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Firm Size Moderation in Digital Environmental Disclosure, Online Attention, and Stock Prices

Anggit Suryopratomo[1], Majidah Majidah [2] ,
M. Syafaruddin Mahaputra [3] , Awat Widuri [4], Dara Fujiana [5]

Abstract

The objective of this study is to investigate the effect of digital environmental disclosure and online attention on stock prices, and the moderating role of company size in non-cyclical consumer goods issuers on the Indonesia Stock Exchange. The Green Digital Marketing Intensity (GDMI) index represents digital environmental disclosure and is constructed from green communication traces on corporate websites and official social media. Online attention is measured using a composite index derived from Google search interest and corporate website traffic. Grounded in signaling theory, legitimacy theory, stakeholder theory, and the attention-based view, the study positions GDMI and online attention as signals that influence market assessment, while company size acts as a structural factor that alters signal strength. A balanced panel of 14 issuers during 2021–2024 (56 firm-year observations) was analyzed using Feasible Generalized Least Squares panel regression under inter-firm heteroscedasticity. The results show that GDMI, online attention, and company size positively and significantly affect stock price logs. However, the interaction between GDMI and size is negative and significant, while the interaction between ATT and size is positive and significant. These indicate that digital environmental disclosure has a stronger effect on stock prices in smaller companies, whereas online attention has a larger effect in bigger companies. In conclusion, digital green communication footprints and online attention are valued by the market, yet their influence depends on firm size. Practically, digital green communication strategies should be tailored to company scale, and future research is encouraged to expand sectors, periods, and digital attention indicators.

Keywords: *Digital environmental disclosure; Firm size; GDMI; Online attention; Stock prices.*

[1] *Bisnis Digital, Universitas Ma'soem, Indonesia. suryopratomo.anggit@gmail.com*
[2] *Accounting Master Study Program, School of Economics & Business, Telkom University, Indonesia. majidah@telkomuniversity.ac.id*
[3] *Teknik Industri, Universitas Ma'soem, Indonesia*
[4] *Accounting Master Study Program, School of Economics & Business, Telkom University, Indonesia. widuriawat@student.telkomuniversity.ac.id*
[5] *Teknik Industri, Universitas Ma'soem, Indonesia*

1. Introduction

Digital transformation has significantly transform the manner in which companies communicate their sustainability performance and environmental information. Sustainability reporting is no longer presented only in printed annual reports, but is increasingly being shifted to websites, online portals, and online integrated reporting formats that are easily accessible to stakeholders (Rahim and Omar, 2017; An et al., 2019). In the public sector, disclosures related to Sustainable Development Goals (SDGs) have also begun to be published online through local government websites and public institutions (Nicolò *et al.*, 2023). In the realm of marketing, green digital strategies are integrated into the communication mix to connect sustainability messages with brand identity through websites and social media (Al-Ababneh *et al.*, 2025; Avlonitou *et al.,* 2025).

In environmental disclosure literature, environmental and sustainability disclosure is generally viewed as a mechanism for responding to legitimacy pressures and stakeholder demands. Preliminary studies indicate that companies tend to increase environmental disclosure after events that threaten their legitimacy, such as major oil spills (Patten, 1992). Longitudinal analysis in developing countries confirms that company attributes, including size and ownership structure, are closely linked to environmental disclosure intensity and quality from the perspective of legitimacy theory (Akhter *et al.*, 2023). On the other hand, stakeholder power has been shown to influence the extent of corporate social and environmental disclosure, particularly in jurisdictions with increasing regulatory and social pressure (Lu and Abeysekera, 2014). The concepts of materiality and stakeholder engagement are also emphasized as part of responsive sustainability reporting practices (Saraswati *et al.,* 2024), while sustainability reporting is often interpreted as a strategy to build strategic legitimacy, especially for companies operating in emerging markets (Walsh *et al.,* 2021).

Previous studies has extensively researched the correlation between sustainability reporting and finance-related performance and company value. Empirical evidence in emerging markets shows that sustainability reporting by initial public offering (IPO) issuers is positively associated with post-listing finance-related performance (Abbas *et al.*, 2023). In another context, the disclosure of sustainability in the energy sector among Belt and Road countries was found to lead to improved corporate financial performance (Zhou *et al.,* 2024). Research on Singaporean companies indicate that sustainability reporting correlates with higher company value (Loh *et al.,* 2017). From a more specific perspective, environmental performance and environmental disclosure are linked to financial performance, with investor pressure playing an important role in this relationship (Wahyuningrum *et al.*, 2020; Ifada *et al.*, 2021).

In Indonesia, attention to environmental reporting is also showing an upward trend. Research on company characteristics and social and environmental responsibility reporting indices among manufacturing issuers found that factors such as size and profitability have a correlation to disclosure level (Asrori *et al.,* 2019). Carbon

disclosure in Indonesian companies is influenced by financial performance and media exposure, indicating the role of public scrutiny in prompting transparency (Abdullah *et al.*, 2020). A study on the environmental responsibility of Indonesian manufacturing companies also shows that increased environmental responsibility is still needed to meet the expectations of stakeholders (Choiriah *et al.,* 2018). In the capital market, market reactions to environmental disclosure and company characteristics that influence disclosure have also been observed among Indonesian public issuers, although the focus remains predominantly on annual reports and traditional sustainability reports (Cahyono, 2019).

Concurrently, green marketing literature highlights how green marketing communication helps shape consumer behavior and attitudes. Green marketing communication was found to influence green purchase intention both through attitude formation and value perception, with digital media being one of the main channels for delivering messages (Correia *et al.*, 2023). A multi-faceted measure to green marketing strategies shows that a combination of green products, pricing, distribution, and promotion offers competitive benefits for SMEs (Duffett *et al.*, 2018). In the business-to-business context, green marketing practices have been shown to increase the satisfaction and loyalty among customers (Gelderman *et al.*, 2021). The effectiveness of this communication is influenced by the psychological benefits felt by consumers, such as moral pride and a sense of contributing to the environment (Liao *et al.,* 2020). On the other hand, the integrated model of green brand trust confirms that trust in green claims is an important determinant of purchase intention and loyalty (Jamal *et al.*, 2023).

However, the strengthening of the discourse on sustainability has also been accompanied by an increased risk of greenwashing. Recent studies show that skepticism toward sustainability claims can erode brand trust, especially when consumers perceive green messaging as exaggerated or inconsistent with company practices (Riva *et al.*, 2024). Consumer awareness of greenwashing practices and perceptions of green benefits influence consumer confusion and purchasing tendencies, meaning that careless green communication can actually reduce purchase intent (Apostolopoulos *et al.*, 2025). In addition, consumers' ability to identify greenwashing has proven to be crucial in distinguishing between brands that are truly sustainable and those that merely exploit green narratives for marketing purposes (Fella and Bausa, 2024). This condition implies that the intensity and quality of digital-based environmental disclosure must be managed credibly so as not to cause negative reactions.

In the financial sector, the concept of online attention has been developed to capture the attention of investors and the public towards specific companies or issues by utilizing internet search data. Park and Kim (2018) used Google Trends data to construct an index of public interest in renewable energy and found that spikes in searches correlated with changes in household electricity consumption in the US, suggesting that online search volume can reflect variations in demand and economic

behavior. Another study on corporate green competitiveness shows that analysis of search queries and online search trends can be used to identify market interest in sustainable business issues (Chygryn *et al.*, 2024). In the context of sustainability, search patterns related to food sustainability issues in Europe during 2010–2021 were found to reflect the dynamics of public interest in the public (Portugal-Nunes *et al.*, 2023), which indicates that online attention can map the focus of environmental issues in society. In addition to searches, social media activity has also been reported to influence capital market reactions; for example, announcements of data leaks exposed through social media have been shown to impact the share prices of affected companies (Rosati *et al.*, 2019). These findings indicate that online attention, whether in the form of searches or social media interactions, potentially influences stock prices through the mechanisms of attention and information diffusion.

Company characteristics, particularly size, have been identified as important factors shaping disclosure behavior and the connection between disclosure and performance. Research on corporate social performance, size, and organizational visibility shows that large and more publicly visible companies tend to engage in more intensive and strategic sustainability reporting (Schreck and Raithel, 2018). Research in Indonesia found that company size, managerial ownership, and finance-related performance have a relationship to corporate environmental disclosure level, indicating that large companies face higher closer pressure (Oktafianti and Rizki, 2020). In addition, company size was reported to moderate the connection between relational capital and company performance in Europe, so that size was seen as a structural factor that could strengthen or weaken the influence of intangible resources on performance (Corvino *et al.*, 2019). In developing countries, company attributes including size and ownership structure are also reported to influence environmental disclosure patterns based on legitimacy and stakeholder pressure (Lu and Abeysekera, 2014; Akhter *et al.*, 2023).

Although the literature on sustainability reporting, green marketing, and online attention has grown rapidly, several important gaps remain apparent. First, most studies on environmental and sustainability disclosure continue to focus on annual reports, sustainability reports, or conventional integrated reports, while environmental disclosure based on digital marketing channels, such as the intensity of green content on corporate websites and social media, is still relatively rarely mapped systematically (Mion and Loza Adaui, 2019; Akhter *et al.*, 2023). Second, studies on digital green marketing often focus on consumer response and brand equity (Duffett *et al.*, 2018; Gelderman *et al.*, 2021; Correia *et al.*, 2023), hence the capital market implications of digital green communication, particularly on stock prices, have not been widely explored. Third, in developing countries, company attributes including size and ownership structure are also reported to influence environmental disclosure patterns; studies on Indonesian companies show that company characteristics such as dimension, the ability to generate profit, and foreign ownership are substantially linked to the level of environmental disclosure (Hartikayanti *et al.,* 2016), meanwhile longitudinal analysis in Bangladesh found that company attributes shape

environmental disclosure quality and intensity as predicted by legitimacy theory (Akhter *et al.*, 2023). Fourth, although company size has been shown to influence disclosure behavior and the relationship between intangible resources and performance (Schreck and Raithel, 2018; Corvino *et al.*, 2019), its moderating role in the connection between the disclosure of digital environment, online attention, and stock prices in the Indonesian capital market has not been adequately documented.

This present study endeavors to examine how digital environmental disclosure and online attention affect stock prices, as well as how company size moderates these two relationships in consumer non-cyclical issuers listed on the Indonesia Stock Exchange. Digital environmental disclosure is operationalized through the Green Digital Marketing Intensity (GDMI) index, which captures the intensity and quality of green communication on companies' official digital channels, while online attention is measured using a composite index based on Google search interest and corporate website traffic. The current study is expected to offer a contribution to the literature concerning digital sustainability disclosure and market-based accounting research in emerging markets, while offering practical implications for the design of digital green communication strategies tailored to company size.

2. Theoretical Background

Theoretical Framework

The conceptual basis of this study rests on four main frameworks, namely signaling theory, legitimacy theory, stakeholder theory, and attention-based view. In signaling theory, information disclosure is viewed as a signal sent by management to the market to reduce information asymmetry; Digital environmental disclosure through official company channels can be perceived as a signal of the quality of environmental commitment that is relevant to the investors (Spence, 1973; Connelly *et al.*, 2011). Legitimacy theory emphasizes that companies will adjust their behavior and disclosures to gain and maintain social legitimacy; in this context, sustainability reporting and environmental disclosure are used as tools to demonstrate alignment with societal values and expectations (Suchman, 1995). Stakeholder theory complements this view by emphasizing that disclosure patterns are determined by the power and demands of various stakeholder groups (Freeman, 1984). Meanwhile, the attention-based view highlights the limitations of attention, both on the part of management and investors, so that issues that receive greater attention, including through online attention, will have a greater impact on decision-making and market valuation (Ocasio, 1997).

Social and environmental disclosure is generally explained through legitimacy theory and stakeholder theory, in which sustainability reporting is understood as a mechanism to meet stakeholder expectations while maintaining corporate legitimacy (Ali *et al.,* 2017; Almagtome *et al.,* 2020). Within this framework, disclosure is viewed as a response to legitimacy pressures and the demands of strategic stakeholders, and the quality of governance and stakeholder pressure has been shown

to increase the intensity of sustainability reporting (Almagtome *et al.,* 2020). Various studies show that stakeholder power and company characteristics, including size, profitability, and ownership structure, determine the extent of social and environmental disclosure; Ali et al. (2017) emphasizing the role of company attributes in general, while Kee *et al.* (2020) dan Akhter *et al*. (2023) documented the effect of size and ownership structure on the level of ESG and environmental disclosure. Company size has consistently been identified as an important driver of sustainability reporting, with a systematic review by Dienes *et al.* (2016) placing firm size as one of the main determinants of reporting intensity. In line with this, Schreck and Raithel (2018) found that large companies are more likely to engage in voluntary sustainability reporting on a broader scale than small companies, while in the mandatory reporting regime, a study by Bergmann and Posch (2018) shows that company size still influences how sustainability reporting is used as strategic tools.

Various studies also show that sustainability reporting and environmental disclosure have implications for financial performance and company value. Sustainability reporting by IPO issuers in emerging markets, for example, has been reported to be positively associated with post-listing financial performance (Abbas *et al.*, 2023). Similar results were found in the energy sector of Belt and Road countries, where sustainability disclosure was associated with improved financial performance (Zhou *et al.,* 2024) as well as in several other contexts where environmental disclosure is related to company performance through reputation mechanism and risk reduction (Emeke *et al.,* 2021; Haider *et al.*, 2025). In Indonesia, environmental performance and environmental disclosure have been examined in relation to financial performance and market reaction. Environmental performance and environmental disclosure disclosure are reported to be related to the financial performance of issuers (Haninun *et al.,* 2018; Ifada *et al.*, 2021), while company characteristics and financial performance were found to influence the level of environmental disclosure (Wahyuningrum *et al.*, 2020). Other research shows that environmental disclosure announcements by Indonesian public companies cause stock price reactions around the date of disclosure (Cahyono, 2019).

Within this framework, digital environmental disclosure through GDMI is positioned as a signal and a means of seeking legitimacy, while online attention represents a dimension of attention that is relevant to the attention-based view. Company size serves as a structural characteristic that influences signal strength and attention mechanisms, thus conceptually consistent with the research question and abstract.

Digital Environmental Disclosure and GDMI

Digital transformation has expanded the medium for sustainability disclosure from printed reports to online channels. Sustainability reporting began to be published online through the websites of educational institutions and companies, with significant variations in structure and depth of information (An *et al.*, 2019). Companies in the eurozone are also reported to be utilizing YouTube as a channel for sustainability

reporting, which is understood as an extension of traditional reporting practices within the framework of legitimacy and stakeholders (Bonsón and Bednárová, 2015).

On the other hand, the development of big data analytics on corporate internet disclosures confirms that websites and other digital channels have become the primary means of corporate communication with investors and the public (Basuony *et al.*, 2022). In the field of marketing, digital marketing is seen as increasingly integrated with sustainability goals; a bibliometric review shows a growing interest in sustainability themes in digital marketing research (Diez-Martin *et al.*, 2019). Green digital marketing strategies are positioned as part of efforts to build a green image and communicate sustainability values to audiences. Studies on green digital strategies in the cultural sector show that digital channels are being used to consistently convey sustainability messages on a global scale (Avlonitou *et al.,* 2025). In the context of tourism and green technology, digital marketing is used to promote environmentally friendly behavior and green technology (Al-Ababneh *et al.*, 2025).

Green marketing communications that utilize digital channels have been proven to influence green attitudes and purchase intentions. Psychological benefits such as moral pride were reported to act as mediators between green communication and purchase intention (Liao *et al.,* 2020), while the quality of green marketing communication influences purchase intention through attitude formation and value perception (Lee, 2020; Correia *et al.*, 2023). Within the framework of brand trust, green brand trust is a key factor linking green marketing strategies to loyalty and purchase intent (Jamal *et al.*, 2023). In this study, digital environmental disclosure is represented by the Green Digital Marketing Intensity (GDMI) index, which is constructed from the green communication footprint on the company's official digital channels (corporate sites and social media). This index is intended to summarize the intensity and quality of environmental signals received by stakeholders, in line with the view that green digital strategies and digital-based green marketing practices are an integral part of efforts to build legitimacy and sustainable competitive advantage (Hashimova, 2024; Avlonitou *et al.,* 2025).

Based on this literature, an increase in GDMI is expected to be perceived as a positive signal regarding environmental commitment, which will ultimately be reflected in higher stock prices. Therefore, it is formulated that:

H1: Digital environmental disclosure measured by GDMI has a positive effect on stock prices.

Online Attention and Stock Prices

The concept of online attention has developed in financial and digital marketing literature to capture the attention of market participants by utilizing internet search data. A study based on Google Trends shows that online search indicators can reflect economic interest that is not fully reflected in traditional fundamental variables; for example, Park and Kim (2018) found that interest in renewable energy, as measured

by Google queries, correlates with changes in household electricity consumption in the United States. In the issue of food sustainability in Europe, search patterns related to food sustainability have been shown to follow the dynamics of public interest throughout 2010–2021 (Portugal-Nunes *et al.*, 2023). On the other hand, studies on digital marketing place search data and search engine activity as important components for monitoring consumer attention and behavior (Kannan and Li, 2017), recent research shows that Google Trends can also map interest and potential demand for healthcare services spatially and temporally (Nihal *et al.,* 2025).

These findings are consistent with the view that economic attention is limited, so that issues that are more prominent in online spaces tend to trigger greater behavioral and market responses. In addition, social media activity as a form of digital attention has also been proven to influence the capital market. The disclosure of data breaches via social media, for example, is associated with significant stock price reactions in affected companies (Rosati *et al.*, 2019). In the context of green brands, the intensity of public discourse related to sustainability claims is known to influence green brand trust and stakeholder attitudes (Riva *et al.*, 2024).

However, online attention is not always positive. When public attention is triggered by greenwashing issues, increased online attention has the potential to reduce trust and purchase intent (Apostolopoulos *et al.*, 2025; Liu, Huang and Lin, 2025) (Apostolopoulos *et al.*, 2025; Tu *et al.*, 2024). Consumers' ability to identify greenwashing reportedly influences brand evaluation and can weaken the effectiveness of green communication (Fella and Bausa, 2024; Javed *et al.*, 2024).

In this study, online attention was measured through a composite index based on Google search interest and corporate website traffic, thereby focusing on online attention related to the company's officially channels. For issuers in the non-cyclical consumer sector in emerging markets, this type of online attention is assumed to primarily reflect interest in product information and sustainability, and therefore has the potential to be perceived positively by investors. Thus, it is formulated that:

H2: Online attention has a positive effect on stock prices.

Company Size as a Moderating Variable

Company size has been confirmed as an important determinant of sustainability disclosure practices. Large companies tend to have more formal reporting systems and greater resources for preparing sustainability reports (Dienes *et al.,* 2016). In European markets, large companies are better able to leverage mandatory sustainability reporting as a tool to manage stakeholder perceptions (Bergmann and Posch, 2018).

In the context of voluntary disclosure, social performance and organizational visibility interact with company size in influencing the level of sustainability reporting; large companies with good social performance tend to disclose more extensive information (Schreck and Raithel, 2018). In Indonesia, Company size and financial characteristics

are reported to be related to the social and environmental disclosure index of public issuers (Asrori *et al.,* 2019). Other research shows that company size and media exposure influence carbon emission disclosure, indicating greater public scrutiny of large companies (Abdullah *et al.*, 2020).

Studies in various jurisdictions confirm that company size not only acts as a direct determinant of disclosure, but can also modify the relationship between governance and sustainability disclosure. In companies in the Middle East, company size was found to moderate the relationship between audit committee characteristics and the level of sustainability reporting (Alodat *et al.*, 2023). In circular economy sustainability reporting, company characteristics including size influence the extent to which circular economy initiatives are disclosed (Vitolla *et al.*, 2023). These findings indicate the potential role of firm size as a moderating variable.

In the digital context, large companies generally have more mature digital communication and marketing infrastructure. Integrated green digital strategies are more likely to be implemented by large-scale organizations that have the resources to orchestrate various digital channels (Avlonitou *et al.,* 2025). Studies on corporate internet disclosures also found that large companies make more intensive use of websites and online channels as corporate communication media (Basuony *et al.*, 2022). This condition implies that a certain level of digital environmental disclosure may have become the expected "baseline" for large companies, so that additional improvements in GDMI do not always result in significant changes in market valuation. Conversely, for small companies, increasing the intensity of digital green communication can be a more prominent signal of differentiation.

On the other hand, online attention to large companies tends to have stronger implications for market dynamics. Investor attention limits make information about companies with high visibility more likely to be responded to intensively when there is a surge in searches or social media exposure (Rosati *et al.*, 2019) shows that social media exposure and issuer visibility amplify stock price reactions to incident announcements, while findings by Schreck and Raithel (2018) indicate that company size and visibility increase stakeholder sensitivity to corporate disclosures and their strategic consequences.

Based on the above arguments, the effect of digital environmental disclosure on stock prices is expected to be stronger for small companies, while the effect of online attention on stock prices is expected to be stronger for large companies. Therefore, it is formulated that:

H3: Company size moderates the effect of digital environmental disclosure on stock prices, so that the effect of GDMI on stock prices is stronger in small companies.
H4: Company size moderates the effect of online attention on stock prices, such that the effect of online attention on stock prices is stronger for large companies.

3. Methodology

Population and Samples

The population in this study consists of all non-cyclical consumer issuers on the IDX as of December 31, 2024 (n=128). Samples were selected using purposive sampling (observation period based on July–June) with the following sample criteria

Table 1. Sampling Criteria

No	Criteria	Consumer Non Cyclicals
	Listed issuers Population	128
1	The company was not consistently listed on the Stock Exchange during the research period	(31)
2	The company does not have consistent monthly Google Trends (RSV) and monthly Traffic or Visits on the Semrush website during the research period	(4)
3	The company did not consistently have a sustainability report menu on its official website during the research period	(79)
	Number of Samples	**14**
	Research Period	***4***
	Total Research Observations	**56**

Source: Company's Official Website, Indonesia Stock Exchange (IDX) 2021-2025

Research Model and Estimation Technique

The study applies a linear panel model to examine the effect of GDMI and online attention on stock prices, with company size as a moderating variable. The estimated basic model can be expressed as follows:

$$\ln(Price_{it}) = \alpha + \beta_1 gdmi\_c_{it} + \beta_2 att\_c_{it} + \beta_3 size\_c_{it} + \beta_4 gdmi\_size_{it} + \beta_5 att\_size_{it} + \sum_{2022}^{2024} \gamma_k Years_k + \varepsilon_{it}$$

Notes:

ln($Price_{it}$)	: Natural log of the stock price of firm (i) in year (t)
gdmi_c$_{it}$	: Centered GDMI value of firm (i) in year (t)
att_c$_{it}$	: Centered online attention index of firm (i) in year (t)
size_c$_{it}$	: Centered firm size of firm (i) in year (t)
gdmi_size$_{it}$	: Interaction variables (gdmi_c$_{it}$ \times size_c$_{it}$)
att_size$_{it}$	: Interaction variables (att_c$_{it}$ \times size_c$_{it}$)
year_k	*:* Dummy years (2022, 2023, 2024) to control for the effect of time
ε_{it}	: Error components (error term)

Data and Variables

The data used is secondary. Digital data and online engagement were obtained from the company's official channels and web analytics platforms, while financial data and stock prices were obtained from annual reports, audited financial statements, and the IDX database.

1) Stock prices

Stock prices are measured using the closing price at the end of the annual observation period for each issuer (June 30 of the following year). The stock price was then transformed into a natural log (ln_price) to reduce the effect of outliers and stabilize the variance, so that the dependent variable of the study was expressed as ln(harga saham).

2) Digital Environmental Disclosure – GDMI (independent)

Digital Environmental Disclosure is proxied by Green Digital Marketing Intensity (GDMI), a 0–100 index that reflects the intensity of a company's green marketing communications on official digital channels. The GDMI score is compiled through green content coding on corporate websites and major social media accounts (e.g., LinkedIn, Instagram, YouTube, or X) for July–June. Each relevant post is classified based on environmental theme, message form, and distribution channel, then aggregated into an annual score per issuer.

3) Online attention (independent)

Online attention is measured using the online attention (ATT) index, which combines two indicators: (1) Relative Search Volume (RSV) Google Trends for company/brand names on a global scale, aggregated into an annual indicator; and (2) estimated monthly visits to the company's official domain, transformed using ln(1+Visits). The monthly time series of RSV and ln(1+Visits) are first standardized into z-scores (z_rsv and z_lntraffic), then the ATT index is formed as the average of the two z-scores:

$$ATT_{it} = Z\_RSV_{it} + \ln\_traffics_{it}\frac{z\_rsv_{it} + z\_lntraffic_{it}}{2}$$

Thus, ATT reflects the level of online public attention to issuer i in year t.

4) Firm size (moderator)

Firm size is measured by the natural logarithm of total assets (ln_total assets) at the end of the fiscal year. This variable is stated as size in the database and is used as a moderating variable that interacts with GDMI and ATT. For the purposes of moderation analysis, the GDMI, ATT, and firm size variables are first centered on the sample mean to obtain gdmi_c, att_c, dan size_c. Centering is performed to reduce collinearity between the main variables and their interactions. Based on the centered variables, two interaction variables were formed, namelygdmi_size (gdmi_c × size_c) and att_size (att_c × size_c), which represent the moderation of company size on the effect of GDMI and online attention on stock prices.

4. Empirical Findings/Result

Descriptive Statistics and Correlation

Descriptive statistics and correlations in Table 2 and Table 3 together describe the data profile and initial relationships between the variables studied in the context of firm size moderation on the effect of digital environmental disclosure and online attention on stock prices. The average ln_price of 7,47 with a standard deviation of 1,20 and a range of 5,37–9,33 indicates that the stock prices of issuers in the non-cyclical consumer sector on the IDX are quite widely dispersed, thus providing sufficient variation to test the role of GDMI, online attention, and company sizes. The average values of gdmi_c, att_c, and size_c which are close to zero, reflect the centering process that has been carried out, while the relatively large standard deviations, particularly in GDMI (30,11) and size (1,57), indicate the existence of substantive heterogeneity in the intensity of digital environment disclosure and company scale. The online attention index (att_c) also shows significant variation, ranging from approximately −1,30 to 2,20, which can be interpreted to mean that some issuers receive little online attention, while others receive much higher attention. The interaction variables gdmi_size and att_size have the largest standard deviations, indicating that the combination of disclosure or attention with firm size is highly diverse and conceptually relevant for testing the moderating effect of firm size.

Table 2. Descriptive Statistics

Variable	N	Mean	Max	Min	SD
ln_price	56	7.472753	9.334768	5.365976	1.198869
gdmi_c	56	7.02e-08	47.07964	-47.54036	30.10679
att_c	56	-1.05e-09	2.200065	-1.304318	.8692642
size_c	56	2.99e-10	2.958059	-2.3016	1.573636
gdmi_size	56	10.39043	107.6792	-108.3585	47.28611
att_size	56	.7097772	6.507923	-1.047402	1.614305

Source: Data processed using Stata 18

The correlation pattern then enriches the descriptive picture by showing the direction of the relationship between variables before the regression model testing is conducted. ln_price is positively and significantly correlated with gdmi_c (≈0,39), att_c (≈0,44), and size_c (≈0,42), which descriptively suggests that issuers with more intensive digital environmental disclosure, greater online attention, and larger company size tend to have higher stock prices. On the other hand, the correlation between ln_price with gdmi_size is negative (≈−0,30), while the correlation with att_size is positive (≈0,42); this is in line with the research framework, which suggests that firm size can weaken the relationship between GDMI and stock price but strengthen the relationship between online attention and stock prices. The correlation between explanatory variables is in the low to moderate range (none are close to 0,8), indicating no serious multicollinearity issues and supporting the feasibility of including these variables together in the moderation model.

Table 3. Variable Correlation

	ln_price	gdmi_c	att_c	size_c	gdmi_s~e	att_size
ln_price	**1.0000**					
gdmi_c	**0.3939*** **0.0027**	**1.0000**				
att_c	**0.4358*** **0.0008**	**-0.0336** **0.8058**	**1.0000**			
size_c	**0.4173*** **0.0014**	**0.2233** **0.0981**	**0.5283*** **0.0000**	**1.0000**		
gdmi_size	**-0.3024*** **0.0235**	**-0.4295*** **0.0010**	**0.3099*** **0.0201**	**0.0311** **0.8203**	**1.0000**	
att_size	**0.4155*** **0.0015**	**0.2621** **0.0510**	**0.5650*** **0.0000**	**0.3654*** **0.0056**	**0.0610** **0.6552**	**1.0000**

Source: Data processed using Stata 18

Test Results

Table 4 shows the model selection procedure, where the final estimation was performed using Feasible Generalized Least Squares (FGLS) panel regression. The FGLS model was treated as the selected model because it explicitly accommodated the characteristics of panel data with 14 issuers (groups) and 4 time periods, resulting in a total of 56 observations analyzed simultaneously. The specifications panels (heteroscedastic) and corr (independent) indicate that the error variance is allowed to differ across companies (cross-section heteroscedasticity), while serial correlation of residuals over time is assumed to be absent. With this setting, violations of homoscedasticity assumptions that commonly occur in corporate financial data are no longer a major problem, because the covariance between panels is estimated specifically for each issuer. The Wald chi-square value of 275.71 with a probability of 0.0000 indicates that, collectively, the explanatory variables in the model are significant in explaining the variation in ln_price, so the model is suitable for use as a basis for testing hypotheses.

Classical assumptions related to multicollinearity and function specification were also considered. The absence of a very high correlation between explanatory variables in the correlation matrix and the use of centered variables (gdmi_c, att_c, and size_c) indicates that severe multicollinearity can be ignored. Thus, the regression coefficients can be interpreted more stably, especially for the interaction terms gdmi_size and att_size which are the focus of moderation. The assumption of linearity in the relationship between ln_price and explanatory variables was adopted in accordance with the theoretical framework and moderation model design described in the methodology section.

Table 4. Hypothesis Test Results

Cross-sectional time-series FGLS regression
Coefficients : generalized least squares
Panels : heteroskedastic
Correlation : no autocorrelation

Estimated covariances = 14 Number of obs = 56
Estimated autocorrelations = 0 Number of groups = 14
Estimated coefficients = 9 Time periods = 4
Wald chi2(8) = 275.71
Prob > chi2 = 0.0000

ln_price	coefficients	Std. err.	z	P>|z|	[95% conf.	interval]
gdmi_c	.0056008	.0026195	2.14	0.033	.0004667	.010735
att_c	.4109946	.1412885	2.91	0.004	.1340741	.387915
size_c	.1765592	.0681472	2.59	0.010	.0429931	.3101253
gdmi_size	-.0104113	.0017444	-5.97	0.000	-.0138302	-.0069924
att_size	.1079636	.0495276	2.18	0.029	.0108914	.2050359
Year						
2022	-.1354156	.1641328	-0.83	0.409	-.4571099	.1862787
2023	-.1064157	.1373646	-0.64	0.525	-.4344443	.2216128
2024	-.0825186	.1664789	-0.50	0.620	-.4088112	.243744
_cons	7.498725	.1482304	50.59	0.000	7.208199	7.789251

Source: Data processed using Stata 18

The FGLS estimation results show that all main variables have coefficients in line with the hypothesized direction and are significant at the 5 percent level. The gdmi_c coefficient of 0,0056 with a p-value of p 0,033 indicates that a one-unit increase in centered GDMI is associated with a significant increase in ln_price, after controlling for other variables. These findings support the first hypothesis (H1) that digital environmental disclosure measured by GDMI has a positive effect on stock prices. The att_c coefficient of 0,4110 with p 0,004 is also significantly positive, so that the second hypothesis (H2), which states that online attention has a positive effect on stock prices, is accepted. In addition, the variable size_c has a coefficient of 0,1766 with p 0,010, indicating that company size itself is positively associated with stock prices, consistent with the literature that places firm size as an indicator of company capacity and stabilty.

The moderating role of company size is reflected in the interaction terms gdmi_size and att_size. The gdmi_size coefficient is negative at −0,0104 with p 0,000, indicating that the slope of the relationship between GDMI and ln_price decreases as company size increases. In other words, the positive effect of GDMI on stock prices is stronger for companies below average size and weaker for large companies. These results support the third hypothesis (H3) that firm size moderates the effect of digital environmental disclosure on stock prices, such that the effect of GDMI is relatively stronger in small companies. Conversely, the att_size coefficient has a positive value of 0,1080 with p 0,029, indicating that the effect of online attention on ln_price actually strengthens as the size of the company increases. This finding is consistent with the fourth hypothesis (H4) that firm size moderates the relationship between online attention and stock price, such that the effect of online attention is greater on large companies. The dummy variables for 2022, 2023, and 2024 are not significant, which means that there is no systematic difference in stock prices between years after the effects of GDMI, online attention, firm size, and their interactions are taken into account.

Overall, the results of testing through the selected FGLS model show that the four research hypotheses (H1, H2, H3, dan H4) are accepted. Digital environmental disclosure and online attention have been shown to have a positive effect on stock prices, while company size has been shown to moderate both relationships in different directions: weakening the influence of GDMI and strengthening the influence of online attention on the share prices of consumer non-cyclical issuers on the Indonesia Stock Exchange.

5. Discussion

Why GDMI and Online Attention Affect Stock Prices

The finding that GDMI has a positive effect on stock prices is consistent with the signaling and legitimacy theory framework, which views environmental disclosure as a signal of quality and a means of seeking legitimacy. More extensive and structured sustainability reporting has been widely associated with higher financial performance and company value, particularly in emerging markets (Abbas *et al.*, 2023; Zhou *et al.,* 2024). In this study, GDMI summarizes the aspects of intensity, consistency, and depth of digital green communication, so that an increase in GDMI can be interpreted by investors as a strengthening of sustainability commitments and a reduction in long-term environmental risks.

The positive effect of online attention on stock prices is consistent with behavioral finance literature that emphasizes the role of investor attention based on digital footprints. Studies on market reactions to incident disclosures via social media show that online visibility and conversation intensity amplify stock price responses to corporate events (Rosati *et al.*, 2019), while, research on corporate disclosure via social media confirms that online channels are an important means of attracting the

attention of market stakeholders (Basuony *et al.,* 2018). Another study using Google Trends as a proxy for public attention found that spikes in search interest related to renewable energy and sustainability issues correlated with changes in economic behavior and performance indicators (Park and Kim, 2018; Portugal-Nunes *et al.*, 2023). In line with these findings, by combining search interest and corporate website traffic, the ATT index in this study captures the extent to which companies are the focus of digital attention; when this attention is primarily related to access to official information and narratives of sustainability, the market tends to respond positively, as reflected in rising stock prices.

Why Firm Size Plays a Different Role for GDMI and Online Attention

The negative moderation of company size on the GDMI–stock price relationship indicates that additional digital green disclosures provide greater price benefits for small companies than large companies. This is in line with findings that large companies are usually already under stronger legitimacy and regulatory pressure, so that a certain level of sustainability reporting is considered an expected baseline (Dienes *et al.,* 2016; Bergmann and Posch, 2018). In this context, an increase in GDMI may only add marginal information for investors. Conversely, small companies that increase their GDMI may be perceived as undergoing positive differentiation, making the signal more "surprising" and having a greater impact on perceptions of risk and company value.

Conversely, the positive moderation of company size on the online attention–stock price relationship indicates that large companies are better able to convert online attention into stock demand. Large-scale companies have a broader base of investors, customers, and media coverage, as well as more mature digital marketing infrastructure (Basuony *et al.*, 2022; Avlonitou *et al.,* 2025). Within the attention-based view framework, investors' limited attention span means that shares in large companies that are currently the center of attention tend to elicit a stronger market reaction, as highly visible shares attract greater investor attention and sentiment than other shares (Zhou, Saeed and Agyemang, 2024) (Zhao et al., 2024; Krystyniak, 2025). Therefore, when the ATT index increases, the impact on stock prices is theoretically more pronounced for large companies than for small companies.

Consistency and Contradictions with Previous Research

In general, the results of this study are consistent with previous evidence that sustainability reporting and environmental disclosure are positively related to financial performance and company value in various contexts, including Indonesia (Haninun *et al.,* 2018; Wahyuningrum *et al.*, 2020; Ifada *et al.*, 2021). However, previous studies have generally focused on annual reports or traditional sustainability reports, whereas this study highlights the digital dimension through GDMI and online attention, thereby broadening the understanding of how the digital footprint of sustainability is valued by the market.

Findings regarding the role of online attention are consistent with literature that uses Google Trends as a proxy for public interest in energy and sustainability issues, which has been shown to correlate with economic behavior and performance indicator (Park and Kim, 2018; Portugal-Nunes *et al.*, 2023). On the other hand, literature on greenwashing warns that high attention can backfire if sustainability messages are perceived as lacking credibility, as perceptions of sustainability skepticism and greenwashing can reduce brand trust and green purchase intent (Riva *et al.*, 2024; Apostolopoulos *et al.*, 2025). The absence of negative effects in this study indicates that, for the sample and observation period used, digital attention reflected in ATT tends to correlate with positive perceptions, or at least is not dominated by negative sentiments. The moderating role of firm size in different directions for GDMI and ATT is also consistent with evidence that firm size affects both the intensity of sustainability reporting and how the market responds to such information (Schreck and Raithel, 2018; Alodat *et al.*, 2023).

6. Conclusion

Based on the results of panel data analysis of non-cyclical consumer sector issuers on the Indonesia Stock Exchange, it can be concluded that digital environmental disclosure, as measured by GDMI and online attention, has a positive effect on stock prices, while company size acts as a moderating variable that weakens the effect of GDMI but strengthens the effect of online attention on stock prices. These findings confirm that sustainability information communicated digitally and the level of online attention to issuers are valued by the market, but market sensitivity to these two signals differs according to company size, so digital green communication strategies and online attention management need to be tailored to the characteristics of the company's size.

This study has limitations in terms of the relatively small sample size and its focus on a single sector and a short time horizon, so generalizing the results to other sectors and longer periods should be done with caution. In addition, the possibility of endogeneity between digital disclosure, online attention, and stock prices can not be completely eliminated. Therefore, it is recommended that future research use a broader sector and period coverage, incorporating additional indicators of digital attention (e,g., from social media), and applying a stronger causal approach, so that understanding of the role of digital environmental disclosure, online attention, and firm size in stock price formation in emerging markets can be deepened and strengthened.

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