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Article

Effect of ownership attributes on environmental reporting in the emerging economy

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Abstract: Nowadays investors are measuring the performances of a business organization not only based on their operating efficiency but also fulfilling their social responsibility. At least the investors need to know whether the activities of the business have any adverse impact on the society and environment. This study explores the accountability of the business from the social and environmental context. This empirical study tends to investigate the nature of the ownership structure that influences the environmental disclosure of a business entity. Based on the sample of fifty-five DSE-listed textile companies, this study used multiple regression to assess the causal relationship between the ownership structure and corporate environmental disclosure. Moreover, this cross-sectional study also considers the agency theory and stakeholder theory to explain the relationship between the ownership structure and environmental disclosure. The findings indicate that corporate environmental disclosure is positively influenced by foreign ownership and institutional ownership whereas director ownership and public ownership have no significant association with the environmental disclosure. These insightful results challenge conventional assumptions and highlight the need for a nuanced understanding of the factors that drive environmental reporting practices in the context of an emerging economy. The main contribution of this article lies in its provision of empirical evidence from an emerging economy, Bangladesh, which helps in understanding sustainable practices in a global context. Additionally, it aids in developing effective corporate governance policies and strategies tailored to similar emerging economies by recognizing the role of ownership structures in influencing environmental accountability. These findings further assist policymakers, managers, and other sustainability advocates in understanding how different ownership structures affect corporate environmental disclosure.

Keywords: environmental disclosure; ownership structures; agency theory; stakeholder theory
JEL Classifications: Q56; M14; M41; G32

1. Introduction

The business organization is considered as a member of the society and therefore each of the business need to satisfy its social and environmental responsibilities. Addressing environmental challenges is a pivotal issue in today's business landscape, with Corporate Environmental Disclosure (CED) garnering increased attention from stakeholders, regulators, and researchers (Chen and Bouvain, 2009; Clarkson et al., 2008; Deegan et al., 2002; Lin et al., 2022; Xiuhui and Raza, 2022). Companies are expected to be transparent about their environmental impact in response to growing concerns about sustainability and increased demand for disclosure (Brammer and Pavelin, 2008; Dhaliwal et al., 2011; Lin et al., 2022). As a result, researchers have been investigating factors that influence corporate environmental disclosure because it can affect stakeholders' perceptions and company reputations (Adams, 2002;

Clarkson et al., 2008; Xiuhui and Raza, 2022). Corporate concerns on environmental issues have become an overwhelming challenging issue as till now there has been no uniform and widely accepted guidelines that need to be followed by the business people universally due to the divergent role of the regulatory bodies all over the world (Masum et al., 2024; Raza and Lin, 2023). In addition, the accountabilities of the corporate people towards the environment are not well defined (Lin et al., 2022; Raza and Lin, 2023). Although in developed countries environmental research achieves significant advances developing and emerging economies still face struggles to address the issues (Masum et al., 2024). However, previous studies have largely focused on developed countries (Shah and Ivascu, 2024), leaving a gap in understanding Corporate Environmental Disclosure (CED) practices in emerging economies. Furthermore, while there has been research on the factors influencing CED, limited attention has been given to how different ownership structures (public, director, foreign, institutional) affect these disclosures (Masum et al., 2024), especially in the context of an emerging economy like Bangladesh. This gap in ownership-structure-driven environmental disclosure forms the core of this study. These inconclusive findings of corporate environmental reporting are addressed in this empirical study based on an emerging country context. This research seeks to enrich the current understanding by exploring the significance of ownership structure on corporate environmental disclosure within the context of Bangladesh—an emerging economy. Bangladesh has observed remarkable economic progress despite its struggles with environment conservation and preservation. This study is significant for two reasons: firstly, it provides empirical evidence from an emerging economy, Bangladesh that can contribute significantly to our understanding of sustainable practices globally while simultaneously acknowledging any cultural variations between different nations. Secondly and more pertinently given Bangladesh's context—the findings may encourage companies in Bangladesh to become more environmentally responsible and transparent. The outcomes of this research could aid in developing effective corporate governance policies and strategies within Bangladesh and other comparable economies. By acknowledging ownership structures as a crucial aspect of transparent and comprehensive environmental disclosure practices, this study provides policymakers, investors, and company managers with valuable insights regarding their role in shaping environmental accountability decisions within their organizations. This research also contributes towards advancing the ongoing discussion around corporate environmental responsibility in emerging economies that require further empirical investigation. The study can offer valuable insights into the dynamics of Corporate Environmental Disclosure (CED) influenced by various ownership structures, addressing a significant gap in the understanding of CED practices in emerging economies.

Inspired by similar studies conducted in other emerging economies, such as Xiuhui and Raza (2022) exploration of carbon mitigation in Pakistan's industrial economy and Lin et al. (2022) analysis of fuel substitution in India, this research contributes to the broader understanding of CED in emerging markets. Especially, the impact of corporate governance in terms of ownership attributes on corporate environmental disclosure which will further ensure environmental accountability towards the business entity. This research can assist policymakers and corporate

managers in devising strategies that enhance transparency and environmental responsibility. The findings of the paper will tie the corporate people in achieving the environmental restoration policy of the government. By exploring the influence of ownership structures on CED, the study aims to contribute to the global discourse on corporate sustainability, providing a novel perspective from the context of Bangladesh's rapidly evolving industrial sector.

This empirical study is methodically structured to provide a comprehensive understanding of the relationship between Ownership Structure and Corporate Environmental Disclosure in an emerging economy context. The first section, 'Materials and Methods', lays the foundation for our study. Here the critical examinations of existing literature and formulations of the hypotheses are mentioned. This section also incorporates the 'Methodology of the Study' that highlights the study's approach, including sample construction, measurements of variables, and the empirical model used. The second section includes the 'Results', obtained from the empirical findings. This includes an in-depth analysis of the data. Finally, the paper culminates in the 'Conclusion' section, where we discuss the implications of our findings, address the study's limitations, and suggest directions for future research in this vital field.

2. Materials and methods

2.1. Theoretical framework

This study is guided by two complementary theoretical perspectives, Agency Theory and Stakeholder Theory, which provide a nuanced understanding of how ownership structures can influence corporate environmental disclosure. The Agency Theory postulates the relationship between principals (shareholders) and agents (managers), and potential conflicts of interest arising from this relationship (Jensen and Meckling, 1976). When the principals are dispersed, as is often the case with public ownership, agency costs tend to be higher due to difficulties in monitoring management behavior. These companies are therefore more likely to engage in comprehensive environmental disclosure to reduce information asymmetry (Brammer and Pavelin, 2008). Conversely, in companies with concentrated ownership like director or family ownership, the interests of owners and managers are closely aligned, potentially reducing the motivation for extensive environmental disclosure (Islam and Rahman, 2017). The Stakeholder Theory suggests that corporations have obligations to all their stakeholders, not just the shareholders (Freeman, 1984). This theory implies that diverse ownership structures may drive the demand for comprehensive environmental disclosure, as different stakeholders may have differing levels of expectation and influence over the company's environmental accountability (Hillman and Keim, 2001). For example, institutional and foreign owners may demand more transparent environmental disclosure due to their larger stakes, influence, and international exposure (Chau and Gray, 2002).

2.2. Literature review and hypothesis development

In the context of our research on the influence of ownership structure on

Corporate Environmental Disclosure (CED) in Bangladesh, the findings from Raza (2023) about technological progress in the transport sector, Raza and Lin (2023) insights on natural gas consumption, and Yousaf Raza et al.'s (2023) exploration of energy consumption's impact on CO_2 emissions provide a comprehensive framework. These studies collectively underline the critical interaction between economic factors and environmental sustainability in Bangladesh, reinforcing the relevance of our investigation into how different ownership structures within this emerging economy might shape CED practices. Yang et al.'s 2023 study on Western China's ecosystem highlights the importance of capital flows in economic and environmental contexts. It highlights how capital movements, both domestic and international, critically influence Corporate Environmental Disclosure in rapidly growing economies like Bangladesh, linking financial investment with environmental transparency. Jiang and Raza's (2023) research on China's renewable energy strategies and Raza and Tang's (2022) analysis of Pakistan's energy transition highlight the critical role of policy and technical innovation in achieving environmental sustainability. These studies underscore the global imperative of strategic policy design and technological advancement in reducing carbon emissions, offering valuable insights relevant to our study's focus on environmental disclosure in emerging economies. Our study fills a critical gap in understanding how economic growth and capital flows impact Corporate Environmental Disclosure in Bangladesh. We uniquely integrate insights from global environmental-economic interactions, as highlighted by Yang et al. (2023) in their study of ecosystem services in Western. This approach enriches the literature by linking financial dynamics with environmental transparency in the context of an emerging economy, offering valuable contributions to both academic research and practical policy-making. Our research on ownership structures and corporate environmental disclosure also aligns with He et al. (2023) by contributing to the understanding of environmental management strategies, albeit in a different context. While He et al. (2023) focus on identifying reduction pathways for agricultural water pollution in Hubei Province, China, our study examines how ownership dynamics influence environmental reporting practices in the corporate sector. Both studies contribute to sustainability efforts by shedding light on effective strategies for environmental management and transparency. Moreover, the current research on ownership structures and corporate environmental disclosure complements the findings of Yuan et al. (2024) by offering insights into environmental management strategies within different organizational contexts. Both studies contribute to sustainability efforts by providing valuable insights into effective strategies for environmental management, whether at the intergovernmental level or within private organizations.

The variables integral to this study revolve around Corporate Environmental Disclosure (CED) and its interaction with various forms of ownership structure: public, director, foreign, and institutional. CED stands as a significant marker of corporate environmental responsibility (Clarkson et al., 2008), while the different types of ownership, each presenting unique characteristics, can significantly influence CED practices (Brammer and Pavelin, 2008; Gao and Zhang, 2018; Ho and Wong, 2004; Islam and Rahman, 2017). Alongside these, firm-specific control variables, such as earnings per share, company size, return on equity, and company age, are considered

due to their potential influence on a company's environmental disclosure practices (Chen and Bouvain, 2009; Guthrie and Parker, 1990). The relationship between different forms of ownership structure and corporate environmental disclosure in the context of an emerging economy, specifically Bangladesh, is not extensively explored. Moreover, the adoption of green technologies can further enhance environmental accountability. For instance, Zhang and Chen (2022) highlight how remote monitoring technology influences environmental reporting through improved operational transparency. Additionally, Sun et al. (2023) show that innovations in green technology can strengthen financial risk management, contributing to better environmental disclosures. Liu et al. (2023) further emphasize the role of digital technologies, such as AI and big data, in enhancing the accuracy and transparency of corporate environmental reports. Chen et al. (2023) highlights that sustainable innovation, when coupled with robust corporate governance, drives more comprehensive environmental disclosures. The integration of these advanced technologies enables businesses to provide more accurate real-time data, thereby increasing trust among stakeholders (Liu et al., 2023). Moreover, companies that prioritize sustainable innovations demonstrate a stronger commitment to long-term environmental responsibility, improving their overall corporate image (Chen et al., 2023). The relevant literature based on these four chunks of variables and then company-specific factors like earnings per share, company size, return on equity, and the age of the company are stated below.

2.2.1. Corporate environmental disclosure and public ownership

Public ownership, defined by a broad spread of company shares across numerous individual and institutional shareholders, plays a crucial role in the behavior of a corporation, particularly regarding its disclosure practices. The governance implications of public ownership are significant as they fundamentally influence a corporation's approach to transparency and accountability (Shleifer and Vishny, 1997). The scope of Corporate Environmental Disclosure (CED) is particularly sensitive to the nature of public ownership. Companies with widely dispersed ownership face heightened pressure to provide thorough and detailed information, meeting the diverse expectations of their shareholder base (Brammer and Pavelin, 2008). The scrutiny exerted by the array of shareholders incentivizes publicly-owned companies to adopt superior environmental practices, with their disclosure acting as a reputational safeguard (Clarkson et al., 2008; Cormier et al., 2005). The Principal-Agent theory underlines this pressure, with shareholders (the principals) eager to oversee and control the actions of managers (agents) to ensure alignment with their interests. The theory's implications are potentially more potent in publicly-owned companies, where the diverse and numerous shareholders may amplify the demand for comprehensive environmental disclosure, used as a tool to observe managerial actions around environmental practices (Jensen and Meckling, 1976). Empirical studies lend support to these theories. Brammer and Pavelin (2008) established that companies with dispersed ownership are more likely to engage in comprehensive environmental disclosure. Ho and Wong (2004) concluded that the level of voluntary environmental information disclosure was positively influenced by the presence of a multitude of shareholders in publicly owned companies. Yin and Wang (2018) also illustrated those

stakeholders' perceptions and demands significantly affect the quality and quantity of corporate environmental disclosure, indicating a positive correlation with public ownership. Therefore, in light of the theoretical framework and literature, the following hypothesis is postulated:

Hypothesis 1: Public ownership positively influences corporate environmental disclosure.

2.2.2. Corporate environmental disclosure and director ownership

Director ownership, the second focal variable, refers to the portion of shares owned by the company's directors. This aspect of the ownership structure indicates how closely directors' interests align with those of shareholders. It also sheds light on the balance of power within the organization and its impact on decision-making processes, including those related to environmental disclosure (Akrout and Othman, 2013). The relationship between director ownership and Corporate Environmental Disclosure (CED) can be framed using both the principal-agent and stakeholder theories. As per the principal-agent theory, high director ownership implies that directors' interests are likely closely aligned with those of shareholders, potentially leading to more transparent practices, including improved environmental disclosure (Jensen and Meckling, 1976). Stakeholder theory, on the other hand, suggests that directors, as crucial stakeholders, might strive to meet broader stakeholder expectations when they hold a substantial ownership stake. This could manifest in enhanced environmental transparency, given the growing societal and stakeholder demand for such information (Freeman, 1984). The majority of empirical studies indicate a positive association between director ownership and CED. For instance, Akrout and Othman (2013) found that director ownership significantly impacted the extent and quality of environmental disclosures among Middle Eastern and North African (MENA) companies. Similarly, Gerged (2021) noted a positive influence of director ownership on CED in various emerging markets, suggesting that increased alignment of interests facilitated by director ownership may act as a catalyst for improved environmental disclosure practices. Contrastingly, Dhaliwal et al. (2011) noted a neutral or negative relationship between director ownership and CED, demonstrating that the relationship is not universally positive. However, the preponderance of research, particularly concerning emerging markets, leans towards a positive association. Based on the prevalent positive relationship evident in the literature hypothesis 2 is assumed. Despite this proposed hypothesis, it is critical to acknowledge that the precise nature of this relationship may be nuanced and could vary based on specific corporate and market conditions.

Hypothesis 2: Director ownership positively influences corporate environmental disclosure.

2.2.3. Corporate environmental disclosure and director ownership

Foreign ownership refers to the proportion of a firm's stock that is held by foreign investors. Foreign ownership has been recognized as a critical factor influencing corporate governance and disclosure practices (Djankov and Murrell, 2002). The presence of foreign investors can enhance the demand for corporate disclosure due to their distant geographical location and limited direct access to local information (Jensen and Meckling, 1976). In terms of the theoretical framework, both the

stakeholder theory and the principal-agent theory are applicable here. As important stakeholders, foreign investors can pressure firms to disclose more environmental information to reduce information asymmetry and protect their interests (Freeman, 1984). From the principal-agent perspective, foreign owners, as principals, may require more environmental information to monitor and control the firm's activities and to ensure their investments are safeguarded (Jensen and Meckling, 1976). Empirical studies have provided evidence of the influence of foreign ownership on CED. For instance, in a study conducted in Pakistan, Rustam et al. (2019) found that foreign ownership positively influences corporate sustainability disclosure, including environmental aspects. They argue that foreign owners, particularly those from developed countries, bring their values, norms, and expectations to the firms they invest in, leading to improved disclosure practices. On the other hand, contrasting results are found in other research. Some studies reported no significant relationship between foreign ownership and CED (Walden and Schwartz, 1997), while others reported a negative relationship (Thorne et al., 2014), suggesting that foreign owners may focus more on financial returns than environmental disclosure. Given the mixed findings and the growing importance of foreign investment in developing economies, it is necessary to examine the role of foreign ownership in influencing CED in the context of Bangladesh. Hence, the following hypothesis is proposed:

Hypothesis 3: Foreign ownership positively influences corporate environmental disclosure.

2.2.4. Corporate environmental disclosure and institutional ownership

Institutional ownership refers to the ownership of a company's stocks by institutional investors such as pension funds, mutual funds, and insurance companies. The presence of institutional investors is significant as they often hold large stakes in companies and possess substantial voting power to influence corporate policies and strategies, including disclosure practices (Bushee and Noe, 2000). The stakeholder theory proposes that institutional investors, as important stakeholders, would demand more corporate environmental disclosure due to their fiduciary responsibility to their beneficiaries and their commitment to socially responsible investment (Freeman, 1984). In line with the principal-agent theory, institutional owners can also incentivize managers to provide more environmental disclosure to minimize agency costs and align the interests of managers with those of the shareholders (Jensen and Meckling, 1976). Empirical research on the relationship between institutional ownership and CED has yielded mixed results. A study by Saleh, Zulkifli, and Muhamad (2010) in Malaysia showed a positive relationship between institutional ownership and corporate social responsibility (CSR) disclosure, of which environmental disclosure is a key component. They posited those institutional investors are more likely to invest in companies that demonstrate responsible behavior towards the environment due to their long-term investment horizon. In contrast, some studies have found a non-significant or even negative relationship between institutional ownership and environmental disclosure (Graves and Waddock, 1994). Wang et al. (2021) found that while poor air quality increased corporate environmental disclosure, the presence of institutional investors did not significantly strengthen this effect. Considering these differing findings and the importance of institutional ownership in shaping corporate

disclosure practices, it is essential to explore the influence of institutional ownership on CED in Bangladesh's context. Hence, the following hypothesis is assumed:

Hypothesis 4: Institutional ownership positively influences environmental disclosure.

2.2.5. Corporate environmental disclosure and earnings per share

Earnings Per Share (EPS) is an essential financial metric that indicates a company's profitability. It serves as a significant indicator for shareholders and potential investors to evaluate a company's financial health and growth prospects (Gordon et al., 2009). Moreover, companies with higher earnings may have a larger capacity for investing in environmental sustainability efforts, a phenomenon recognized in the Principal-Agent Theory. It suggests that firms with greater resources can align their actions with stakeholders' interests, which increasingly include environmental concerns. Several empirical studies have explored the relationship between EPS and CED. Cho and Patten (2007) found a positive association between a company's EPS and its level of environmental disclosure. They argued that profitable companies, as indicated by higher EPS, tend to be more proactive in their environmental reporting as it helps portray a responsible corporate image. This viewpoint is in line with the Stakeholder Theory, suggesting that businesses address stakeholders' informational needs to maintain their support and legitimacy. However, a contrasting perspective was provided by Cormier, Magnan and Van Velthoven (2005). They found that firms might use CED as a strategy to divert stakeholders' attention away from poor financial performance, implying a potential negative relationship. Despite these mixed findings, the predominant literature suggests a positive relationship, aligning with the proposed hypothesis that higher earnings per share could lead to enhanced corporate environmental disclosure. Further empirical investigation in varied contexts is needed to corroborate these findings. The following hypothesis is assumed:

Hypothesis 5: EPS positively influences corporate environmental disclosure.

2.2.6. Corporate environmental disclosure and company size

It is frequently acknowledged that a firm's level of environmental disclosure is significantly influenced by its size. Given their significant financial resources and wide range of stakeholders, larger businesses are likely to experience greater pressure to disclose their environmental activities and effects (Neu et al., 1998). The Stakeholder Theory contends that larger businesses improve their environmental reporting methods due to increased visibility and public scrutiny (Freeman, 1984). There is also a connection to the Principal-Agent Theory because large corporations have a wide variety of shareholders whose interests must be taken into consideration. Environmental stewardship is becoming more and more important to one of these concerns. So, to align their interests with those of their shareholders, larger companies may release more information. There is a strong correlation between corporate size and the amount of environmental disclosure, according to the empirical literature. According to Brammer and Pavelin's (2008) research, larger companies release more information regarding their environmental performance. They attribute this to increased public scrutiny and their increased capacity to cover the expenses of disclosure. Similarly, Clarkson et al. (2008) pointed out that larger companies have

greater incentives to publish environmental information because of their visibility and possible environmental effects. The proposed hypothesis, according to which firm size affects corporate environmental disclosure favorably, is consistent with the significant findings in the body of previous research. Thus, the expectation is that larger companies in Bangladesh would exhibit a higher degree of environmental disclosure. The hypothesis is then formed:

Hypothesis 6: Company size positively influences corporate environmental disclosure.

2.2.7. Corporate environmental disclosure and return on equity

Return on Equity (ROE), a measure of financial performance, is an important factor for investors when considering a company's profitability (Bhuiyan and Masum, 2010). It represents the net income returned as a percentage of shareholders' equity, thus conveying how effectively management is using a company's resources to create profits. Empirically, a positive relationship between ROE and CED has been suggested in the literature (Ahmed et. al, 2021; Masum et al., 2020; Plumlee, 2003; Rahman and Masum, 2021). For instance, Plumlee (2003) found that companies with a higher ROE tend to disclose more environmental information due to their ability to bear the costs of disclosure and the necessity to maintain a positive image among stakeholders. Similarly, Cormier, Magnan, and Van Velthoven (2005) revealed that companies with better financial performance, as measured by ROE, are more likely to make extensive environmental disclosures. Masum et al. (2020) conducted a comprehensive study to explore the relationship between corporate voluntary disclosure and corporate performance in terms of return on equity. It was found that the profitability of a company significantly influences corporate voluntary disclosure. Given this backdrop, companies in Bangladesh with higher ROE would be expected to provide more comprehensive environmental disclosures. Consequently, the hypothesis is formed as follows:

Hypothesis 7: Return on equity positively influences corporate environmental disclosure.

2.2.8. Corporate environmental disclosure and company age

Company age refers to the number of years since a company was established. It is generally believed that older companies are more likely to have established routines, formalized procedures, and long-standing relationships with various stakeholders. Empirically, several studies have found a positive relationship between company age and the extent of CED. For instance, Deegan and Gordon (1996) showed that older companies are more likely to disclose environmental information. They suggest that older companies have more at stake, in terms of reputation, and thus are more likely to engage in environmental reporting. Similarly, Cowen et al. (1987) found that older companies tend to have more extensive CED, potentially due to increased stakeholder pressure and expectations. From the context of Bangladesh, Masum et al. (2020) found no significant relationship between the age of a company listed in the DSE and corporate voluntary disclosure. Based on these considerations, it is expected that older companies in Bangladesh would provide more comprehensive environmental disclosures. Therefore, the following hypothesis can be suggested:

Hypothesis 8: Company age positively influences corporate environmental disclosure.

2.3. Methodology of the study

2.3.1. Sample constructions

This study has been conducted to explore the most significant ownership structure that results from more corporate environmental disclosure in the context of an emerging economy, Bangladesh. There are 62 listed jute and textile companies in DSE and all the companies have been used as a sample to execute the study. To achieve the objectives of the study a purposive sample of fifty-five DSE-listed companies are selected considering the following conditions:

1) All the selected samples are listed in DSE

2) All the selected companies published their audited annual report regularly

3) All the selected samples arrange their AGM regularly

Textile and Jute industries have been considered for the study as they are the top export-oriented commodities in Bangladesh (Bhuiyan and Masum, 2010). Due to the foreign investor's embargo, textile and jute industries are required to comply with various environmental issues. Based on their environmentally friendly operations, the textile and jute factories are rewarded as the green factory. The status of a "green factory" creates positive images of the textile and jute industries among local and foreign buyers. The annual reports are taken for the year 2021–2022. Annual reports are used as the sources of data as they are more reliable and available (Ahmed et al., 2021; Rahman and Masum, 2021). Moreover, the annual reports are verified by a third independent party (Ahmed et al, 2021; Masum et al., 2020).

2.3.2. Measurements of variables

In this study, corporate environmental disclosure has been used as the dependent variable which is determined through content analysis. Content analysis is a widely accepted technique to quantify qualitative information (Ahmed et. al, 2021; Masum et al., 2020; Rahman and Masum, 2021). To determine the corporate environmental disclosure score an unweighted disclosure index has been used from the published annual reports of the concerned company. Here, a self-constructed disclosure index having twenty-two items is used to measure the environmental disclosure for each of the selected companies. The contents of the disclosure index have been finalized based on the previous academic research on corporate environmental disclosure. The following formula has been used to determine the CED score:

CED Score = (∑Disclosed items by the Company/Maximum available score) × 100

For each of the disclosed items the concerned company gets "one" otherwise it gets "zero". Finally, the total score of a company out of twenty items has been obtained. Lately, the environment score has been converted to a relative score. The reliability of the environmental score of the selected samples has been cross-checked through a "paired-*t* test". From the paired t-test of the environmental score, no significant differences have been found between the two independently appointed data coders. Four proxy variables of ownership structure namely, public ownership, director ownership, foreign ownership, and institutional ownership have been used as

independent variables in the study since these features are most common in the context of Bangladesh (Hasan et al., 2022; Masum et. al., 2020). Details of the variable measurements are stated in **Table 1**.

Table 1. Operationalization of variables.

Variables	Abridged form	Measurements
Corporate Environmental Disclosure score	ENV_SCORE	An unweighted disclosure index has been used to determine the environmental disclosure of the selected companies.
Public Ownership	O_Public	Total number of individual shareholdings divided by the total number of ordinary shares outstanding.
Director Ownership	O_Director	Total number of director shareholdings divided by the total number of ordinary shares outstanding.
Foreign Ownership	O_Foreign	Total number of foreign shareholdings divided by the total number of ordinary shares outstanding.
Institutional Ownership	O_Institutional	Total number of institutional shareholdings divided by the total number of ordinary shares outstanding.
Earnings Per Share	EPS	Net profit attributable to the common stockholders scaled by the total number of ordinary shares outstanding
Size of Company	Company_Size	Natural log of total assets taken from the annual report of the concerned company.
Return on Equity	ROE	Net profit divided by total equity.
Company Age	Company_Age	Differences between the year of establishment of any particular company and the year in which the annual report has been used in the study.

2.3.3. Empirical model

To investigate the impact of ownership structure on corporate environmental disclosure in the emerging economy, a cross-sectional study is used in the study. Due to the inherent nature of the samples cross sectional study becomes best suited for this comprehensive study. On the other hand, due to the sample size and nature of the data, panel data seems to be irrelevant to the study. Therefore, the following multiple regression is used:

$$\text{ENV_}SCORE = \beta_0 + \beta_1 O_Public + \beta_2 O_Director + \beta_3 O_Foreign + \beta_4 O_Institutional + \beta_5 EPS + \beta_6 Company_Size + \beta_7 ROE + \beta_8 Company_Age + \varepsilon$$

3. Results and discussions

3.1. Descriptive statistics

Table 2 presents the descriptive statistics for the variables included in the analysis. It provides an overview of each variable's sample size, mean, and standard deviation. In terms of the environmental score (ENV_SCORE), the mean value of 0.34 suggests a moderate level of environmental disclosure among the companies in the sample, with a standard deviation of 0.38. This indicates a notable degree of variability in the environmental scores across the sample companies. These findings align with previous research that emphasizes the heterogeneity in corporate environmental disclosure practices (Clarkson et al., 2008; Yin and Wang, 2018). Regarding ownership structures, the mean value of O_Public (0.43) indicates a substantial

presence of public ownership, with a standard deviation of 0.31. The relatively high standard deviation suggests a wide range of public ownership percentages among the companies. This finding supports the literature's emphasis on the role of public ownership in driving comprehensive environmental disclosure, as the dispersion in ownership may contribute to variations in disclosure practices (Brammer and Pavelin, 2008). Similarly, the mean value of O_Director (0.35) suggests that directors have a significant ownership stake in the companies, with a standard deviation of 0.22. The lower standard deviation indicates relatively less variability in director ownership percentages. This finding aligns with the literature, which suggests that director ownership may influence environmental disclosure, although the relationship may be more consistent due to the concentrated ownership structure (Akrout and Othman, 2013). In terms of O_Foreign and O_Institutional, the relatively low mean values (0.04 and 0.11, respectively) and small standard deviations (0.12 and 0.13) indicate a limited presence of foreign and institutional ownership in the sample companies. These findings suggest a more consistent ownership structure in these categories. However, the literature highlights the potential influence of these ownership types on environmental disclosure, despite their lower representation in the sample (Rustam et al., 2019; Saleh et al., 2010).

The control variables in this study provide additional insights into the companies' characteristics and their potential influence on environmental disclosure practices. EPS, with a mean value of 10.08 and a relatively high standard deviation of 27.91, indicates significant variability in earnings per share among the companies. Higher earnings per share are expected to positively influence environmental disclosure, but the wide range of values suggests varying levels of financial capacity and potential impact on disclosure practices. Company Size, with a mean value of 8.66 and a moderate standard deviation of 1.39, reflects the diversity in company sizes. Larger companies are often subject to greater public scrutiny and are expected to disclose more environmental information due to their visibility and potential impact on the environment. The variability in company sizes allows for a comprehensive analysis of the relationship between company size and environmental disclosure. ROE, with a negative mean value of −0.68 and a standard deviation of 6.22, indicates variability in return on equity among the companies. While a higher return on equity may lead to improved environmental disclosure, the wide range of values suggests the potential influence of other factors and contexts on this relationship. Company_Age, with a mean value of 41.91 and a considerable standard deviation of 28.87, represents the average age of the companies. Older companies are expected to have established routines, formalized procedures, and long-standing relationships with stakeholders, potentially influencing their environmental disclosure practices. The descriptive statistics indicate that the variables demonstrate varying degrees of normality. While some variables show reasonably normal distributions, others exhibit deviations from normality. The normality assumptions should be considered when interpreting the results.

Table 2. Descriptive statistics.

Variables	Mean	Standard Deviation	Minimum	Maximum
ENV_SCORE	0.34	0.38	0.02	0.74
O_Public	0.43	0.31	0.23	0.59
O_Director	0.35	0.22	0.21	0.81
O_Foreign	0.04	0.12	0.00	0.21
O_Institutional	0.11	0.13	0.02	0.39
EPS	10.08	27.91	−68.90	203.00
Company_Size	8.66	1.39	5.66	9.21
ROE	−0.68	26.22	−0.89	133.00
Company_Age	41.91	28.87	12	62

3.2. Correlation analysis

Based on empirical study, the correlation coefficients of the variables are presented in **Table 3**. Starting with the dependent variable, ENV_SCORE, a significant negative correlation with O_Public ($r = -0.337^*$, $p < 0.01$) is found, indicating that a higher level of public ownership is associated with lower environmental disclosure scores. This finding aligns with the literature on the influence of ownership structures on corporate environmental disclosure. Moving to the directors' ownership, it shows a significant positive correlation with ENV_SCORE ($r = 0.509$, $p < 0.01$), suggesting that higher director ownership is associated with increased environmental disclosure. This result is consistent with the theory that directors with substantial ownership stakes are more inclined to prioritize environmental transparency. The correlation between O_Foreign and ENV_SCORE is not statistically significant ($r = 0.348$, $p > 0.10$), indicating that foreign ownership does not significantly impact environmental disclosure in this context. Similarly, the correlation between O_Institutional and ENV_SCORE is also not statistically significant ($r = 0.232$, $p > 0.10$), suggesting that institutional ownership does not significantly influence environmental disclosure. Regarding the control variables, EPS shows a significant positive correlation with ENV_SCORE ($r = 0.458$, $p < 0.01$), implying that higher earnings per share are associated with greater environmental disclosure. Company_Size exhibits a significant negative correlation with ENV_SCORE ($r = -0.404$, $p < 0.01$), indicating that larger companies tend to have lower levels of environmental disclosure. This finding aligns with the notion that larger companies may face greater scrutiny and stakeholder expectations regarding their environmental practices. The correlation between ROE and ENV_SCORE is not statistically significant ($r = 0.076$, $p > 0.10$), suggesting that return on equity does not significantly impact environmental disclosure in this study. Lastly, there is a significant positive correlation between Company_Age and ENV_SCORE ($r = 0.552$, $p < 0.01$), indicating that older companies are more likely to have higher levels of environmental disclosure.

Table 3. Correlation coefficients.

	ENV_ SCORE	**O_ Pub.**	**O_ Direc.**	**O_ For.**	**O_Ins.**	**EPS**	**Com._Size**	**ROE**	**Com._Age**
ENV_ SCORE	1.000								
O_ Pub.	−0.337*	1.000							
O_ Direc.	0.509*	−0.326**	1.000						
O_ For.	0.348	−0.307	−0.065	1.000					
O_ Inst.	0.232	−0.260	−0.071*	−0.109	1.000				
EPS	0.458*	−0.428	0.486	0.008	−0.014	1.000			
Com._ Size	−0.404*	0.343	−0.453	0.301	0.466	−0.177	1.000		
ROE	0.076	−0.106**	0.024	0.046	0.089	0.112*	−0.018	1.000	
Com._ Age	0.552*	−0.609	0.597	−0.001	−0.271	0.431***	−0.595	0.037	1.000

*1% level of significance
**5% level of significance
***10% level of significance

3.3. Regression and hypothesis analysis

Table 4 represents the regression coefficients of the empirical study and **Table 5** describes the summary of the hypothesis analysis. Foreign ownership has been consistently found to have a positive influence on corporate environmental disclosure in various studies. G. (2017) and Rustam (2019) both found a significant positive association between foreign ownership and environmental disclosure, with the latter also highlighting the role of firm size and growth. Iatridis (2013) and Gerged (2020) further support this, with the former noting that high-quality environmental disclosers often have significant levels of foreign ownership, and the latter specifically identifying foreign ownership as a factor positively associated with corporate environmental disclosure. These findings suggest that foreign ownership can play a key role in promoting transparency and accountability in environmental reporting. In our study, regarding Foreign Ownership (O_Foreign), the positive coefficient (1.206) aligns with previous research (Rustam et al., 2019), suggesting that foreign ownership positively influences corporate environmental disclosure. Companies with higher levels of foreign ownership are more likely to engage in comprehensive environmental disclosure, reflecting the influence of international norms and stakeholder demands. Hence, we accept Hypothesis 3. This finding implies that the inclusion of foreign shareholdings in the capital structure of the business entities of emerging economies is significantly associated with corporate environmental disclosure. International investors most often want to see that the business should operate by considering the glass house concept. Thus, business entities having more foreign investors may disclose more environment-related information in their annual reports.

Institutional ownership has been consistently linked to increased corporate environmental disclosure. Chang (2015) found that higher institutional ownership and

ownership concentration positively influence environmental information disclosure in heavy-pollution industries in China. This trend is further supported by Wicaksono (2023), who found a positive association between institutional ownership and environmental disclosure in Indonesian companies, particularly those with institutional investors from domestic and developed countries. G. (2017) also highlighted the role of foreign institutional ownership in driving environmental disclosure in India. Lastly, Yin (2018) emphasized the positive impact of institutional investor holdings on the relationship between environmental disclosure and innovation in China's high pollution-emitting listed corporations. These studies collectively suggest that institutional ownership plays a crucial role in promoting corporate environmental disclosure. Similarly, in our analysis, the positive coefficient for Institutional Ownership (O_Institutional) (1.058) supports the hypothesis that institutional ownership positively influences corporate environmental disclosure (Saleh et al., 2010). This finding indicates that institutional investors, driven by fiduciary and social responsibility considerations, demand greater environmental transparency from the companies they invest in. Therefore, we accept Hypothesis 4. Business entities having more institutional ownership tend to disclose more information to persuade the investors, particularly in recent days, environment-sensitive investors always look for the initiatives of the business towards the environment (Masum et al., 2023). The finding of this study also justified this assumption as the large investors have more capacity to afford the cost of the environment-related expenditure. Moreover, their experiences in a global context also induce them to disclose more information in their annual reports.

Turning to the firm-specific control variables, Earnings per Share (EPS) shows a positive coefficient (0.003), indicating that higher earnings per share may lead to increased environmental disclosure (Cho and Patten, 2007). This finding aligns with expectations that financially successful companies have the resources and incentives to prioritize environmental reporting. Therefore, we accept Hypothesis 5. Regarding Public Ownership (O_Public), the negative coefficient (−0.398) suggests a deviation from the expected relationship identified in prior studies (Brammer and Pavelin, 2008; Islam and Rahman, 2017). The literature suggests that dispersed public ownership may lead to increased environmental disclosure. However, our analysis indicates a negative relationship between public ownership and environmental disclosure. Therefore, we reject Hypothesis 1, which predicted that public ownership positively influences corporate environmental disclosure. From the context of an emerging economy like Bangladesh, it is found that a dispersed or diversified ownership structure has less bargaining power to induce the management to disclose additional information concerning the environment. There, in this study, no significant relationship between corporate environmental disclosure and public ownership can be found. Moving to Director Ownership (O_Director), the positive coefficient (0.174) suggests a potential positive relationship between director ownership and corporate environmental disclosure. However, the p-value associated with the coefficient (0.676) is not statistically significant, indicating that we do not have sufficient evidence to support hypothesis 2, that director ownership positively influences corporate environmental disclosure (Akrout and Othman, 2013; Gerged, 2021). Therefore, it might be

concluded that the director ownership has no impact on the corporate environmental disclosure practices in the context of Bangladesh.

Company Size exhibits a negative coefficient (−0.150), contrary to the anticipated positive relationship (Brammer and Pavelin, 2008; Clarkson et al., 2008). The negative coefficient suggests that larger companies may disclose less environmental information, potentially reflecting factors such as increased complexity, coordination challenges, or strategic considerations. Hence, we reject Hypothesis 6, which predicted a positive relationship between company size and environmental disclosure. The coefficients for Return on Equity (ROE) (−0.003) and Company Age (−0.001) also demonstrate negative relationships with Environmental Score (ENV_SCORE). These findings deviate from the expected positive relationships identified in the literature review. This suggests the presence of other contextual or industry-specific factors influencing environmental disclosure practices. Therefore, we reject Hypotheses 7 and 8, which predicted positive relationships between return on equity and company age, respectively, with environmental disclosure. Our study on ownership structures and corporate environmental disclosure aligns with He et al. (2023), who identify reduction pathways for agricultural water pollution in Hubei Province, China. In contrast, we investigate how ownership dynamics affect environmental reporting practices in the corporate sector. Similarly, our research complements the findings of Yuan et al. (2024), who focus on cooperation in water pollution management across trans-jurisdictional river basins. Together, these studies provide valuable insights into effective environmental management strategies, spanning both governmental and corporate contexts.

Table 4. Regression coefficients.

	Unstandardized Coefficients	Standard Error	Standardized co-efficient	Sig.	VIF Value
O_Pub.	−0.398	0.360	−0.329	0.275	1.868
O_Direc.	0.174	0.414	0.100	0.676	4.037
O_For.	1.206	0.444	0.380	0.009	4.839
O_Ins.	1.058	0.439	0.349	0.020	3.190
EPS	0.003	0.001	0.238	0.020	2.423
Com._Size	−0.150	0.043	−0.548	0.001	2.996
ROE	−0.003	0.004	−0.043	0.512	1.052
Com._Age	−0.001	0.003	−0.095	0.627	4.435

Table 5. Summary of findings and hypothesis.

Hypothesis No.	Title of Hypothesis	Predicted Relationship	Hypothesis accepted/rejected
Hypothesis 1	Public ownership positively influences Corporate Environmental Disclosure.	+	Hypothesis cannot be accepted
Hypothesis 2	Director ownership positively influences Corporate Environmental Disclosure.	+	Hypothesis cannot be accepted
Hypothesis 3	Foreign ownership positively influences Corporate Environmental Disclosure.	+	Hypothesis accepted
Hypothesis 4	Institutional ownership positively influences Corporate Environmental Disclosure.	+	Hypothesis accepted

Table 5. (*Continued*).

Hypothesis No.	Title of Hypothesis	Predicted Relationship	Hypothesis accepted/rejected
Hypothesis 5	Earnings per share positively influence Corporate Environmental Disclosure.	+	Hypothesis accepted
Hypothesis 6	Company size positively influences Corporate Environmental Disclosure.	+	Hypothesis cannot be accepted
Hypothesis 7	Return on Equity positively influences Corporate Environmental Disclosure.	+	Hypothesis cannot be accepted
Hypothesis 8	Company Age positively influences Corporate Environmental Disclosure.	+	Hypothesis cannot be accepted

4. Conclusion

This study examined the relationship between ownership structures, firm-specific control variables, and corporate environmental disclosure. The outcome of the study revealed an inverse relationship between public ownership and environmental disclosure while foreign and institutional ownership positively influenced corporate environment disclosure. This empirical study brings out the cruel truth that in developing and emerging countries general people are less sensitive towards the environment and society in case of executing their business operations. The primary focus of this research was to fill a gap in the literature by exploring how different ownership structures influence corporate environmental disclosure in an emerging economy like Bangladesh. This focus is critical because, despite the global emphasis on sustainability, emerging economies have lagged in adopting comprehensive environmental reporting practices. By highlighting the role of foreign and institutional ownership in promoting environmental accountability, this study provides new insights that are relevant for both academia and corporate governance. The findings challenge conventional assumptions and present a nuanced understanding of how ownership dynamics affect environmental transparency in an emerging market context.

Further investigation is needed to understand the perceptions of the general public towards environmental reporting in Bangladesh. Practically, these findings have important implications for policymakers, investors, and other stakeholders. The government and the policymakers may launch environmental awareness programs that will stimulate local investors to develop a positive image towards corporate environmental disclosure. In addition, the International Accounting Standard Board (IASB) issued sustainability series accounting standard, IFRS S1—General guidelines for sustainability-related financial disclosure and IFRS S2 Climate change disclosure which is effective from 1/1/24. Since Bangladesh is a member of IASB there are some inherent obligations to adopt these standards soon. The findings of the study will assist the Financial Regulatory Counsel (FRC) of Bangladesh to understand the features of corporate governance required to incorporate the IFRS S1 and S2 in Bangladesh.

This empirical study has several limitations and it provides ample opportunities in opening the door of environmental research from the context of corporate reporting. Prospects for this research include extending the analysis to other industries beyond textiles to verify the stability and generalizability of the findings across different sectors. Additionally, there is scope for expanding the analysis to investigate the role of passive factors, such as cultural and economic barriers, that might hinder

environmental reporting in emerging economies. This will allow future studies to provide a more balanced view of the driving and inhibiting factors affecting corporate environmental disclosure. Firstly this study uses secondary data, primary data like interviews of corporate managers and regulatory bodies may provide more meaningful outcomes in this regard. Secondly, the perceptions of local investors may be investigated towards the corporate environmental reporting—it might show the reasons for their reluctance in persuading their investment decisions in Bangladesh. Thirdly, multi-cultural environmental reporting may be analyzed based on corporate environmental reporting by the listed companies in different countries. Fourthly, in this study, only the listed companies are considered as their information is publicly available and easy to use but inside the economies there are unlisted companies also that can be investigated in further study. Furthermore, expanding the analysis to include other relevant variables, such as industry-specific factors, regulatory environments, and stakeholder pressures, can provide a more comprehensive understanding of the determinants of environmental disclosure.

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