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# How ESG Information Shapes Consumer Awareness and Behavioral Intentions: Evidence from Sustainable Digital Commerce

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## Abstract

The growing importance of sustainable digital commerce has increased the need to understand how Environmental, Social, and Governance (ESG)-related information communicated through digitally mediated environments influences consumer decision-making and value creation. This study investigates the effects of corporate ESG information and public ESG information on consumer awareness and subsequent behavioral responses, including purchase intention, investment intention, advocacy, and positive perceptions toward ESG-oriented companies. Drawing on Stakeholder Theory and the theory of planned behavior, the study examines how different sources of ESG information shape consumer evaluations and intentions in an increasingly information-driven marketplace. Using partial least squares structural equation modeling (PLS-SEM), data from 1836 respondents obtained from the Korea Consumer Agency's national consumer survey were analyzed. The results indicate that corporate ESG information significantly enhanced consumer awareness, whereas public ESG information did not have a significant effect on consumer awareness. Public ESG information significantly strengthened positive perceptions but did not significantly influence advocacy. Consumer awareness emerged as the strongest predictor of purchase intention, investment intention, advocacy, and positive perception. It significantly mediated the relationships between corporate ESG information and consumer responses, whereas no significant indirect effects were observed for public ESG information. However, corporate ESG information did not directly increase purchase intention or investment intention, suggesting that awareness represents the primary mechanism through which ESG communication influences consumer responses. These findings contribute to the literature on sustainable digital commerce by demonstrating that ESG information functions as a strategic market signal that promotes consumer engagement and sustainable value creation through awareness. The study further provides practical implications for firms and policymakers seeking to develop credible ESG communication strategies that support the green transition and foster sustainable consumer decision-making.

**Keywords:** ESG information; sustainable digital commerce; consumer behavior; consumer awareness; ESG communication; value creation

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## 1. Introduction

In contemporary digital commerce environments, the rapid expansion of digital technologies has fundamentally transformed how consumers obtain, evaluate, and act upon Environmental, Social, and Governance (ESG)-related information. Corporate websites, e-commerce platforms, online marketplaces, sustainability reports, digital news media, and social networking services have become major channels through which consumers encounter sustainability information before making purchasing and investment decisions. Consequently, ESG communication has evolved beyond a corporate reporting activity into a strategic component of digital commerce, functioning as a market signal that enables consumers to evaluate firms' credibility, sustainability orientation, and long-term value. As sustainable consumption and responsible investment become increasingly embedded in digitally mediated information environments, understanding how ESG information shapes consumer behavioral intentions has become an important research issue for both scholars and practitioners.

ESG has rapidly become a central consideration in corporate strategy and investment decision-making, reflecting growing societal demands for sustainable and ethically responsible business practices [1]. Beyond regulatory compliance, firms increasingly adopt ESG practices to strengthen corporate reputation, improve long-term performance, and gain competitive advantages [2,3]. At the same time, consumers increasingly rely on digital information sources when making purchasing and investment decisions [4]. Well-known examples, including Patagonia's environmental initiatives and Ben & Jerry's social responsibility programs, illustrate how strong ESG commitments can positively influence consumer evaluations [5,6]. Previous studies have similarly shown that consumer perceptions of ESG influence purchasing decisions, brand loyalty, and advocacy [7,8]. Accordingly, understanding how consumers interpret ESG information has become increasingly important for firms seeking to strengthen long-term relationships with sustainability-oriented consumers [9,10].

The dissemination of ESG information has therefore become a critical component of contemporary business environments [11]. Companies are expected to provide transparent and reliable disclosures regarding their ESG practices, while governments, public agencies, and independent organizations increasingly disseminate ESG-related information through reports, policy documents, and digital media [12]. Although both corporate ESG information and public ESG information communicate sustainability-related content, they represent distinct information sources with different communication objectives, levels of organizational control, and perceived credibility. Corporate ESG information originates directly from firms and reflects organizational disclosure strategies, whereas public ESG information is generated or disseminated by independent institutions, government agencies, and media organizations. Consequently, consumers may interpret similar ESG content differently depending on its source, making the distinction between these two constructs theoretically meaningful.

Consumer awareness represents a critical cognitive mechanism through which ESG information may influence subsequent consumer responses [13]. As consumers develop a deeper understanding of ESG principles, they are more likely to support sustainable consumption and expect greater corporate accountability [14]. Consistent with the Theory of Planned Behavior (TPB) [15], this study conceptualizes consumer awareness as the primary cognitive mechanism linking ESG information to purchase intention, investment intention, advocacy, and positive perception. Rather than assuming that ESG communication directly changes consumer behavior, this study proposes that its influence is largely transmitted through increased consumer awareness.

Consumers increasingly participate in ESG by purchasing products from responsible firms, investing in ESG-oriented companies, and selecting sustainable financial products

such as ESG funds and socially responsible bonds [13,14,16,17]. As consumers place greater value on ESG, they are more likely to expect firms to implement meaningful sustainability strategies [18]. Such expectations may strengthen favorable evaluations, advocacy, and behavioral intentions toward firms demonstrating credible ESG commitments [19,20]. Understanding this process is therefore important for explaining how ESG awareness translates into consumer responses.

Although previous studies have examined the effects of ESG disclosure on consumer responses, relatively little attention has been paid to whether corporate ESG information and public ESG information play different roles in shaping consumer awareness and subsequent consumer responses within digitally mediated commerce environments. By distinguishing these two information sources and examining the mediating role of consumer awareness, this study extends current understanding of how ESG communication contributes to responsible consumer decision-making and value creation in sustainable digital commerce.

Although the dataset does not directly measure online purchasing behavior, consumers increasingly obtain ESG information through digital communication channels. Accordingly, this study conceptualizes sustainable digital commerce as an information environment in which ESG communication shapes consumer awareness and subsequent consumer responses. Specifically, this study investigates how corporate ESG information and public ESG information influence consumer awareness, purchase intention, investment intention, advocacy, and positive perception while controlling for sociodemographic characteristics (gender, age, education, and income). The findings provide theoretical insights into ESG communication and practical implications for firms and policymakers seeking to strengthen sustainable digital commerce through more effective ESG information strategies.

## 2. Theoretical Foundation and Hypothesis Development

### *2.1. Theoretical Foundation*

In digital commerce environments, consumers increasingly rely on externally available information to reduce uncertainty and evaluate firms before making purchasing, investment, or advocacy-related decisions. ESG information functions as an important sustainability-related information cue that consumers encounter through corporate websites, sustainability reports, e-commerce platforms, digital news media, and social networking services. Rather than serving merely as a disclosure mechanism, ESG information acts as a digital market signal that influences how consumers evaluate corporate credibility, sustainability orientation, and long-term value. Accordingly, this study integrates Stakeholder Theory and TPB to explain both the origin of ESG information and the cognitive mechanism through which such information influences consumer responses. In addition, four sociodemographic variables—gender, age, education, and income—are included as control variables to account for consumer heterogeneity when estimating the proposed structural model.

Stakeholder Theory posits that firms should create value not only for shareholders but also for a broad range of stakeholders, including consumers, investors, employees, governments, and society [21]. Within this perspective, transparent communication regarding ESG activities represents an important stakeholder engagement strategy because it reduces information asymmetry, enhances organizational legitimacy, and strengthens stakeholder trust [22]. Consequently, both corporate ESG information and public ESG information constitute important external information sources that enable consumers to evaluate firms' sustainability practices. However, although Stakeholder Theory explains why organizations communicate ESG information and why such communication is important, it

provides only limited insight into how consumers cognitively process this information and subsequently translate it into consumer responses.

To explain this psychological process, TPB provides a complementary cognitive perspective. TPB proposes that behavioral intentions are determined by individuals' cognitive evaluations, including attitudes, subjective norms, and perceived behavioral control [15]. Within the context of ESG communication, consumer awareness represents the initial cognitive response generated through exposure to ESG information. Consumers who become more aware of corporate sustainability practices are more likely to develop favorable evaluations and stronger behavioral intentions toward ESG-oriented firms. Accordingly, TPB explains how consumer awareness functions as the key psychological mechanism linking ESG information to purchase intention, investment intention, advocacy, and positive perception [23].

The integration of Stakeholder Theory and TPB provides a coherent explanation of ESG communication within sustainable digital commerce. Stakeholder Theory explains why firms and public institutions disclose ESG information as part of stakeholder engagement and transparency, thereby defining the external information environment in which consumers obtain sustainability-related information. TPB complements this perspective by explaining how consumers process these external information cues through consumer awareness, which subsequently shapes consumer responses. Thus, Stakeholder Theory explains the source of ESG information, whereas TPB explains the cognitive mechanism that transforms ESG information into consumer responses. Together, these theories provide a comprehensive framework for understanding how ESG communication influences consumer decision-making in digitally mediated markets.

Based on this integrated theoretical framework, this study proposes that corporate ESG information and public ESG information increase consumer awareness, which subsequently influences purchase intention, investment intention, advocacy, and positive perception. The proposed research model also incorporates these sociodemographic variables as control variables to account for consumer heterogeneity while estimating the structural relationships among the focal constructs. The proposed research model is presented in Figure 1.

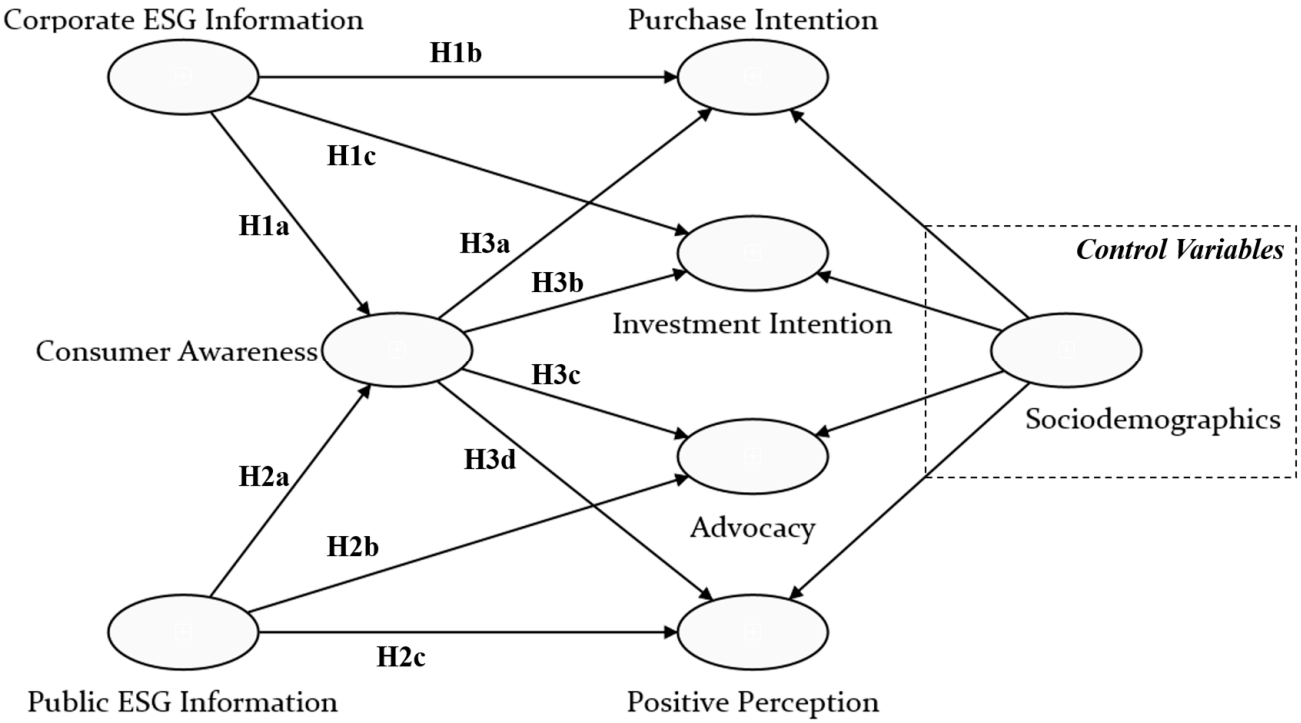



**Figure 1.** Proposed Research Model.

### 2.2. Hypothesis Development

#### 2.2.1. Corporate ESG Information

Corporate ESG information refers to the communication and disclosures made by companies about their practices and performance in environmental, social, and governance aspects [24,25]. The dissemination of such information plays a crucial role in shaping stakeholders' perceptions and behaviors [26]. According to Stakeholder Theory, companies must consider the interests of all stakeholders, including consumers, employees, investors, and the broader community, in their decision-making processes [21]. Transparent and comprehensive ESG reporting is essential for building trust and fostering stakeholder engagement, which, in turn, can influence consumer behavior and perceptions toward companies [27]. Research has consistently shown that transparent and comprehensive ESG reporting can significantly influence stakeholder awareness and attitudes toward a company [28]. Specifically, when companies provide detailed information about their ESG initiatives, it enhances consumer awareness about these efforts and the company's commitment to sustainability [29,30]. This increased awareness is crucial as it forms the basis upon which consumers develop their perceptions and make informed decisions regarding the company and its products or services. TPB supports this by suggesting that increased awareness can shape consumers' attitudes, thereby influencing their behavioral intentions [15]. Furthermore, the availability of corporate ESG information has been linked to consumers' purchase intentions [13,31]. Studies have found that consumers are more likely to support companies that they perceive as socially and environmentally responsible [32,33]. This is because many consumers today seek more than just quality products or services; they are looking for assurance that their purchases do not contribute negatively to the environment or society. Thus, when companies communicate their ESG efforts effectively, it can lead to a positive impact on consumers' willingness to purchase from these companies [34,35]. Similarly, corporate ESG information impacts investment intention among consumers. The growing interest in sustainable investing has led to a heightened demand for clear and reliable ESG information, as investors seek to allocate their resources to companies that align with their values [22,36]. The transparency and quality of ESG disclosures have been shown to influence investors' decisions, with a positive correlation between the availability of ESG information and investors' willingness to invest in a company [37]. Thus, this study suggests the following hypotheses.

**H1a.** *Corporate ESG information has a direct positive effect on consumer awareness.*

**H1b.** *Corporate ESG information has a direct positive effect on purchase intention.*

**H1c.** *Corporate ESG information has a direct positive effect on investment intention.*

#### 2.2.2. Public ESG Information

Public ESG information encompasses data, reports, and insights provided by entities outside corporations, such as media outlets, government agencies, and non-governmental organizations [38,39]. This type of information plays a pivotal role in educating and informing the general public about the environmental, social, and governance efforts of companies [40]. The accessibility of ESG-related information from public sources is instrumental in raising consumer awareness about corporate sustainability practices. According to Stakeholder Theory, these external sources help ensure that companies' ESG efforts are communicated broadly and transparently, fostering trust and engagement among stakeholders [21]. Studies have shown that when consumers are exposed to information about a company's ESG initiatives, their awareness of these issues increases, influencing their perceptions and behaviors toward those companies [10,41]. This aligns with TPB, which posits that increased awareness can shape attitudes and subjective norms, thereby impacting

behavioral intentions [15]. Public ESG information significantly impacts consumer advocacy, as well-informed consumers are more likely to recommend and support companies through various means [42,43]. This advocacy is often driven by a belief in the importance of supporting businesses that contribute positively to societal and environmental goals. Additionally, the dissemination of ESG information by public sources can enhance the positive perception of consumers toward companies implementing ESG practices. When consumers learn about a company's commitment to ESG principles through credible public sources, it enhances the company's reputation in the eyes of consumers, leading to a more favorable perception [13,14,44]. This positive perception is crucial for companies as it can influence consumer loyalty, trust, and overall support. By integrating Stakeholder Theory and TPB, this study highlights the importance of public ESG information in shaping consumer behaviors and perceptions. Stakeholder Theory justifies the need for comprehensive and transparent ESG communication from external sources, while TPB explains how this information influences consumer awareness, advocacy, and positive perception. Thus, this study suggests the following hypotheses.

**H2a.** *Public ESG information has a direct positive effect on consumer awareness.*

**H2b.** *Public ESG information has a direct positive effect on advocacy.*

**H2c.** *Public ESG information has a direct positive effect on positive perception.*

#### 2.2.3. Consumer Awareness

Consumer awareness refers to the extent to which consumers are informed about a company's ESG practices and initiatives [14,45]. This awareness is crucial as it forms the foundation upon which consumers base their decisions and attitudes toward companies. Increased awareness can significantly influence consumer attitudes, subjective norms, and perceived behavioral control, thereby shaping their intentions and behaviors [15]. Research has consistently demonstrated that increased awareness of a company's ESG efforts can significantly influence consumer behavior and perceptions [4,20,46]. When consumers are aware of a company's commitment to sustainability and ethical practices, they are more likely to develop a favorable attitude toward the company, which can translate into various positive outcomes [47]. For instance, awareness of ESG practices has been shown to positively impact consumers' purchase intention. Consumers who are informed about a company's sustainability efforts are more likely to prefer purchasing products or services from such a company, as they align with the consumers' values and expectations regarding corporate responsibility [48–50]. This alignment between consumer values and corporate actions enhances the likelihood of purchase decisions favoring companies with strong ESG credentials. Similarly, awareness of ESG initiatives influences investment intention among consumers. As sustainable investing becomes more mainstream, investors are increasingly seeking out companies with robust ESG practices [51,52]. Awareness of these practices can thus encourage consumers to invest in companies that they perceive as not only financially viable but also socially and environmentally responsible [53]. Moreover, heightened awareness of a company's ESG efforts can lead to increased advocacy. Consumers who are knowledgeable about a company's commitment to ESG principles are more likely to recommend the company to others, share positive feedback, and support the company through various means [54]. This advocacy is a powerful tool for companies, as it amplifies their reputation and attracts more consumers and investors who value corporate responsibility. Lastly, awareness positively impacts consumers' positive perception of companies. Knowledge of a company's ESG initiatives can enhance its reputation and credibility in the eyes of consumers, leading to a more positive overall perception of the company [46]. This positive perception is crucial for building trust and loyalty among consumers, which are

key determinants of a company's long-term success. By integrating TPB with the concept of awareness, this study highlights the significant role of consumer knowledge in shaping various dimensions of consumer behavior toward ESG-committed companies. Thus, this study suggests the following hypotheses:

**H3a.** *Consumer awareness has a direct positive effect on purchase intention.*

**H3b.** *Consumer awareness has a direct positive effect on investment intention.*

**H3c.** *Consumer awareness has a direct positive effect on advocacy.*

**H3d.** *Consumer awareness has a direct positive effect on positive perception.*

#### 2.2.4. Sociodemographic Control Variables

Although the primary objective of this study is to examine how ESG information influences consumer awareness and subsequent consumer responses, previous studies have consistently shown that consumer responses to sustainability initiatives may vary according to individual demographic characteristics [55–58]. Gender, age, education, and income have been reported to influence ethical consumption, sustainable investment, and evaluations of corporate ESG activities [59–61]. Accordingly, these variables were incorporated as control variables to account for consumer heterogeneity rather than as core theoretical constructs within the proposed research model. Including sociodemographic controls enables a more rigorous estimation of the relationships among ESG information, consumer awareness, and behavioral intentions by reducing the potential influence of individual background characteristics. Therefore, gender, age, education, and income were included as exogenous control variables affecting the behavioral outcome variables in the structural model.

## 3. Research Methodology

### *3.1. Measurement*

This study utilized the variables reflected in the Consumer Perception Survey on ESG Management conducted by the Korea Consumer Agency (KCA) in 2022 as its main scales. Utilizing the Korean Economic Justice Index [62] and the evaluation indicators of the Korea Corporate Governance Service [63], the KCA developed a structured questionnaire to assess ESG management from the consumer's perspective and conducted a large-scale online consumer survey to examine consumers' overall perceptions of ESG management and provide implications for improving ESG management.

Because the original KCA questionnaire included a broader set of items related to consumers' perceptions of ESG management, only the items directly corresponding to the theoretical constructs specified in the proposed research model were selected for analysis. The selection of items was theory-driven rather than data-driven. Specifically, items measuring perceptions of corporate ESG information and public ESG information were used to operationalize the two information-source constructs, whereas items assessing respondents' overall feelings toward ESG management, their interest in ESG management, and the perceived relevance of ESG management to their daily consumer lives were grouped to represent consumer awareness. Although both constructs assess perceptions of ESG-related information, they differ with respect to the source of that information. Corporate ESG information captures consumers' evaluations of ESG disclosures provided directly by firms, whereas public ESG information reflects evaluations of ESG information disseminated by external stakeholders, including government agencies and public institutions. Thus, the distinction between the two constructs lies in the information source rather than the ESG content itself. Items measuring ESG-related purchasing, investment, advocacy, and positive

evaluations of ESG-oriented companies were used to operationalize the four consumer response constructs.

Table A1 in Appendix A summarizes the mapping between the original KCA questionnaire items and the latent constructs employed in this study, together with their sources and the supporting literature. Table A1 presents a comprehensive overview of the constructs and items used in this study to assess consumer perceptions of corporate ESG management. It includes constructs such as corporate ESG information and public ESG information, which explore beliefs about the adequacy and consistency of ESG-related disclosures from companies and public entities, respectively. The consumer awareness construct assesses respondents' overall feelings toward ESG management, their interest in ESG management, and the perceived relevance of ESG management to their daily consumer lives. Purchase intention and investment intention constructs gauge consumers' willingness to buy products or invest in companies practicing ESG management, while advocacy and positive perception constructs measure the extent to which consumers advocate for and hold favorable views toward such companies. Each item within these constructs is linked to specific questionnaire items and corresponding literature sources. All scales were measured from the perspective of frequency or degree on a 5-point Likert scale, allowing for insights into consumer perceptions and behaviors regarding ESG management practices among companies. The wording of the questionnaire items was retained from the original KCA survey, whereas the grouping of individual items into latent constructs followed the theoretical framework proposed in this study.

### *3.2. Subject and Data Collection*

The KCA conducted a detailed survey aimed at gathering insights into consumer perceptions regarding corporate ESG management practices. This initiative was undertaken with the goal of developing questions that accurately capture the consumer's viewpoint on corporate ESG efforts. These insights are intended to serve as foundational data for shaping relevant policies and enhancing ESG management practices from a consumer perspective. On 1 February 2024, the author accessed the data from the public data site and downloaded the dataset. Since the KCA anonymized all individual responses, there was no access to information that could identify individual participants during or after data collection. The publicly available dataset consisted of the original KCA questionnaire responses. No modifications were made to the survey items prior to analysis, and only the subset of variables corresponding to the proposed research constructs was extracted for the present study. By targeting a broad demographic of consumers aged 20 and above, the survey sought to perform an analysis that would yield consumer-centric insights into ESG management.

The survey was meticulously planned to encompass a wide range of participants, employing a stratified proportional allocation method to ensure a diverse and representative sample. This method took into account various demographic factors, including region, age, and gender, to select a total of 3000 consumers for the study. The participants, who were general adult consumers residing across the nation and aged 20 and above, were engaged through an online questionnaire hosted on a website. This digital approach facilitated the efficient collection of data over the course of the survey period, which spanned from 10 November 2022, to 22 November 2022.

The survey population specifically included adult consumers from all 17 provinces and cities across the country. This wide geographical coverage ensured that the survey results would reflect the perceptions of consumers from a broad spectrum of locations and backgrounds.

The methodology of conducting the survey online through a web questionnaire not only maximized participation rates but also allowed for the collection of data in a manner that was both time-efficient and accessible to a larger segment of the population. With a sampling error of ±2.90%p at a 95% confidence level, the survey's findings offer a reliable snapshot of current consumer attitudes toward ESG management practices in Korea. This comprehensive data collection and analysis process underscores the importance of understanding consumer perceptions in the development of effective ESG strategies and policies.

In this study, for analysis that aligns with the research objectives and purpose, only responses from consumers who are aware of the ESG concept were utilized. This filtering procedure ensured that respondents were capable of meaningfully evaluating ESG-related information and responding to the subsequent survey items. The questionnaire asked, "Are you aware of the concept of ESG management?" using a 5-point Likert scale. Responses that scored 1 point (Not at all) were excluded, leaving 1836 responses for analysis.

Table 1 presents demographic data from a survey of 1836 participants, detailing gender, age, education, and monthly income distributions. Males constitute 53.8%, while females account for 46.2%. Age groups are evenly spread, with the largest segments being 50–59 (24.2%) and 40–49 (21.7%). A significant majority, 68.9%, are college graduates. Monthly income varies, with 22.5% earning between 2 and 3 million KRW, highlighting a diverse sample in terms of gender, age, educational background, and income levels.

**Table 1.** Profile of the Respondents.

| Item | Subjects (*N* = 1836) | Frequency | Percentage |
|---|---|---|---|
| Gender | Male | 988 | 53.8% |
| | Female | 848 | 46.2% |
| Age | 20–29 | 309 | 16.8% |
| | 30–39 | 303 | 16.5% |
| | 40–49 | 399 | 21.7% |
| | 50–59 | 444 | 24.2% |
| | 60–69 | 381 | 20.8% |
| Education | High school graduate or less | 223 | 12.1% |
| | College (currently enrolled) | 76 | 4.1% |
| | College graduate | 1265 | 68.9% |
| | Graduate school (currently enrolled) | 38 | 2.1% |
| | Graduate school graduate or higher | 234 | 12.7% |
| Monthly Income (Million KRW) | <2 | 365 | 19.9% |
| | 2–3 | 414 | 22.5% |
| | 3–4 | 404 | 22.0% |
| | 4–5 | 220 | 12.0% |
| | 5–6 | 191 | 10.4% |
| | 6–7 | 88 | 4.8% |
| | 7–8 | 51 | 2.8% |
| | >8 | 103 | 5.6% |

### *3.3. Analysis*

This study employed Partial Least Squares Structural Equation Modeling (PLS-SEM) because of its causal–predictive orientation and its suitability for estimating complex structural models involving multiple latent constructs [64]. Rather than re-establishing the validity of well-developed theories, this study applies Stakeholder Theory and TPB as the theoretical foundation for developing and evaluating a causal–predictive model of consumer responses to ESG information. Accordingly, the primary objective is to examine

the extent to which corporate ESG information and public ESG information, together with consumer awareness, predict consumer responses while accounting for sociodemographic control variables.

PLS-SEM is particularly appropriate when the objective is to explain and predict endogenous constructs simultaneously, especially in models involving multiple latent variables and complex structural relationships [64]. The method is also robust with respect to distributional assumptions and is well suited for estimating models with reflective constructs and multiple endogenous variables [65]. Following current recommendations for causal–predictive PLS-SEM research, the analysis included assessments of the measurement model, structural model, indirect effects, and predictive performance using using the PLSpredict procedure implemented in SmartPLS 4.1.1.8 [66]. This analytical procedure enables the evaluation of both the explanatory relationships among constructs and the model's out-of-sample predictive capability for consumer responses.

## 4. Results

### *4.1. Common Method Bias*

Because all variables were obtained from a single survey dataset, common method bias (CMB) was assessed using both procedural and statistical remedies [67]. First, procedural remedies had already been incorporated into the original survey design conducted by the Korea Consumer Agency. The survey employed a structured questionnaire with standardized wording and anonymous responses, thereby reducing respondents' evaluation apprehension and minimizing social desirability bias. Furthermore, the questionnaire contained multiple construct sections measuring conceptually distinct variables, which helped reduce respondents' tendency to provide consistent responses across constructs.

Second, Harman's single-factor test was conducted by performing an unrotated exploratory factor analysis. The first factor explained 31.738% of the total variance, which is well below the commonly accepted threshold of 50%, suggesting that common method variance is unlikely to represent a serious concern [67].

Third, full collinearity variance inflation factors (VIFs) were examined to assess potential common method bias in the PLS-SEM model [68]. All inner-model VIF values ranged from 1.031 to 2.520, which are substantially below the conservative threshold of 3.3, indicating that common method bias is unlikely to threaten the validity of the estimated relationships [68]. Collectively, these procedural and statistical assessments suggest that common method bias does not materially affect the findings of this study.

### *4.2. Measurement Model*

In the measurement model section of this study, the reliability and validity of the constructs were thoroughly evaluated using scale reliability, composite reliability, and average variance extracted (AVE) alongside factor loadings (Table 2). The Cronbach's alpha values for constructs such as corporate ESG information and public ESG information demonstrated strong internal consistency, with scores of 0.847 and 0.883 respectively, indicating a high level of reliability [69]. Furthermore, the composite reliability (rho_a and rho_c) and AVE for all constructs exceeded the recommended thresholds of 0.7 for reliability and 0.5 for AVE, suggesting that the constructs are well-defined and capture a significant portion of the variance in the observed variables [70].

The discriminant validity, assessed through the Fornell–Larcker criterion and the Heterotrait–Monotrait ratio (HTMT), further supports the distinctiveness of the constructs. The square root of AVE for each construct was greater than its correlation with other constructs, satisfying the Fornell–Larcker criterion (Table 3).

**Table 2.** Reliability and Validity.

| Construct | Item | Mean | St. Dev. | Factor Loading | Cronbach's Alpha | Composite Reliability (rho_a) | Composite Reliability (rho_c) | Average Variance Extracted (AVE) |
|---|---|---|---|---|---|---|---|---|
| Corporate ESG Information | CIF1 | 3.094 | 0.784 | 0.925 | 0.847 | 0.992 | 0.902 | 0.755 |
| | CIF2 | 2.936 | 0.894 | 0.798 | | | | |
| | CIF3 | 2.983 | 0.825 | 0.879 | | | | |
| Public ESG Information | PIF1 | 3.055 | 0.824 | 0.910 | 0.883 | 0.892 | 0.927 | 0.810 |
| | PIF2 | 2.974 | 0.872 | 0.877 | | | | |
| | PIF3 | 3.016 | 0.858 | 0.912 | | | | |
| Consumer Awareness | AWR1 | 4.192 | 0.613 | 0.834 | 0.785 | 0.786 | 0.875 | 0.700 |
| | AWR2 | 3.798 | 0.714 | 0.847 | | | | |
| | AWR3 | 3.831 | 0.710 | 0.828 | | | | |
| Purchase Intention | PUR1 | 3.989 | 0.604 | 0.945 | 0.871 | 0.874 | 0.939 | 0.886 |
| | PUR2 | 3.998 | 0.609 | 0.937 | | | | |
| Investment Intention | INV1 | 3.916 | 0.741 | 0.917 | 0.802 | 0.803 | 0.910 | 0.835 |
| | INV2 | 3.758 | 0.749 | 0.910 | | | | |
| Advocacy | ADV1 | 4.379 | 0.705 | 0.785 | 0.750 | 0.759 | 0.857 | 0.668 |
| | ADV2 | 3.933 | 0.741 | 0.893 | | | | |
| | ADV3 | 3.553 | 0.863 | 0.767 | | | | |
| Positive Perception | POS1 | 4.083 | 0.704 | 0.887 | 0.877 | 0.877 | 0.924 | 0.802 |
| | POS2 | 4.033 | 0.741 | 0.903 | | | | |
| | POS3 | 4.163 | 0.656 | 0.896 | | | | |

**Table 3.** Construct Correlations and Discriminant Validity.

| Construct | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|---|
| 1. Corporate ESG Information | 0.869 | | | | | | |
| 2. Public ESG Information | 0.777 | 0.900 | | | | | |
| 3. Consumer Awareness | 0.140 | 0.122 | 0.836 | | | | |
| 4. Purchase Intention | 0.049 | 0.048 | 0.614 | 0.941 | | | |
| 5. Investment Intention | 0.099 | 0.067 | 0.522 | 0.565 | 0.914 | | |
| 6. Advocacy | 0.108 | 0.107 | 0.593 | 0.506 | 0.413 | 0.817 | |
| 7. Positive Perception | 0.136 | 0.124 | 0.623 | 0.530 | 0.427 | 0.570 | 0.896 |

Note: Diagonal elements are the square root of AVE.

Furthermore, as shown in Table 4, most HTMT values were below the recommended threshold of 0.90 [71], providing additional evidence of discriminant validity. Although the HTMT value between corporate ESG information and public ESG information was slightly above this threshold (HTMT = 0.906), the deviation was minimal. This result is theoretically reasonable because the two constructs represent conceptually related dimensions of ESG information that differ primarily in their information source (i.e., corporate disclosures versus public-sector information). Moreover, the Fornell–Larcker criterion was fully satisfied, indicating acceptable discriminant validity. Taken together, these results support the distinction between the two constructs despite their high conceptual relatedness.

**Table 4.** HTMT.

| Construct | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|---|
| 1. Corporate ESG Information | | | | | | | |
| 2. Public ESG Information | 0.906 | | | | | | |
| 3. Consumer Awareness | 0.161 | 0.147 | | | | | |
| 4. Purchase Intention | 0.061 | 0.055 | 0.740 | | | | |
| 5. Investment Intention | 0.114 | 0.081 | 0.657 | 0.674 | | | |
| 6. Advocacy | 0.204 | 0.178 | 0.761 | 0.609 | 0.524 | | |
| 7. Positive Perception | 0.148 | 0.140 | 0.748 | 0.607 | 0.509 | 0.690 | |

This study examined the model fit index. The standardized root mean square residual (SRMR) was 0.055, which was less than the recommended threshold of 0.08 [72]. It is recommended that D_ULS (i.e., the squared Euclidean distance) and d_G (i.e., the geodesic distance) are less than 95% bootstrapped quantile [73]. D_ULS and d_G were 0.850 and 0.394, respectively. The Chi-square value was 4731.387. Therefore, the measurement model shows a satisfactory fit.

### *4.3. Structural Model*

The structural model was evaluated using the bootstrapping procedure with 10,000 resamples. Following current PLS-SEM guidelines, hypothesis testing was based on standardized path coefficients, *p*-values, and 95% bootstrap confidence intervals (CIs) [64]. A hypothesis was considered supported when the path coefficient was statistically significant, in the hypothesized direction, and the 95% bootstrap confidence interval did not include zero.

As shown in Table 5, corporate ESG information positively influenced consumer awareness ($\beta$ = 0.113, $p$ = 0.006), supporting H1a. However, the magnitude of the standardized coefficient indicates a relatively small direct effect. Corporate ESG information showed a small negative association with purchase intention ($\beta$ = −0.041, $p$ = 0.063), but the relationship was not statistically significant because the 95% bootstrap confidence interval included zero. Therefore, H1b was not supported. Similarly, corporate ESG information did not significantly affect investment intention ($\beta$ = 0.025, $p$ = 0.282), leading to the rejection of H1c. Public ESG information significantly influenced only positive perception ($\beta$ = 0.053, $p$ = 0.010), supporting H2c. However, the standardized effect size was relatively small, suggesting limited practical relevance despite statistical significance. In contrast, its effects on awareness and advocacy were not significant, resulting in the rejection of H2a and H2b.

**Table 5.** Analysis of Path Coefficients.

| H | Predictor | Outcome | $\beta$ | 95% Bootstrap CI | $p$ | Result |
|---|---|---|---|---|---|---|
| H1a | Corporate ESG Information | Consumer Awareness | 0.113 | [0.033, 0.194] | 0.006 | Supported |
| H1b | Corporate ESG Information | Purchase Intention | −0.041 | [−0.085, 0.002] | 0.063 | Not Supported |
| H1c | Corporate ESG Information | Investment Intention | 0.025 | [−0.020, 0.069] | 0.282 | Not Supported |
| H2a | Public ESG Information | Consumer Awareness | 0.034 | [−0.046, 0.116] | 0.411 | Not Supported |
| H2b | Public ESG Information | Advocacy | 0.035 | [−0.007, 0.079] | 0.107 | Not Supported |
| H2c | Public ESG Information | Positive Perception | 0.053 | [0.011, 0.092] | 0.010 | Supported |
| H3a | Consumer Awareness | Purchase Intention | 0.618 | [0.578, 0.654] | <0.001 | Supported |
| H3b | Consumer Awareness | Investment Intention | 0.527 | [0.482, 0.568] | <0.001 | Supported |
| H3c | Consumer Awareness | Advocacy | 0.578 | [0.539, 0.614] | <0.001 | Supported |
| H3d | Consumer Awareness | Positive Perception | 0.598 | [0.561, 0.633] | <0.001 | Supported |
| CV | Gender | Purchase Intention | 0.070 | [−0.006, 0.145] | 0.068 | Not Significant |
| CV | Gender | Investment Intention | −0.044 | [−0.125, 0.038] | 0.288 | Not Significant |
| CV | Gender | Advocacy | 0.078 | [0.004, 0.154] | 0.041 | Significant |
| CV | Gender | Positive Perception | 0.097 | [0.025, 0.168] | 0.008 | Significant |
| CV | Age | Purchase Intention | −0.006 | [−0.045, 0.034] | 0.770 | Not Significant |
| CV | Age | Investment Intention | −0.039 | [−0.080, 0.001] | 0.057 | Not Significant |
| CV | Age | Advocacy | 0.066 | [0.027, 0.105] | 0.001 | Significant |
| CV | Age | Positive Perception | 0.106 | [0.070, 0.143] | <0.001 | Significant |
| CV | Education | Purchase Intention | −0.016 | [−0.055, 0.022] | 0.425 | Not Significant |
| CV | Education | Investment Intention | −0.007 | [−0.048, 0.031] | 0.726 | Not Significant |
| CV | Education | Advocacy | −0.063 | [−0.099, −0.025] | 0.001 | Significant |
| CV | Education | Positive Perception | −0.046 | [−0.084, −0.007] | 0.019 | Significant |
| CV | Income | Purchase Intention | −0.016 | [−0.076, 0.043] | 0.604 | Not Significant |
| CV | Income | Investment Intention | −0.006 | [−0.050, 0.046] | 0.820 | Not Significant |
| CV | Income | Advocacy | −0.022 | [−0.076, 0.034] | 0.442 | Not Significant |
| CV | Income | Positive Perception | −0.034 | [−0.087, 0.020] | 0.205 | Not Significant |

Note: Structural relationships were estimated using bias-corrected bootstrapping (10,000 resamples). Statistical significance was determined based on *p*-values and 95% bootstrap confidence intervals (CIs). Gender, age, education, and income were included as control variables. CV = control variable.

Consumer awareness exerted strong positive effects on purchase intention ($\beta$ = 0.618), investment intention ($\beta$ = 0.527), advocacy ($\beta$ = 0.578), and positive perception ($\beta$ = 0.598) (all $p < 0.001$), supporting H3a–H3d. Among the control variables, gender was positively associated with advocacy and positive perception, whereas age was positively associated with advocacy and positive perception. Education was negatively associated with advocacy and positive perception. In contrast, the effects of gender on purchase intention, age on purchase and investment intention, and all income effects were not statistically significant.

### *4.4. Indirect Effects Analysis*

To further examine the mediating role of consumer awareness, the specific indirect effects were assessed using the bias-corrected bootstrapping procedure with 10,000 resamples. As shown in Table 6, consumer awareness significantly mediated the relationships between corporate ESG information and all consumer responses. Specifically, corporate ESG information exerted significant indirect effects on purchase intention ($\beta$ = 0.070, $p$ = 0.006), investment intention ($\beta$ = 0.060, $p$ = 0.007), advocacy ($\beta$ = 0.066, $p$ = 0.006), and positive perception ($\beta$ = 0.068, $p$ = 0.006). For all four indirect effects, the 95% bootstrap confidence intervals excluded zero, providing additional evidence of statistically significant mediation. In contrast, none of the indirect effects of public ESG information through consumer awareness reached statistical significance, as all corresponding 95% bootstrap confidence intervals included zero.

**Table 6.** Specific Indirect Effects.

| Indirect Path | $\beta$ | 95% Bootstrap CI | $p$ | Significance |
|---|---|---|---|---|
| Corporate ESG Information → Consumer Awareness → Purchase Intention | 0.070 | [0.021, 0.120] | 0.006 | Significant |
| Corporate ESG Information → Consumer Awareness → Investment Intention | 0.060 | [0.017, 0.103] | 0.007 | Significant |
| Corporate ESG Information → Consumer Awareness → Advocacy | 0.066 | [0.019, 0.113] | 0.006 | Significant |
| Corporate ESG Information → Consumer Awareness → Positive Perception | 0.068 | [0.020, 0.117] | 0.006 | Significant |
| Public ESG Information → Consumer Awareness → Purchase Intention | 0.021 | [−0.028, 0.072] | 0.411 | Not Significant |
| Public ESG Information → Consumer Awareness → Investment Intention | 0.018 | [−0.024, 0.061] | 0.409 | Not Significant |
| Public ESG Information → Consumer Awareness → Advocacy | 0.020 | [−0.027, 0.067] | 0.411 | Not Significant |
| Public ESG Information → Consumer Awareness → Positive Perception | 0.020 | [−0.027, 0.070] | 0.411 | Not Significant |

Note: Indirect effects were estimated using bias-corrected bootstrapping with 10,000 resamples. Statistical significance was determined based on $p$-values and 95% bootstrap confidence intervals excluding zero.

Although the standardized indirect effect sizes were relatively modest, the findings consistently indicate that consumer awareness serves as the principal mechanism through which corporate ESG information influences consumer responses. In contrast, the influence of public ESG information on consumer responses was not transmitted through consumer awareness in the proposed model, suggesting that other mediating mechanisms may explain its effects.

### *4.5. Predictive Assessment*

To evaluate the predictive performance of the proposed model, PLSpredict was conducted following the recommendations of Shmueli, et al. [66]. Predictive relevance was assessed using the Stone–Geisser $Q^2$predict values. A $Q^2$predict value greater than zero indicates that the PLS-SEM model has predictive relevance for the corresponding endogenous construct [66]. As shown in Table 7, positive $Q^2$predict values were obtained for Awareness (0.017), Advocacy (0.029), and Positive Perception (0.050), indicating small but positive predictive relevance for these endogenous constructs. In contrast, Purchase Intention (−0.002) and Investment Intention (−0.005) produced negative $Q^2$predict values, suggesting that the model does not demonstrate predictive relevance for these outcomes. Overall, the results

indicate that the proposed model exhibits limited predictive capability, with predictive relevance evident primarily for awareness- and perception-related constructs rather than purchase- and investment-related outcomes.

**Table 7.** PLSpredict Results.

| Construct | $Q^2$predict | RMSE | MAE |
|---|---|---|---|
| Awareness | 0.017 | 0.993 | 0.743 |
| Purchase Intention | −0.002 | 1.003 | 0.615 |
| Investment Intention | −0.005 | 1.004 | 0.768 |
| Advocacy | 0.029 | 0.987 | 0.769 |
| Positive Perception | 0.050 | 0.976 | 0.733 |

Note: Predictive performance was assessed using the PLSpredict procedure. Positive $Q^2$predict values indicate predictive relevance for the corresponding endogenous construct [66]. RMSE = root mean squared error; MAE = mean absolute error.

## 5. Discussion

The findings provide a nuanced understanding of how ESG information influences consumer responses in sustainable digital commerce environments. ESG information does not automatically translate into consumer action merely because it is disclosed through corporate or public channels. Rather, its influence depends substantially on whether consumers become aware of and understand the information. Consumer awareness therefore appears to function as a central cognitive mechanism linking ESG communication to consumer responses.

Corporate ESG information had a significant positive effect on consumer awareness. This result is consistent with previous research showing that transparent and comprehensive sustainability reporting can strengthen stakeholder awareness and evaluations of firms [28,54]. When companies communicate their ESG activities clearly, consumers may become better informed about their sustainability commitments and more capable of incorporating this information into subsequent decisions. However, the standardized coefficient was relatively small ($\beta$ = 0.113), indicating that corporate ESG information alone is unlikely to produce substantial changes in consumer awareness.

Corporate ESG information also showed a small negative but statistically non-significant association with purchase intention ($\beta$ = −0.041, $p$ = 0.063); therefore, H1b was not supported. This finding differs from studies suggesting that ESG disclosures directly encourage consumers to favor firms with strong sustainability credentials [74]. One possible explanation is that exposure to firm-generated ESG information encourages more critical evaluation rather than an immediate increase in purchasing motivation. Because such disclosures originate from the companies themselves, consumers may interpret them as promotional communication and scrutinize the credibility, authenticity, and completeness of the underlying claims. Moreover, purchase decisions are influenced by factors beyond ESG, including price, product quality, convenience, brand familiarity, and perceived value. The small coefficient should therefore be interpreted cautiously and requires further examination across different consumer and market contexts.

The positive indirect effect through consumer awareness offers additional insight into this pattern. Although the direct relationship between corporate ESG information and purchase intention was negative and non-significant, the indirect relationship through awareness was positive and significant. This result suggests that corporate ESG communication may increase awareness while simultaneously prompting consumers to evaluate corporate claims more critically. Its contribution to purchase intention therefore appears to occur primarily through enhanced awareness rather than through an immediate direct response.

Corporate ESG information did not directly influence investment intention. This result differs from research indicating that ESG-related information can affect investment

decisions [53]. Investment judgments generally involve financial performance, expected returns, risk, corporate credibility, and market conditions in addition to ESG considerations. Corporate ESG information alone may therefore be insufficient to change investment intention directly. Nevertheless, its significant indirect effects on purchase intention, investment intention, advocacy, and positive perception indicate that it contributes to favorable consumer responses by increasing awareness. Overall, the influence of corporate ESG information appears to be primarily indirect rather than direct.

Public ESG information did not significantly influence consumer awareness. This finding differs from the expectation that externally provided sustainability information would increase awareness [40]. Public ESG information may not attract sufficient attention or may be too general, technical, or detached from consumers' immediate decisions to substantially improve their understanding of ESG practices. Its influence may also depend on the visibility, accessibility, and perceived relevance of the particular information source. Future research should therefore examine the conditions under which governmental, media, and independent institutional information becomes salient to consumers.

Public ESG information also did not significantly influence advocacy. Although the coefficient was positive, the effect did not reach statistical significance. Public disclosures may thus be insufficient by themselves to motivate consumers to recommend or publicly support ESG-oriented companies [42]. Advocacy may require a stronger personal connection, perceived benefit, emotional response, or identification with a company's values than public ESG information alone can provide.

In contrast, public ESG information had a significant positive direct effect on positive perception. However, the standardized coefficient was small ($\beta = 0.053$), indicating limited practical influence. Moreover, the indirect effect through consumer awareness was not significant. Public ESG information may therefore shape favorable evaluations through mechanisms other than awareness, such as perceived credibility, institutional legitimacy, or third-party validation [44]. This interpretation suggests that public and corporate ESG information sources perform different functions: corporate disclosures may contribute to consumer understanding, whereas independent or public ESG information may provide external confirmation that strengthens favorable perceptions.

Consumer awareness had significant positive effects on purchase intention, investment intention, advocacy, and positive perception. The positive association with purchase intention is consistent with evidence that consumers who understand a company's social and environmental activities are more likely to make purchasing decisions aligned with their values [48]. This result is also consistent with the Theory of Planned Behavior, which explains how cognitive evaluations and favorable attitudes contribute to behavioral intentions [15].

Consumer awareness also positively influenced investment intention. Consumers who are more knowledgeable about ESG practices may perceive responsible companies as more compatible with their ethical preferences and long-term sustainability goals [53]. Similarly, the positive effect on advocacy indicates that informed consumers are more likely to recommend and support companies demonstrating credible ESG commitments [42]. Awareness may therefore influence not only personal decisions but also interpersonal communication and public endorsement.

The positive relationship between awareness and positive perception further suggests that knowledge of a company's ESG activities can strengthen its image and credibility. This finding is consistent with research showing that corporate social responsibility affects consumers' overall evaluations of firms [75]. Taken together, the results identify consumer awareness as the most influential mechanism in the proposed model. It had substantially larger effects on the four outcomes than either corporate or public ESG information had directly. The indirect effect results reinforce this conclusion for corporate ESG information,

whereas the absence of significant indirect effects for public ESG information suggests that the two information sources operate through different mechanisms.

The control variables provide additional contextual information. Gender was positively associated with advocacy and positive perception but was not significantly associated with purchase intention or investment intention. Age was also positively associated with advocacy and positive perception, while its relationships with purchase intention and investment intention were not statistically significant. Education was negatively associated with advocacy and positive perception, whereas income was not significantly related to any consumer response. Because these variables were included only to control for consumer heterogeneity, the findings should be interpreted cautiously rather than as central theoretical explanations. Future research may investigate these sociodemographic differences using dedicated theoretical frameworks.

From a sustainable digital commerce perspective, the findings imply that simply publishing ESG reports on corporate websites or e-commerce platforms may not be sufficient to strengthen consumer engagement. Firms should present verified ESG information in accessible, transparent, and interpretable formats throughout the digital consumer journey. Relevant applications include ESG indicators on product pages, interactive sustainability dashboards, platform-based labels, mobile applications, and personalized ESG content. These tools may help transform disclosure into consumer awareness, which appears to be the principal pathway through which corporate ESG communication influences downstream responses.

Public and third-party ESG information can complement corporate disclosures by providing independent validation. Governmental ESG databases, certification systems, sustainability rating platforms, and verified marketplace information may strengthen favorable evaluations by improving the perceived credibility of ESG claims. The results therefore support an integrated information environment in which corporate communication increases understanding and independent information reinforces trust and legitimacy.

Overall, the direct effects of corporate ESG information and public ESG information were generally small, and several relationships were not statistically significant. These effects should therefore not be overstated. By contrast, consumer awareness exhibited considerably stronger relationships with all consumer responses, confirming its central explanatory role in the proposed model. The PLSpredict results further indicate that the model has predictive relevance primarily for awareness- and perception-related outcomes. ESG communication may therefore be more effective in explaining cognitive and evaluative responses than in directly predicting purchase- and investment-related outcomes.

## 6. Conclusions

This study significantly enriches the academic discourse on the nuanced effects of corporate ESG information and public ESG information on consumer engagement with ESG practices. By dissecting the distinct roles that corporate and public sources of ESG information play in shaping consumer attitudes and behaviors, this research addresses a critical gap in the existing literature. Prior investigations have predominantly concentrated on the influence of Corporate Social Responsibility (CSR) disclosures on aspects like consumer purchase intentions, often assuming a direct, positive impact [54,76]. However, this study reveals a more nuanced picture. While corporate ESG disclosures increase consumer awareness, they do not significantly influence both purchase intention and investment intention. These findings suggest that the effects of corporate ESG communication differ across consumer responses rather than producing uniformly positive responses. This intricate understanding challenges the more linear assumptions seen in earlier works, such as those by Sen and Bhattacharya [75], who argued a positive correlation between

CSR disclosures and consumer purchase behavior. Instead, our findings suggest that the impact of ESG information on consumer behavior varies depending on the source of ESG information and the type of behavioral outcome, indicating a layered and multifaceted relationship between ESG communication and consumer responses. Moreover, this research brings to light the relatively underexplored domain of public ESG information's role in influencing consumer behavior. Unlike corporate disclosures, public sources of ESG information—spanning media reports, governmental publications, and communications from non-governmental organizations (NGOs)—were found to contribute primarily to positive consumer perceptions rather than directly enhancing consumer awareness, advocacy, purchasing intentions, or investment intentions. These findings suggest that corporate ESG information and public ESG information influence different aspects of consumer responses, underscoring the importance of distinguishing information sources when examining ESG communication. For the academic community, the implications of this study are manifold. It calls for a broader conceptualization of how ESG information is communicated to and processed by consumers, urging scholars to account for the diversity of information sources and their varying levels of influence. Furthermore, it invites future research to delve into the mechanisms through which the credibility and trustworthiness of different ESG information sources affect consumer responses. By doing so, this study not only expands the theoretical framework surrounding ESG practices and consumer behavior but also sets the stage for more granular investigations into the dynamics of ESG communication and its implications for sustainable business practices. More importantly, the findings reposition ESG communication as a sustainable digital commerce issue by demonstrating that consumer awareness represents the primary mechanism through which ESG information influences consumer responses.

This research offers valuable insights for various stakeholders engaged in ESG practices, including companies, governments, investors, and consumers. For ESG companies, the findings underscore the importance of transparent and comprehensive ESG reporting. However, the findings also indicate that merely increasing the volume of ESG disclosure is insufficient. Companies should provide credible and transparent ESG information that enhances consumer awareness rather than expecting immediate direct changes in consumers' purchasing or investment intentions. For example, digital commerce platforms may improve consumer awareness by integrating verified ESG indicators into product pages, recommendation systems, mobile applications, and online sustainability dashboards, thereby enabling consumers to evaluate ESG performance during digital purchasing journeys. For governments and regulatory bodies, this study highlights the role of public ESG disclosures in strengthening positive consumer perceptions toward ESG-oriented firms while supporting sustainable market development. However, it also points to the need for policies that enhance the credibility of public ESG information. Investors may benefit from considering ESG information from multiple sources while recognizing that ESG disclosures alone may be insufficient to influence investment decisions. Consumers, on the other hand, are encouraged to seek out and critically evaluate both corporate and public ESG disclosures, becoming more informed and conscientious in their consumption and investment choices. This research thus provides a roadmap for enhancing the effectiveness of ESG practices through improved information dissemination and credibility.

This study also contributes to sustainable digital commerce research by showing that consumer awareness is the primary mechanism through which ESG information influences consumer responses. In digitally mediated markets, ESG communication should therefore be understood not merely as a disclosure activity, but as a strategic mechanism for consumer engagement, responsible value creation, and sustainability-oriented decision-making. For firms and policymakers, the findings highlight the need to design credible and accessible

ESG information systems that help consumers evaluate responsible firms and distinguish substantive ESG practices from symbolic claims. Examples include standardized ESG labels on e-commerce platforms, artificial intelligence (AI)-assisted ESG recommendation systems, interactive sustainability dashboards, and platform-level ESG verification mechanisms that enable consumers to access trustworthy ESG information during online decision-making processes. Rather than focusing on transaction behavior itself, this study explains one of the key informational mechanisms through which sustainable digital commerce creates value, namely the transformation of ESG information into consumer awareness.

A notable limitation of this study is its reliance on self-reported measures of consumer behavior and perceptions, which may not fully reflect actual consumer actions. Although the study is positioned within the context of sustainable digital commerce, the secondary dataset measures general consumer perceptions of ESG rather than actual online purchasing behavior or interactions with specific digital commerce platforms. Therefore, the findings should be interpreted as evidence of how ESG information shapes consumer awareness and behavioral intentions within digitally mediated information environments rather than as direct evidence of e-commerce behavior. Moreover, because respondents who reported no awareness of ESG management were excluded from the analysis, the findings may not be fully generalizable to the broader population of consumers. Future research should compare ESG-aware and ESG-unaware consumers to better understand how different levels of prior ESG awareness influence responses to ESG communication. Additionally, this study focuses on the aggregate effects of corporate ESG information and public ESG information, leaving opportunities for future research to examine which specific ESG dimensions (e.g., environmental, social, or governance issues) exert the greatest influence on consumer responses. Furthermore, the cross-sectional design limits the ability to capture changes in consumer perceptions and behaviors over time. Future research could address these limitations by incorporating longitudinal designs, platform-level behavioral data, online behavioral traces, ESG disclosure exposure experiments, social media analytics, or actual purchase and investment records to examine how consumers process ESG information and translate it into real consumer responses in digital commerce settings. Future research should also investigate additional mediating mechanisms through which public ESG information influences positive consumer evaluations and other consumer responses, as awareness did not mediate these relationships in the present study.

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**Informed Consent Statement:** This study used secondary data derived from the 'Consumer Perception Survey on ESG Management' conducted by the Korea Consumer Agency. Prior to participation, respondents were informed of the purpose and objectives of the survey, and participation was strictly voluntary. Informed consent was obtained by the Korea Consumer Agency. Only respondents who agreed to the survey terms were allowed to proceed with the questionnaire. The data provided to the researchers were fully anonymized, and no personally identifiable information was accessible during or after data analysis.

**Data Availability Statement:** The data used in this study are publicly available from the Korea Consumer Agency through the Korean Public Data Portal. The authors did not generate the data and therefore do not have permission to redistribute them. The dataset can be accessed at: https://www.data.go.kr/data/15114291/fileData.do (accessed on 3 June 2026).

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**Conflicts of Interest:** The authors declare no conflicts of interest.

## Appendix A

**Table A1.** List of Constructs and Items.

| Construct | Item | Description | Source |
|---|---|---|---|
| Corporate ESG Information | CIF1 | I believe that domestic companies are providing sufficient information on ESG management (business objectives, business performance, benefits of ESG management, etc.) | KEJI [62]; KCGS [63] |
| | CIF2 | I believe that domestic companies provide both positive and negative information about their ESG management activities. | |
| | CIF3 | I believe that information on ESG management of domestic companies is provided consistently. | |
| Public ESG Information | PIF1 | I believe that the public sector provides sufficient information on corporate ESG management (need, activities, expected effects, etc.). | KEJI [62]; KCGS [63] |
| | PIF2 | I believe that the public sector provides both positive and negative information about companies' ESG management. | |
| | PIF3 | I believe that the public sector consistently provides information on companies' ESG management. | |
| Consumer Awareness | AWR1 | How do you feel about ESG management? | KEJI [62]; KCGS [63] |
| | AWR2 | Are you interested in ESG management? | |
| | AWR3 | Do you think ESG management is relevant to your daily consumer life? | |
| Purchase Intention | PUR1 | I believe consumers will be able to purchase products produced by companies that practice ESG management. | KEJI [62]; KCGS [63] |
| | PUR2 | I believe consumers will be able to purchase services produced by companies that practice ESG management. | |
| Investment Intention | INV1 | I believe consumers will be able to invest (e.g., buy stock) in companies that practice ESG management. | KEJI [62]; KCGS [63] |
| | INV2 | I believe consumers will be able to invest in financial products specialized in ESG (e.g., ESG funds, socially responsible bonds, etc.). | |
| Advocacy | ADV1 | I believe that large and mid-sized companies should actively plan and implement ESG management. | KEJI [62]; KCGS [63] |
| | ADV2 | I believe that SMEs should actively plan and implement ESG management. | |
| | ADV3 | I believe that small businesses should actively practice ESG management. | |
| Positive Perception | POS1 | I believe that companies that practice ESG management are socially respectable. | KEJI [62]; KCGS [63] |
| | POS2 | I believe that companies that practice ESG management are trustworthy. | |
| | POS3 | I am positive about companies practicing ESG management. | |
| Gender | Gender | 1 for male and 2 for female | - |
| Age | Age | As collected. | - |
| Education | Education | 1 for individuals with a high school diploma or less, 2 for those currently enrolled in college, 3 for college graduates, 4 for individuals currently enrolled in graduate school, and 5 for graduate school graduates or those with higher levels of education. | - |
| Income | Income | As collected. | - |

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