal how they embrace green policy to run their internal management. Moreover, many firms (71% of sample firms) highlight how they facilitate green infrastructure projects or

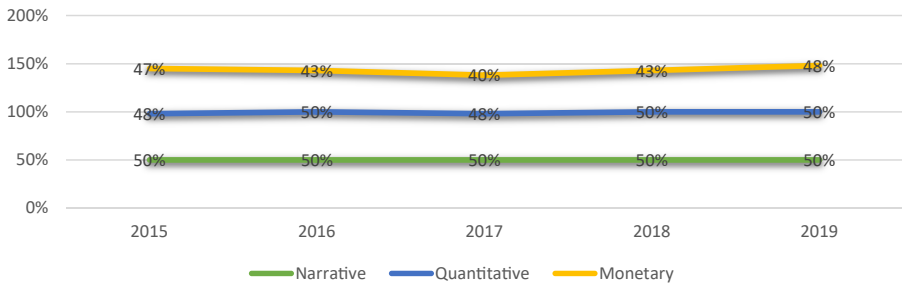


Figure 1.
Longitudinal analysis
of environmental
disclosures

Items Disclosed in 2019

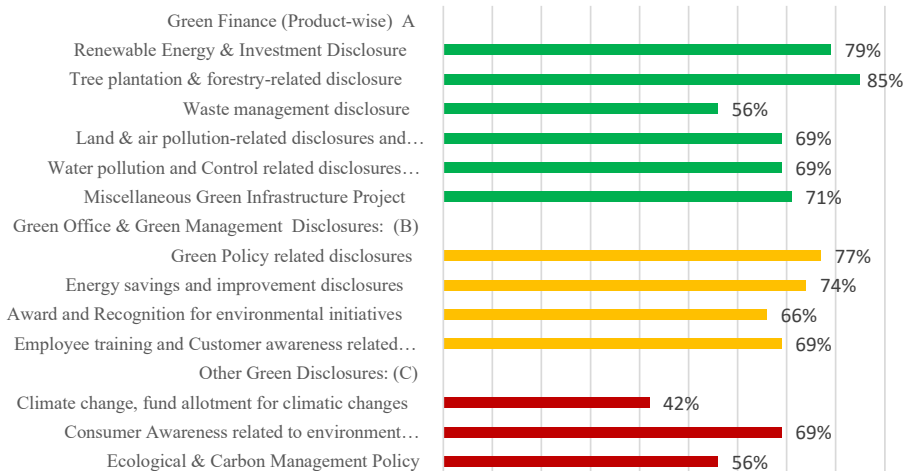


Figure 2.
Items disclosed in
annual reports of 2019

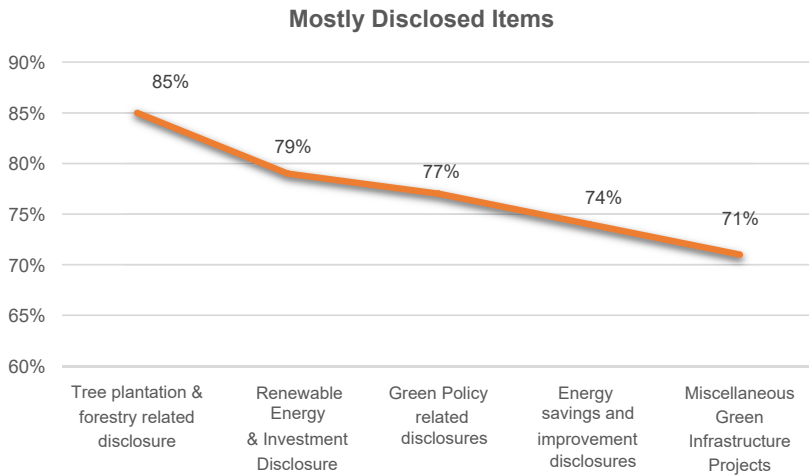


Figure 3. Mostly disclosed items in annual reports of 2019

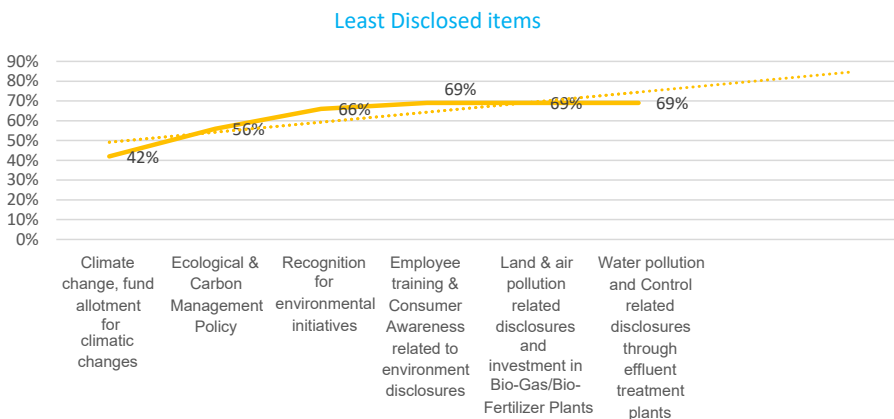


Figure 4. Least disclosed items in annual reports of 2019

green finance. On the contrary, the most neglected environmental disclosure item is fund allotment for climatic changes. Among 69 representative firms, only 24 firms disclose their contribution or fund allotment to face various natural disasters or climatic changes. In addition, the firm's policy toward carbon management policy is also not up to a satisfactory level. Our committed corporate citizens should also facilitate more training programs to make their employees aware of the significance of green policy and its implications. Simultaneously, firms accused of harming the environment in the form of air, water or land pollution should develop technology to minimize their harmful effect and save nature from inevitable extinction. With the authors' best knowledge, investigation to detect the environmental activities that are disclosed mainly by the firms and which items are least disclosed in the context of Bangladesh is the first in its kind in the history of environmental disclosure research and the context of Bangladesh. Therefore, the study adds value to the existing literature by mitigating the current research gap and stimulating future researchers to work further in the same field.

To investigate the answer to the last research question, “Do corporate attributes have any impact on green disclosure practices made by listed financial and nonfinancial institutions in Bangladesh?”, two regression analyses were conducted for financial and nonfinancial institutions (see Table 2).

The regressions are conducted taking EDI as a dependent variable. Two regression models have been developed to carry out the study. The first model is designed for financial institutions and the second model is for nonfinancial institutions.

The regression results show that the two regression models are significant at a 5% level as the F value of the models are 4.83 and 12.924, respectively, suggesting that corporate attributes have an impact on environmental disclosures of both types of firms. The R^2 under the first model is 0.172, which indicates that the model can explain 17.2% of the variability of environmental information disclosure in the sample companies in the study. Furthermore, R^2 under the second model is 0.356, which implies that the model can explain 35.6% of the variability of dependent variables for nonfinancial institutions. The adjusted R^2 for the first regression model is 13.6%. For the second regression model, the value is 32.8%, indicating that more explanatory independent variables have not been considered in the model. The VIF of independent variables is less than 10, which means there is no multicollinearity problem, and sample data fit multiple regression.

The coefficient value of the first regression model shows that firm size, leverage ratio and Human resource cost have passed the significance test at 0.05 level. Among these three independent variables, firm size and leverage ratio have a significant positive relation with EDI, whereas human resource cost (HRC) negatively relates with EDI. However, contrary to our expectations, age of the firms, profitability, independence of board decision and gender diversity in board did not pass the significance. Therefore, it can be concluded that in financial institutions, profitability, age of the firms, gender diversity, and presence of more independent directors in board composition do not impact environmental disclosures made by firms.

The coefficient table of the second regression model (Table 3) shows that firm size and leverage ratio have a significant positive association with EDI. The age of the firm offers a negative relation with EDI. On the contrary, gender diversification has a positive role on the dependent variable. Other variables such as profitability and the presence of independent directors have no relationship with EDI.

	Standardized coefficients (β)	t	Sig.	Tolerance	VIF
(Constant)		-0.429	0.668		
Size of firm	0.362	4.656	0.000	0.840	1.191
Age of firm	0.125	1.472	0.143	0.702	1.424
Human resource cost	-0.492	-4.412	0.000	0.409	2.444
Leverage ratio	0.239	2.305	0.022	0.473	2.116
Profitability	-0.052	-0.453	0.651	0.389	2.572
Independent director	0.010	0.095	0.924	0.445	2.247
Gender diversification	0.061	0.815	0.416	0.896	1.116

$F = 4.831$, $P = 0.00$, $R = 0.172$, R square = 0.172, Adjusted R square = 0.136

Note(s): a. Dependent variable: Environmental disclosure index

b. Selecting only cases for which firm measures = Financial institution

c. Predictors: (Constant), Gender diversification, Age of firm, Size of firm, Leverage ratio, Independent director, Human resource cost, Profitability

Table 2.
Regression result
(financial institution)

	Standardized coefficients (β)	<i>t</i>	Sig.	Tolerance	VIF
(Constant)		6.221	0.000		
Size of firm	0.537	6.539	0.000	0.583	1.714
Age of firm	-0.212	-2.656	0.009	0.618	1.619
Human resource cost	0.148	1.890	0.061	0.642	1.558
Leverage ratio	0.261	3.874	0.000	0.865	1.156
Profitability	0.103	1.390	0.167	0.714	1.401
Independent director	-0.087	-1.236	0.218	0.796	1.256
Gender diversification	0.174	2.637	0.009	0.904	1.107

$F = 12.924, P = 0.00, R = 0.172, R$ square = 0.356, Adjusted R square = 0.328

Note(s): a. Dependent variable: Environmental disclosure index

b. Selecting only cases for which firm measures = Nonfinancial institution

c. Predictors: (Constant), Gender diversification, Age of firm, Size of firm, Leverage ratio, Independent director, Human resource cost, Profitability

Table 3. Regression result for nonfinancial institution

5. Discussions

The paper explores the environmental disclosure practices of the publicly listed firms of Bangladesh from the legitimacy theory perspective. A longitudinal analysis has been conducted over 345 annual reports ranging from 2015 to 2019 to gauge the extent of environmental disclosure practices of corporations through effective enforcement of Bangladesh Bank Green Policy Guidelines 2011. Environment-related disclosures are further categorized into three levels: Narrative, Quantitative and Monetary Disclosures to get a narrower view of disclosure trends. The findings suggest that there is a radical improvement in corporate attitude toward environmental reporting. Before the enforcement of Bangladesh Bank Green Policy Guidelines 2011, the disclosure level was poor. During the year 2010–2011, only 2.23% of corporations published their environmental performance as documented by [Ahmad \(2012\)](#), [Bose et al. \(2018\)](#) and [Nurunnabi \(2016\)](#).

In contrast, in 2015, almost 50% of the sample firms published their contribution toward the environment in the annual report either in the narrative, quantitative, monetary form or adopting three approaches simultaneously. The rate has been consistently maintained in subsequent years. Thus, it can be recapitulated that enforcement of Green Banking Rules 2011 and other circulars of Bangladesh Bank positively influence the environmental disclosures of commercial banks. The finding is consistent with [Bose et al. \(2018\)](#), who argued that strict enforcement of mandatory regulations issued by the Central Bank is the only effective mechanism to encourage environmental disclosure practices. [Nurunnabi \(2016\)](#) also concluded in a similar tone when they conducted a survey in the year 2010–2011 and expressed their urge for a mandatory regulatory framework that is essential to increase environmental disclosures and reshape corporate behavior toward the environment.

The longitudinal analysis also revealed that the narrative approach is the most favored form of environmental disclosure. Quantitative and monetary conditions of disclosures are also well-practiced as the minimum disclosure rate during the sample years is 48% and 40%. The finding is consistent with [Llena et al., \(2007\)](#), who argued that narrative disclosures are the most common form of companies and stated that quantitative and monetary information was not very popular since the beginning of environmental reporting practices. But strict enforcement of mandatory regulations may stem the practices. [Llena et al. \(2007\)](#) also added that companies are increasingly paying attention to quantitative and monetary forms of disclosures.

Further, to answer the second and third research questions, content analysis has been conducted on the authors' compiled checklist of 12 items of environmental disclosures to

compute EDI. Based on the EDI, most disclosed and least disclosed environmental reporting items had been identified. The investigation to address the most favored and neglected areas of environmental reporting items is the first of its kind in Environmental Disclosure research and the context of Bangladesh. Therefore, it will add significant insights to the existing research and offer new avenues for future research. The result revealed that listed companies mainly emphasize tree plantation and forestry-related disclosures (85%) in annual reports, implying that firms invest most in tree plantations. Many sample firms (55 out of 69) report renewable energy performance and reveal how they embrace green management policies (53 sample firms) to run their internal operations. Thus, disclosure on Renewable Energy and Green Management Policy took the second and third ranks of most favored environmental reporting items. The finding is consistent with Masud *et al.* (2018), who argued that Green Finance and Green Management policy are priority areas of environmental reporting of banks, and banks are increasing disclosures in these two areas. The present study also illuminates that the most neglected environmental reporting item is fund allotment for climate change and carbon management policy. Masud *et al.* (2018) expressed their frustration in a similar vein and stressed practicing and reporting on these components because they are labeled the most crucial weapon to combat global warming and the atrocity of climate change. In addition, disclosure rates regarding employees training and customer awareness are also very scanty compared to their merits.

The present study also attempts to examine the impact of corporate attributes on the environmental reporting practices of firms. The analysis revealed that firm size and leverage ratio positively impact environmental reporting for financial and nonfinancial institutions. By the legitimacy settings, large companies disclose a higher volume of information on their websites because they are more accountable to the public regarding environmental activities. Such disclosures often create a platform to gain social appreciation. Moreover, for more prominent companies, this information may already have been collected for internal reporting and decision-making. Hence, they can easily communicate it to external stakeholders by publishing it in their reports. But small firms may have limitations of resources to collect ample information and disseminate it to the public. The finding is also supported by Chowdhury *et al.* (2020), Islam *et al.* (2020), Joshi *et al.* (2011) and Gray *et al.* (2001). The study also found a positive relationship between the leverage ratio and environmental disclosures for financial and nonfinancial institutions. Bangladesh Bank makes it mandatory for all commercial banks to comply with Green Banking Rules 2011. All the financial institutions have to abide by the enforced regulations of the country's central bank. As a part of this mandatory regulation, commercial banks follow Green Finance Policy and impose environmental safety dimensions while approving loans and grants to borrower institutions.

Consequently, levered companies disclose environmental information due to the regulations of financial institutions than non-levered companies. Moreover, companies with high debts tend to establish a good rapport with their interest groups and are more likely to reveal their environmental activities. The finding is aligned with Clarkson *et al.* (2008), who also posited a positive relationship between leverage and level of environmental disclosures. The study observed a mixed relationship between environmental disclosures and the age of firms for financial and nonfinancial institutions. Age is an indicator to measure firms' financial stability and maturity. Findings demonstrate that in the case of nonfinancial institutions, age has an inverse relationship with environmental disclosures. It implies that younger firms want to be legitimate for their stakeholders and establish their reputation in the market. Such firms intend to incorporate environmental safety measures and investment in green policies to manage funds from external sources such as commercial banks. But the age of firms does not influence environmental disclosures of financial institutions because all the financial institutions regulated under Bangladesh Bank are bound to follow Green

Banking Rules 2011 in operating their business and publish annual reports accordingly. Akbas (2014) and Joshi *et al.* (2011) concluded that the age of a company is unrelated to the extent of environmental disclosure. The present study also shows that profitability does not influence environmental disclosure practices. Chowdhury *et al.* (2020), Yusoff and Lehman (2009) and Liu and Anbumozhi (2009) also found no significant relationship between the profitability of firms and environmental disclosures. The result explains that companies are providing the environmental information mainly to alleviate the concerns from the government and to avail myriad benefits such as Tax Rebate, Green Finance, etc.

A vast majority of investors do not find environmental reporting information relevant for their investment portfolios (Joshi *et al.*, 2011; Liu and Anbumozhi, 2009). However, the interest of stakeholders is slowly growing; thus, more firms will opt for opening environmental information. The regression result of the present study also showed that independent directors do not exert any influence on environmental disclosures; the finding is consistent with (Terjesen *et al.*, 2016). Terjesen *et al.* (2016) posited that independent directors are responsible for overseeing the board activities and protecting the minorities. Their presence in board meetings will ensure lawful, transparent and credible board decisions in all material aspects, including environmental contribution and environmental reporting of firms. However, the finding was reversed entirely. After a thorough investigation, they found that the presence of nonexecutive or independent directors does not contribute any effectiveness to a corporation's attitude toward the environment (Terjesen *et al.*, 2016). Guenther *et al.* (2016) and Dinca *et al.* (2019) argued that companies investing more in human resources also reported environmental issues elaborately. The negative relationship between human resource cost and environmental disclosures practices of financial institutions is a remarkable finding of the study, which interprets that banks and other financial institutions who spend more on human resources suffer from a lack of resources for social and environmental activities. Due to resource constraints often, these types of firms are compelled to prioritize their choices. However, it is a matter of hope that the government of Bangladesh has taken initiatives to incentivize corporate houses in different forms such as tax rebate, financial remuneration, award, etc., which may lead to a rapid change in the current scenario. On the contrary, the study obtained an inconclusive relation between human resource costs and environmental disclosures for nonfinancial institutions.

Furthermore, the study shows that female directors do not exert influence on environmental reporting in the case of financial institutions. It can be deduced from the finding that the Central Bank strictly monitors the financial institutions of Bangladesh to comply with the Green Banking Rules 2011. Therefore, all the commercial banks disclose environmental contributions regardless of the board composition. On the contrary, in the case of nonfinancial institutions presence of female directors in board composition has a positive impact on environmental disclosures. The finding is consistent as opined by Elmagrhi *et al.* (2018), Gyapong *et al.* (2016), Nasr and Ntim (2018) and Shahab *et al.* (2018) that if the number of female directors can be enhanced in board composition, they can play an active role to strengthen board attitude toward environmental responsibilities.

6. Managerial implications

6.1 Theoretical implications

The present study supports legitimacy theory and sheds light on the understanding of legitimacy dynamics in the environmental disclosure domain. The strategic legitimacy perspective has been applied to focus on positive environmental disclosures while carrying out the research. Legitimacy theory assumes that successful organizations appear to be operating in conformance with community expectations and are attributed the status of being legitimate (Deegan, 2019). The theory predicts tactics like consistent and predictable exchange behavior for maintaining legitimacy status with pragmatic audiences. Institutional investors,

small investors, public interest groups and the environmentally conscious general public are identified as audiences toward whom managers will direct moral legitimization efforts. These audiences are concerned with “doing the right thing” vis-à-vis the social contract. The Mandatory Environmental Regulatory framework, such as Green Banking Rules 2011, plays a role in the legitimacy dynamics of organization and society interactions. In accordance with the legitimacy theory, large organizations consider the rights of the public at large and not merely those of the investors only. In this manner, they attempt to narrow the legitimacy gap between society’s expectations and the organization’s value system (Joshi *et al.*, 2011).

Moreover, large firms perceive that they will earn social appreciation and public credibility through their legitimate behavior, thus attracting more investors and gaining public support. Highly levered companies also tend to behave in a legitimate approach than non-levered companies as they have to comply with environmental safety dimensions to receive loans and grants. Due to mandatory regulations of financial institutions, levered companies disclose environmental information. Furthermore, the increased debt proportion in capital structure generates incentives among managers to disclose more information to avoid potential nuisances among the shareholders, creditors and managers. It has also been derived from the findings that young nonfinancial entrants want to establish their reputation in the market and be legitimate toward their stakeholders. Compliance with environmental safety measures enables them to manage external funds from commercial banks. Besides, such practices help them avail tax rebates and many other facilities and alleviate concerns from the government. Thus, regardless of profitability, all nonfinancial institutions tend to disclose their environmental contribution in annual reports.

On the contrary, age and profitability seem unrelated to the environmental reporting of financial institutions. All the financial institutions governed by the Central Bank of Bangladesh compulsorily practice and publish their Green initiatives according to Green Banking Rules 2011. The present study witnessed that none of the practicing firms of Bangladesh disclose any negative information, for instance, the hazardous impact of their operation on the environment and its volume/quantity. Perhaps they are in fear of losing credibility from stakeholders. Firms adopt environmental disclosure practices as an influential catalyst to share a credible and long-lasting relationship with society.

6.2 Practical implications

The findings of the study provide several managerial implications. The trend of environmental disclosures shows that around 50% of sample companies disclose environmental information in either narrative, qualitative or monetary form. These percentages remain consistent in the last five years, which is an exponential growth compared to the previous decade when such reporting rate was 2.23% on an average (Bose *et al.*, 2018). Bangladesh Bank deserves a lion portion of appreciation for such rapid growth in environmental reporting. Through Green Banking initiatives 2011, the central bank makes it mandatory for all financial institutions to disclose their environmental activities and encourage nonfinancial institutions to behave in the same manner through Green Finance policies. The study also observed that many listed institutions did not practice environmental reporting, and the rate remained stagnant over the years. Regulatory bodies of the country’s nonfinancial institutions may initiate institutional guidelines to stimulate these noncompliant firms to accelerate their environmental activities and green strategies and thus boost environmental reporting. The government and regulatory bodies may also consider increasing the benefits of compliance with the Green Law through market-based incentives to intensify the level of corporate commitment to save green.

The study highlights that the most neglected environmental reporting items are fund allotment for climate change and carbon management policy. The policymakers need to provide some orientation programs for listed companies to make them aware of climate

change, the role of carbon management policy in Bangladesh and how it will affect their businesses. International policymakers (such as the Intergovernmental Panel on Climate Change (IPCC), the European Union, the World Bank, the UN Environment Programme, the International Energy Agency and the World Economic Forum) can develop strategies to make the local companies more socially accountable to climate change reporting and carbon management policy in the most vulnerable countries.

In addition, our Government and regulatory bodies also put attention on the independence of independent board members appointed by listed firms. Independent directors influence firms' strategic attitude toward environmental performances and report without compromising their independence.

The study's findings can be generalized for other non-listed banks, nonbank financial institutions and non-listed firms across different industries like cement industries, shipbuilders, steel industries, telecommunication industries, tobacco companies, agro-based industries, pulp and paper mills and jute processing companies. The findings may also apply to other emerging economies where environmental contamination has become a rising concern and environmental performances and reporting initiatives have emerged in recent years.

7. Future avenues of research

Notwithstanding the observations mentioned above in the study, the current research acknowledges a few limitations of the study. First, the study observed that the R^2 value of regression models is low, indicating that few other vital variables could have been considered. Hence, a better conclusion could be drawn. Although the limitation may not affect the findings, further research may be warranted to navigate the field in a narrower approach. Future research may also take into consideration whether environmental disclosures provide long-term benefits for stakeholders. Although the study demonstrates the extent and quality of environmental disclosures, an in-depth analysis could also identify why certain items are least disclosed. For instance, the study observed that fund allotment for climatic changes; carbon management policy is the few least disclosed items. Future research may consider how corporations will earn social appreciation and motivation by investing in those least preferred items in the legitimacy theory setting. A comparative analysis among the environmentally sensitive industries may provide valuable insights to address any differences among the most disclosed and least disclosed environmental initiatives taken by them.

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Further reading

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Appendix 1

1. Dutch Bangla Bank Limited
2. The City Bank Limited
3. Islamic Bank Bangladesh Limited
4. Eastern Bank Limited
5. Al-Arafah Islamic Bank Limited
6. Dhaka Bank Limited
7. Uttara Bank Limited
8. Standard Bank Limited
9. BRAC Bank Limited
10. Prime Bank Limited
11. Social Islamic Bank Limited
12. First Security Bank Limited
13. Mercantile Bank Limited
14. One Bank Limited
15. IFIC Bank Limited
16. ICB Islamic Bank Limited
17. Shahjalal Islamic Bank Limited
18. EXIM Bank Limited
19. Bank Asia Limited
20. AB Bank Limited
21. Premier Bank Limited
22. Southeast Bank
23. National Bank Limited
24. UCB Limited
25. Jamuna Bank Limited
26. NCC Bank Limited
27. Pubali Bank Limited
26. Rupali Bank Limited
27. Trust Bank Limited
28. NCC Bank Limited
29. IDLC Finance Limited
30. United Finance Limited
31. City General Insurance Company Limited
32. Eastern Insurance Company Limited
33. Nitol Insurance Company Limited
34. Central Insurance Company Limited

Table A1.
List of sample bank and nonbank financial institutions under Dhaka Stock Exchange

EJMBE
32,3

368

1. Heidelberg Cement Limited
2. Meghna Cement Limited
3. Crown Cement Limited
4. RAK Ceramic Limited
5. Fu-Wang Ceramic Industries Limited
6. Shinepukur Ceramics Limited
7. BSRM Steels Limited
8. RSRM Steels Limited
9. GPH Ishpat Limited
10. Navana CNG Limited
11. Singer Bangladesh Limited
12. Hakkani Pulp and Paper Mills Limited
13. Western Marine Shipyard Limited
14. Aamra Technology Limited
15. BDCOM Online Limited
16. Acme Laboratory
17. ACI Limited
18. Square Pharmaceutical
19. Reneta Limited
20. IBNSINA Pharma
21. Orion Pharma
22. Baximco Pharma
23. Titas Gas Transmission and Distribution Company Limited
25. Lanka Bangla
26. IDLC Finance Limited
27. United Finance Limited
28. City General Insurance Company Limited
29. United Power and Distribution
30. Meghna Petroleum Limited
31. Linde Bangladesh Limited
32. British American Tobacco Bangladesh Company Limited
33. Golden Harvest Agro Industries Limited
34. Bata Shoe Company (Bangladesh) Limited
35. Bangladesh Export Import Company Limited

Table A2.
List of sample
nonfinancial
institutions under
Dhaka Stock Exchange

Bangladesh Bank Green Reporting Guidelines 2011

GRI code

Green finance (A)	GR3 – Encouraging investment in renewable energy project, clean water project, wastewater and management treatment plant, solid and hazardous disposal plant, and green and environmental innovation and technology
Green office and green management disclosures (B)	GR5 – Green office management Energy use, saving and efficiency; electricity consumption and saving; gas and fuel consumption and saving; water consumption and saving; less consumption of paper; eco-printing; using solar energy; green office guide; reduce business travel GR7 – Stakeholders’ training and awareness Social, investors and customers awareness of environmental, water and air pollution; using renewable sources of energy; tree plantation; use energy-efficient vehicles; regular training to the employees; introducing green day and green events GR11 – Reward and motivation Ranking top ten green firms; risk rating facility; positive impact on CAMEL rating; opening new branches; CSR rating; tax benefit; gaining circulation of Green logo
Other green disclosures (C)	GR4 – Climate change risk fund Climate change responsibility; formulation and utilization of climate change fund for flood, cyclone and drought; ensure more financing in the climate-vulnerable areas and sectors GR2 – Environmental risk management auditing guidelines and reporting format considering environmental and climate risks; introducing environmental due diligence checklist

Table A3.
Bangladesh Green Banks

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