

## Article

# Effects of Perceived Sustainability Level of Sportswear Product on Purchase Intention: Exploring the Roles of Perceived Skepticism and Perceived Brand Reputation

Yunjeong Kim and Kyung Wha Oh \* 

Department of Fashion, College of Arts, Chung-Ang University, Anseong 17546, Korea; kyj79341@gmail.com

\* Correspondence: kwhaoh@cau.ac.kr

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**Abstract:** Fashion companies are trying to increase the efficiency of their communication with consumers by providing information on sustainable activities or product levels. This study explored the effects of the perceived sustainability level of products offered by sports brands. An online survey was conducted of consumers in their 20s and 30s, and a total of 316 questionnaires were used for the analysis. The structural equation model analysis using AMOS showed that the perceived sustainability level had a positive effect on purchase intention and a negative effect on perceived skepticism. Furthermore, perceived skepticism was confirmed to have a negative effect on purchase intention. By verifying the moderating effect of the perceived brand reputation, it was confirmed that the effect of the perceived sustainability level on purchase intention and the influence of the perceived skepticism on purchase intention differ between high and low brand reputation groups. When the perceived brand reputation is high, the perceived sustainability level has only a direct effect on purchase intention, whereas when the perceived brand reputation is low, only the indirect effect of perceived skepticism appears. This study contributes to the literature and practice by verifying that perceived skepticism plays an important role in the purchasing behavior of sustainable products in fashion.

**Keywords:** perceived sustainability level; perceived skepticism; perceived brand reputation; purchase intention; sportswear; sustainable fashion

## 1. Introduction

Sustainability is a decisive driver for ensuring the proper synthesis of economic and environmental needs [1]. As consumers' interest in sustainability has increased significantly, many retailers are working to increase sustainable options or to develop new standards for the future [2,3]. Recently, such companies as Nike, Adidas, and Under Armor, which are famous sports brands globally, have been introducing marketing communication activities to reinforce their eco-friendly brand image and introducing various sustainable products. Nike announced a Move to Zero campaign through the Nike 2020 Future Forum, which commits Nike to a carbon-free and waste-free future [4]. Under Move to Zero, all products are made of eco-friendly materials, such as recycled polyester and sustainable cotton, to minimize the impact on the environment. In addition, Adidas announced that it would replace all plastic-used products with recycled polyester from 2024. The company, which has been included in the Dow Jones Sustainability Index for 20 consecutive years [5], is participating in various environmental protection activities, such as increasing the use of sustainable materials, reducing waste emissions, and recovering used products. Sportswear brands share substantial responsibility for sustainability, as their business practices affect many people as well as the planet. In addition, younger generations

are increasingly emphasizing that they will pay more for products with the least negative impact on the environment [1]. As such, sportswear stakeholders are striving for meaningful behavior and regulatory compliance while responding to consumer demands for transformative change.

However, the media has highlighted unethical issues and environmental concerns involving many sports brands. Nike was recognized as an unethical company via reports of it using sweatshops and child labor in the 1990s [6]. Greenpeace has reported that a number of studies have shown that various chemicals used in sportswear are potential health risks [7]. Consumers encountered information that conflicted with their prior knowledge of the company and began to wonder about the company's sustainable activities [8]—what is the motive for these companies undertaking sustainable activities, and how do they contribute to society? In addition, there is a lack of information on eco-friendly products. If consumer awareness of a product is insufficient, the consumers are likely to misunderstand the product, and companies can engage in practices such as greenwashing that deceive consumers. Greenwashing refers to misleading consumers about a company's environmental practices or the environmental benefits of a product or service [8] that can reduce the quality, performance, and safety of the product [9–11]. Sustainability as a marketing strategy accounts for one-fourth of greenwashing in the fashion industry, and thus, there is ongoing criticism of sustainability activities, making it difficult to build consumer confidence [1].

When consumers come across a sustainable product, they may doubt whether it is truly sustainable, a tendency known as skepticism [12]. To bolster consumer confidence in sustainability, regulations on various environmental substances, institutionalization of laws, and standardization of certification have become more prominent worldwide. The world's leading institutions have developed and introduced diverse indicators and technologies to evaluate and analyze sustainability according to various materials and processes [13]. SETAC (Society of Environmental Toxicology and Chemistry) defined the LCA (Life Cycle Assessment) process to assess the environmental load by identifying and quantifying the energy used, raw materials, and discharged waste. In addition, the Sustainable Apparel Coalition (SAC) released the Higg Index, which indicates the degree of environmental conservation of clothing [13]. Leading fashion companies are introducing eco-label systems for apparel products and are employing such indexes as the Higg Index for this purpose. Quantifying the sustainability level of apparel products and classifying them by grade makes it possible for consumers to obtain information efficiently and conveniently. However, it is still difficult to objectively assess sustainability in the case of apparel products, including sports brands. Since sustainability is primarily communicated based on the materials used and the information provided is limited, consumers might not be able to avoid doubts about the sustainability of a product. Nevertheless, there is a lack of research on how consumers perceive a company's provision of sustainable information. Recently, sportswear brands have been taking full advantage of the growing consumer interest in sustainable credentials, and Nike, Puma, Reebok, and Adidas have all announced initiatives to incorporate advances in materials into their products [14]. As such, given that sustainability is evolving into an inevitable corporate strategy, it is essential to understand consumer perceptions of a company's sustainable products as a first step.

Recently, the sustainable efforts of many sportswear brands have been increasing, but there is still insufficient research on consumer perception and purchase intention. To fill this research gap, this study aims to establish how the sustainability level of products provided by sports brands affects consumer skepticism, and in turn how it affects purchase intention. In addition, we seek to investigate the moderating effect of brand reputation. Brand reputation serves as a product endorsement to consumers [15] and is a reason for making purchasing decisions [16,17]. Therefore, consumer skepticism and evaluation of sustainable products can be influenced by brand reputation. As many brands currently market sustainable products, it is meaningful to explore the role of the brand reputation of such products. Through this study, we intend to lay a foundation for fashion companies to successfully implement their strategies for sustainable products.

## 2. Theoretical Background

### 2.1. Perceived Sustainability Level of Sportswear Product

Previous studies have shown that relevant knowledge is important to drive the purchase of sustainable products. Consumers with more environmental knowledge are generally more likely to engage in eco-friendly buying behaviors [18,19], and purchase more eco-friendly clothing and footwear products [20–22]. Consumers find it difficult to make the right choice for eco-friendly clothing and footwear [23], and thus, they demand more information and better education about the materials used in the production of these items [24–26]. Since such product-related knowledge can act as a major reason for purchase, it is important to convey knowledge about the product, such as commercialized certification labels and material information. Thus, providing information to consumers in an easy-to-understand way is a way to increase purchases of sustainable products.

Recently, many companies have shown considerable interest in improving the efficiency of information communication of sustainable products [12]. Fashion companies, including sports brands, inform consumers about sustainable activities or product levels. For example, Nike has developed the Materials Sustainability Index, and the Sustainable Apparel Coalition (SAC) has developed the Higg Index. Since purchase-related information is often not available to environmentally conscious consumers, a standardized system could help many consumers to make smart choices.

Several previous studies have focused on the provision of sustainability information for sustainability labels [27–33]. Hyllegard et al. [28] studied socially responsible business practices and examined consumers' reactions to clothing companies' use of hang tags with informational text. They investigated the impact of environmentally friendly production and fair labor messages on consumer evaluation of hang tags, attitudes toward clothing brands, and purchase intentions. The results of the study showed that apparel companies used clear messages and logos to obtain favorable reviews for hang tags and positive attitudes toward apparel brands, and predicted positive purchase intentions. Cho and Baskin [31] investigated the impact of the interaction between healthiness and sustainability levels on consumer product evaluation in food categories. Research has shown that a label that includes both the sustainability level and the environmental dimensions of a product can be an effective tool to communicate sustainability initiatives. Cho and Taylor [33] validated the impact of brand-based sustainability levels on detergent products. Research indicated that the sustainability level affects perceptions of ambiguity, which affects attitudes toward brands. While labels with a high sustainability level are effective in influencing consumers' attitudes toward brands, Cho and Taylor [33] found that using a moderate sustainability level increases perceived ambiguity toward consumers and decreases the persuasiveness of information. Recently, Baier et al. [34] applied the Kano model to reveal the drivers of sustainable apparel and sportswear consumption from a detailed Kano perspective. Research has shown that returns of used (recycled) products, discounts on purchases of sustainable products, bio-based materials, and sustainability level indicators are very attractive. Researchers have found that when developing a sustainable product, the basic requirements for a product (i.e., appearance, quality, and comfort) should be met first, but the sustainability factor has a positive effect on customer satisfaction and is a necessary factor for rethinking brand value and increasing sales revenue [34]. As such, sustainability acts as an important factor in the purchase of fashion products, but there are few studies on the effects of sustainability levels in the apparel category.

This study attempts to understand purchase intention based on the sustainability level of sportswear products. Specifically, this study aims to determine what level of sustainability leads to consumer purchases, which could play an important role in establishing sustainability strategies for companies in the future. Therefore, it is necessary to establish how consumers' perceptions change depending on the level of sustainability of the products presented by sports brands. As consumers generally prefer specific information over that which requires multiple interpretations [27,29], objectively provided sustainability information could have a direct impact on consumer perceptions. A growing number of consumers are interested in buying products that are beneficial to the

environment [35] and are willing to pay a price premium [36]. Therefore, the following hypothesis is established, considering that provision of information about the sustainability level could have a decisive influence on purchasing decisions.

**Hypothesis 1 (H1).** *The perceived sustainability level of a sportswear product has a positive effect on purchase intention.*

## 2.2. The Role of Perceived Skepticism

Skepticism is a cognitive response that depends on the context and content of communication [37]. It generally can be defined as a tendency to doubt, disbelieve, and question [38–40]. Skepticism has been studied mainly in the field of advertising. Advertising skepticism is a sense of disbelief, including the advertiser's purpose and motive to persuade consumers, as well as the truth about the advertisement claims, and is an important factor for consumers' persuasive knowledge [41]. Since then, as companies have been making efforts to become more sustainable, skepticism has developed with regard to corporate CSR (Corporate Social Responsibility) activities. CSR skepticism is a negative reaction that consumers feel toward a company, in which consumers feel skepticism, distrust, and question the hidden values and motivations of a company when conducting CSR activities [40,42,43]. Recently, interest in green skepticism has been increasing from the perspective of consumers, companies, and stakeholders. In recent years, along with the rapid expansion of the eco-friendly product markets, the number of greenwashing cases has increased enormously [10,44], leading to skepticism about corporate green initiatives [11,45].

According to the persuasion knowledge model proposed by Friestad and Wright [41], consumers understand and evaluate the purpose and strategy of the subject who is trying to persuade them, and this knowledge is used to determine how to respond to the attempts to persuade them. One of the ways in which consumers shape persuasive knowledge is attribution inference. Attribution theory explains what causes consumers to attribute an event, and how this perception affects subsequent attitudes and behaviors [46]. Consumers infer the cause of a company's behavior, which influences the consumer reaction to the company. From the perspective of advertising skepticism, because the information conveyed to the consumer is in the advertisement, consumers have access to the information in the advertisement and regard the advertisement as having informational value. However, it is possible that consumers are wary of the information they obtain from the market [39], consider the advertiser's motives for attempting to persuade them, and perceive the advertiser's claims to be biased. In addition, consumers may be suspicious of the truthfulness of the information provided through advertisements [38,47]. As consumers' perceptions of the subject who persuades them directly affect not only the general attitude but also the reliability itself, the informational value provided by the subject may decrease depending on the degree to which the consumer doubts the truth. Therefore, it is necessary to find out how much skepticism is perceived by consumers about the information provided by companies.

Providing sustainability-related information (e.g., material information) influences the perception that the product is environmentally friendly or sustainable. Since a company's sustainable products benefit from the formation of positive perceptions, the level of sustainability presented in the product can affect consumer perceptions and lead to corporate performance. However, consumers may doubt the truthfulness of the information presented about the sustainability level, and the degree of this doubt may affect their attitudes or behavior toward sustainable products. A low sustainability level could make consumers consider the product to be opportunistic and profitable, while a high sustainability level could lower consumers' skepticism of the brand. In this way, H2 is established.

**Hypothesis 2 (H2).** *The perceived sustainability level of a sportswear product has a negative effect on perceived skepticism.*

Previous studies have confirmed that consumers are more likely to have a lower preference when they doubt the environmental characteristics of green products than when there is no doubt [48]. In addition, it has been found that there is a reduced likelihood of purchasing products to contribute to solving environmental problems [49,50]. A study on food has verified that skepticism has a negative effect on purchase intention [11]. Consumers are skeptical about sustainable products if their sustainability level is low, and consumers may be reluctant to buy these products. Thus, perceived skepticism is expected to have a negative effect on purchase intention, and the following hypothesis is established.

**Hypothesis 3 (H3).** *Perceived skepticism has a negative effect on purchase intention.*

Based on a review of the relevant literature, the sustainability level is predicted to have a negative effect on the perception of skepticism, which in turn leads to negative intention to purchase. This leads to the expectation that perceived skepticism mediates the relationship between sustainability levels and purchase intentions, which can be explained by the cognition-affect-behavior (C-A-B) paradigm. The premise of the C-A-B paradigm is that cognition affects emotion and consequently results in behavior; it is intended to establish a systematic model of buyer behavior [51,52]. The paradigm was subsequently found to be effective in analyzing the mediating role of consumers' reactions to advertisements and emotions [53], shopping experience [54], and brand selection process [55]. Recently, it was applied as a framework to identify green purchase intentions and was applied to verify the mediating role of skepticism [11,56]. By applying this framework, we propose that the sustainability level (C) perceived through consumers' cognitive responses affects the perceived skepticism (A), resulting in negative purchase intention (B). Therefore, in this study, the following hypothesis is established.

**Hypothesis 4 (H4).** *Perceived skepticism mediates the relationship between perceived sustainability level and purchase intention.*

### 2.3. Moderating Effect of Perceived Brand Reputation

Reputation is formed through the process of accumulating judgment over time by the various groups interacting with a company [57]. Firms can build a brand's reputation as a differentiation strategy by providing unique values or services to consumers [58]. Brands that are familiar to consumers and induce positive emotions can have a positive effect on brand reputation [59,60]. In general, products with a high brand reputation are widely known to consumers, and by utilizing this reputation, the brand has a market advantage in terms of perceived quality, advertising, and price compared to competing brands, which brings great profits to companies [43,59]. A well-established brand reputation not only directly positively affects brand performance, but also influences brand performance through the creation of a positive brand image [61].

Brand reputation is formed by the accumulation of past brand performance and is a comprehensive and subjective evaluation criterion [62]. When evaluating a brand, consumers tend to recognize the inherent brand reputation and make purchasing decisions based on it [16,17]. As such, brand reputation can be used as an external clue of product quality, providing consumers with additional value for the product in purchasing decisions [63]. In addition, if it is not easy to select and compare alternative products, then brand reputation serves as a product guarantee to the consumer, and consumers can reduce perceived risk by purchasing a product with a higher brand reputation [15].

The higher the level of brand reputation, the lower the sensitivity to potential negative factors (i.e., technical uncertainty and negative cost) of the product due to the high reliability of the brand. This study predicts that when consumers purchase sustainable products, the higher the level of sustainability, the higher their purchase intention. The higher the brand reputation that is perceived, the more this influence increases the purchase intention. Thus, H5 is established.



**Hypothesis 5 (H5).** *When perceived brand reputation is higher, the impact of perceived sustainability level on purchase intention is more positive.*

Among previous studies on reputation and skepticism, Bae and Cameron [64] manipulated the reputation of a fictional company. Research has found that consumers believe that a company's motives are honest and unselfish when it has a good reputation, but skepticism arises when its reputation is poor. These results show that poor reputation can influence skepticism. Assuming that consumers buy sustainable products, skepticism can be perceived more negatively when the brand reputation is lower, even if consumers perceive the sustainability level to be high. Accordingly, the following hypothesis is established.

**Hypothesis 6 (H6).** *When perceived brand reputation is higher, the impact of perceived sustainability level on perceived skepticism is less negative.*

In addition, the higher the consumer's perceived skepticism toward a sustainable product, the lower the purchase intention. However, H7 is proposed, because the magnitude of this negative influence can be reduced owing to the halo effect of a high brand reputation.

**Hypothesis 7 (H7).** *When perceived brand reputation is higher, the impact of perceived skepticism on purchase intention is less negative.*

Figure 1 shows the model of this study for analysis of the relationship between perceived sustainability level, perceived skepticism, purchase intention, and perceived brand reputation.

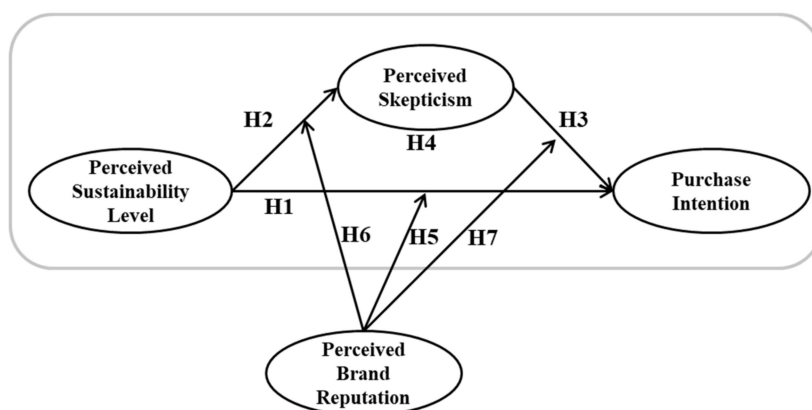


Figure 1. Research model.

### 3. Methodology

#### 3.1. Procedure and Measures

This research was designed as a questionnaire-based study using scenarios. The questionnaire consisted of a between-subjects experimental design with three sustainability levels (high/low/no) and two brand reputation (high/low). Prior to the main survey, a preliminary survey was conducted to classify six survey groups according to the sustainability level and brand reputation. A preliminary survey was administered to 58 consumers aged in their 20s and 30s. Sustainability level referred to the concept of how many sustainable materials are used in the materials in sportswear products. Based on the respondents' perceived sustainability level scores, three levels were selected: high (100% use of sustainable materials,  $M = 6.23$ ), low (50% use of sustainable materials,  $M = 4.79$ ), and no (no sustainable materials used,  $M = 2.74$ ). Next, to select a brand suitable for high and low brand reputation, five top and bottom sportswear brands (based on global sales and recognition) were chosen.

As a result of evaluating the brand reputation of the respondents, Nike ( $M = 6.86$ ) was selected as a brand perceived as having a high brand reputation and Topeak ( $M = 3.48$ ) was selected as a brand perceived as having a low brand reputation. The results of the preliminary survey were used to develop the groups for the main questionnaire.

The questionnaire items consisted of perceived sustainability level, perceived skepticism, purchase intention, perceived brand reputation, and demographic variables. The perceived sustainability level was composed of two questions on the sustainability level of products and materials by referring to the study by Cho [29]. In addition, four questions of perceived skepticism [65], three questions of purchase intention [29,31], and three questions of perceived brand reputation [17] were used after modification by referring to previous studies. All questions were measured on a 7-point scale for the analysis (1 = completely disagree to 7 = strongly agree).

### 3.2. Participants

To verify the research problem empirically, an online survey was conducted by recruiting participants from 25 June to 10 July 2020, through a professional online survey company (<http://www.embrain.com/eng>). The questionnaire for those who wished to participate in the online panel was conducted anonymously. The online survey was targeted at Korean consumers aged in their 20s and 30s who were aware of the concept of sustainability among panels of specialized research institutes and who had purchased sports products in the past year. Young people in their 20s and 30s are willing to pay more for products that have a less negative impact on the environment [2] and have high knowledge of and interest in sustainable clothing [66]. Therefore, they were selected as the subjects of the questionnaire. Respondents were assigned to one of six groups based on their responses regarding perceived sustainability level, perceived skepticism, purchase intention, perceived brand reputation, and demographic characteristics. A total of 328 responses were collected, of which 316 were used for the analysis, excluding careless responses. Of the respondents, 48.5% were women and 51.6% men, while 43% were in their 20s and 57% in their 30s. Furthermore, most respondents were single (64.6%, versus 35.4% married), and most were college graduates. The characteristics of respondents who participated in this study are shown in Table 1.

Table 1. Sample description.

Characteristics	Frequency	Percentage	Characteristics	Frequency	Percentage
Gender			Education		
Male	153	48.5	Less than high school graduate	10	3.1
Female	163	51.6	College student	32	10.1
Age			College degree	217	68.7
20–29	136	43.0	Master's/Doctoral degree	57	18.0
30–39	180	57.0	Average monthly household income (Unit: 10,000 won)		
Marital status			Less than 200	19	6.0
Single	204	64.6	More than 200–Less than 300	66	20.9
Married	112	35.4	More than 300–Less than 400	44	13.9
Education			More than 400–Less than 500	45	14.2
Less than high school graduate	10	3.1	More than 500–Less than 600	35	11.1
College student	32	10.1	More than 600–Less than 800	47	14.9
College degree	217	68.7	More than 800–Less than 1000	34	10.8
Master's/Doctoral degree	57	18.0	More than 1000	26	8.2
Occupation			Average monthly fashion product purchase cost (Unit: 10,000 won)		
Office work	179	56.6	Less than 10	77	24.4
Student	47	14.9	More than 10–Less than 20	106	33.5
Management/Professional	31	9.8	More than 20–Less than 30	65	20.5
Functional	26	8.2	More than 30–Less than 40	18	5.7
Freelancer	11	3.5	More than 40–Less than 50	23	7.3
Etc.	22	6.9	More than 50	27	8.6

For the collected responses, frequency analysis, cross-analysis, and reliability analysis were performed using SPSS 21.0, and confirmatory factor analysis and structural equation model analysis were performed using AMOS 18.0. A chi-square test confirmed the characteristics and differences between the six survey groups, and there were no differences in the questionnaire regarding the respondents' gender, age, marital status, education, and monthly average household income. Therefore, in the subsequent analysis, the analysis was conducted using the entire response.

## 4. Results

### 4.1. Manipulation Checks

Before conducting the hypothesis verification, this study verified whether the manipulated brand reputation and sustainability level were actually perceived differently depending on the group. As a result of confirming the difference in perception of brand reputation according to high and low brand reputation through analysis of variance (ANOVA), the high group was found to perceive a higher brand reputation than the low group ( $M_{\text{high}} = 5.07$ ,  $M_{\text{low}} = 4.17$ ,  $F = 63.097$ ,  $p < 0.001$ ). In addition, the ANOVA confirmed differences in perception according to the sustainability level group ( $M_{\text{high}} = 5.22$ ,  $M_{\text{low}} = 4.86$ ,  $M_{\text{no}} = 4.11$ ,  $F = 25.765$ ,  $p < 0.001$ ). The result confirmed that the stimulus manipulation of this study on brand reputation and level of sustainability was well performed.

This study attempted to verify how the perception of sustainability level affects purchase intention through perceived skepticism and to verify the difference in influence according to perceived brand reputation. Therefore, the related hypotheses were verified by analyzing the measurement model and the structural model using AMOS 18.0 for all responses.

### 4.2. Testing of Measurement Model

Before verifying the structural model of this study, confirmatory factor analysis was conducted for the entire measurement model reflecting all factors using AMOS 18.0 to confirm the validity of the measurement model. The results are shown in Table 2. The major model fit indexes appeared to be within the appropriate range ( $\chi^2(\text{df}) = 146.724(48)$ , Normed  $\chi^2 = 3.057$ , GFI = 0.932, CFI = 0.970, TLI = 0.959, RMSEA = 0.081), and the overall measurement model was verified as acceptable. Cronbach's  $\alpha$  values for all variables ranged from 0.834 to 0.946, confirming a high level of reliability.

It was necessary to examine the construct validity of the four latent variables to confirm whether the model for analyzing the impact of the perceived sustainability level was excellent. Construct validity relates to the degree of correspondence between factors and measurement variables, and to the degree to which a measurement tool accurately measures the value of the factor to be measured [67]. For this evaluation, convergent validity and discriminant validity were identified.

Convergent validity refers to the degree to which two or more measurement tools for a single factor correlate; methods for evaluating this are average variance extracted (AVE) and construct reliability (CR). If AVE is more than 0.5 and CR is more than 0.7, it is considered acceptable [68]. All of the variables in this study satisfy convergence validity by showing AVE values of 0.5 or more (0.645–0.855), and CR also showed convergence validity of more than the reference value of 0.7 (0.968–0.986). Discriminant validity indicates how different one factor is from another. To verify this, the AVE value of the latent variable and the correlation coefficient between each of the two variables are calculated according to the procedure proposed by Fornell and Larcker [68]. If the AVE value of each variable is greater than the squared value of the correlation coefficient of the two variables, discriminant validity is said to exist between the two factors. The squared value of the correlation coefficient between the latent variables in the study model was smaller than the AVE value for each variable, confirming the discrimination validity that the four variables are different concepts (Table 3).



**Table 2.** Results of confirmatory factor analysis.

Construct	Item	Standardized Factor Loading	t-Value	Cronbach's $\alpha$	AVE	CR
Perceived sustainability level	I think the sustainability level of these products is high.	0.897	– <sup>a</sup>	0.907	0.830	0.986
	I think the sustainability level of this product's materials is high.	0.925	22.408 ***			
Perceived skepticism	It is doubtful that this is an environmentally friendly product.	0.839	– <sup>a</sup>	0.925	0.759	0.986
	It is uncertain that this product is less damaging to the environment.	0.861	19.280 ***			
	It is sure that this product meets low environmental standards.	0.915	21.347 ***			
	It is questionable that this product is made in an environmentally friendly way.	0.869	19.573 ***			
Purchase intention	If I want to buy a sportswear product, I am willing to purchase it.	0.908	– <sup>a</sup>	0.946	0.855	0.986
	If I want to buy a sportswear product, I am likely to consider purchasing this product.	0.957	29.830 ***			
	I am willing to purchase this sportswear product in consideration of the information indicated on the product.	0.908	26.125 ***			
Perceived brand reputation	In general, I believe this sportswear brand always fulfills the promises that it makes to its customers.	0.706	– <sup>a</sup>	0.834	0.645	0.968
	This sportswear brand has a good reputation.	0.894	13.844 ***			
	I believe that the reputation of this sportswear brand is better than other companies.	0.799	12.958 ***			

<sup>a</sup> Unstandardized estimate was fixed by a value of one, so the *t*-value was not given. \*\*\*  $p < 0.001$ .

**Table 3.** Discriminant validity.

	Perceived Sustainability Level	Skepticism	Purchase Intention	Perceived Brand Reputation
Perceived sustainability level	<b>0.830<sup>a</sup></b>			
Skepticism	0.664 <sup>b</sup>	<b>0.759</b>		
Purchase intention	0.328	0.335	<b>0.818</b>	
Perceived brand reputation	0.258	0.192	0.518	<b>0.647</b>

Note: <sup>a</sup>: Average Variance Extracted (AVE) for constructs are displayed on the diagonal. <sup>b</sup>: Numbers below the diagonal are squared correlation estimates of two variables.

As confirmed above, for this research model, which consists of the four elements of perception of sustainability, perception of skepticism, perception of purchase intention, and perception of brand attitude, it was confirmed that individual measurement items well explained the variable, and each variable was a different concept.

#### 4.3. Testing of Structural Equation Model

The overall structural model was constructed and verified to identify how the perceived sustainability level affects the perceived skepticism and how this, in turn, affects the purchase intention. The structural model and analysis results of the study are shown in Figure 2. The research model fit was found to be excellent ( $\chi^2(df) = 47.053(24)$ , Normed  $\chi^2 = 1.961$ , GFI = 0.970, CFI = 0.943, TLI = 0.987, RMSEA = 0.055).

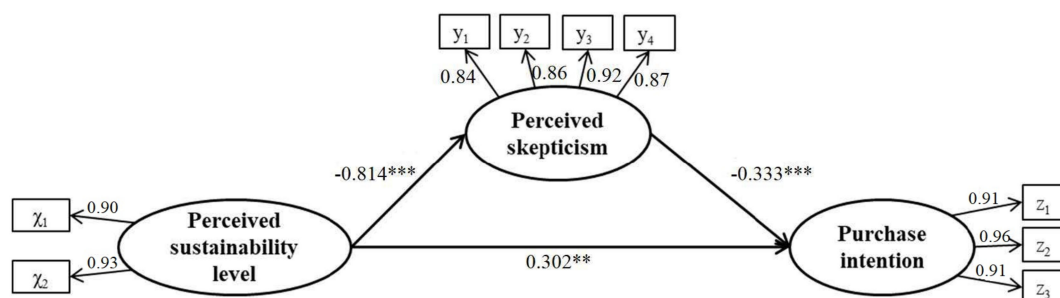


Figure 2. The result of SEM.

According to the verification of the research model, the perceived sustainability level had a positive effect on purchase intention, thereby supporting H1 ( $\beta = 0.302$ ,  $p < 0.01$ ). This result shows that a high level of sustainability can drive purchases. In addition, the perceived sustainability level negatively affects perceived skepticism ( $\beta = -0.814$ ,  $p < 0.001$ ), and perceived skepticism negatively affects purchase intention ( $\beta = -0.333$ ,  $p < 0.001$ ). Thus, H2 and H3 were supported. These results showed that the perceived sustainability level had an effect on purchase intention through perceived skepticism, and thus, the partial mediating effect of perceived skepticism was verified, supporting H4.

The structural equation model analysis confirmed that the higher the perception of the sustainability level of sports products, the lower the skepticism, which in turn increases the purchase intention.

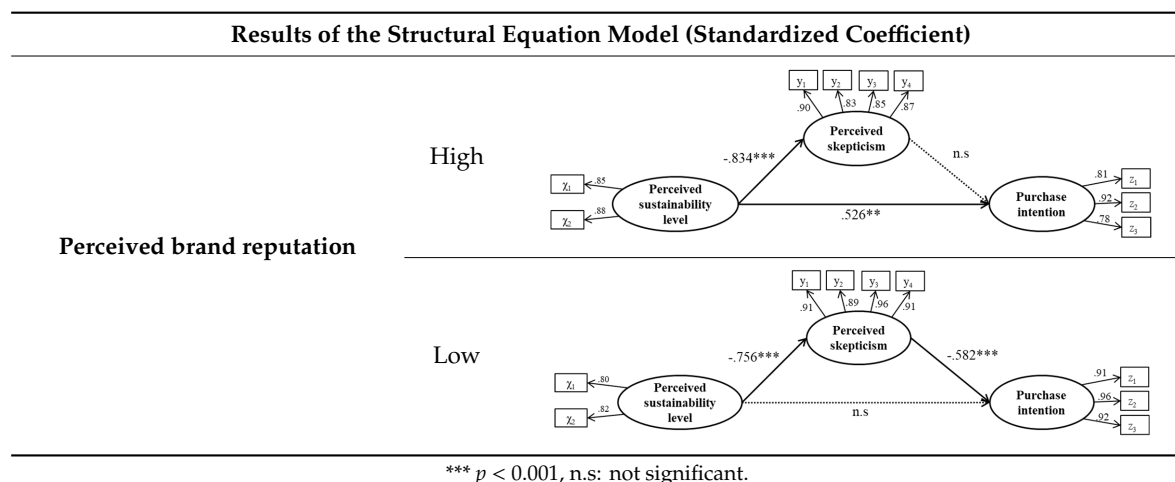
#### 4.4. Moderating Effect of Perceived Brand Reputation

To verify the moderation effect using the structural equation, the measurement equivalence of the model, which judges whether the measurement model of each group shows the same construct, should be confirmed [69]. The measurement equivalence was verified through multi-group factor analysis. The multi-group analysis is a method for investigating the effects of moderators appearing on the pathways between potential variables. To implement this analysis, configural invariance and metric invariance between groups must be premised [70].

In verifying the difference between two groups using the structural equation, configural invariance is secured when the model fit is high in each group and factor loadings are significant. Perceived brand reputation for the high group (Normed  $\chi^2 = 2.979$ , GFI = 0.875, CFI = 0.923, TLI = 0.894) and the low group (Normed  $\chi^2 = 2.026$ , GFI = 0.913, CFI = 0.965, TLI = 0.952) showed acceptable model fit for each research model, and factor loadings of each group were statistically significant at the 0.1% level, ensuring configural invariance. The verification of metric invariance can be confirmed by comparing the model with the constraint that factor loadings are the same for each group (measurement weights model) and the model without any constraints (unconstrained model). The metric invariance is confirmed when the increase of the chi-square value of the two models is not statistically significant. In this study, there was no significant difference between the fit of the unconstrained model ( $\chi^2(df) = 240.260(96)$ , Normed  $\chi^2 = 2.503$ , CFI = 0.945, TLI = 0.925) and the fit of the measurement weights model ( $\chi^2(df) = 254.122(104)$ , Normed  $\chi^2 = 2.443$ , CFI = 0.943, TLI = 0.928). In addition, compared to the non-constrained model, the chi-square increase was not significant at the 5% level in the factor load-constrained model, thereby ensuring metric invariance between the two groups ( $\Delta\chi^2 = 13.862(8) < \chi^2_{.050}(8) = 15.507$ ,  $\Delta df = 8$ ).

This study attempted to examine the difference in influence according to the high versus the low groups of perceived brand reputation in each path (perceived sustainability level  $\rightarrow$  purchase intention, perceived sustainability level  $\rightarrow$  perceived skepticism, perceived skepticism  $\rightarrow$  purchase intention). To confirm this, a chi-square test should be performed on the two models (the free model that does not restrict each path and the constraint model that limits the path coefficients between each group to be the same) and the significance of  $\Delta\chi^2$  should be checked. The results of the moderating effect analysis are shown in Table 4.

Table 4. Results of multi-group analysis.



First, the difference between the free model and the constraint model was tested with regard to the influence of the perceived sustainability level on purchase intention. The result showed that the increase in  $\chi^2$  ( $\Delta\chi^2 = 13.002$ ) was greater than 12.5916, which is the criterion of  $\Delta df = 6$ , and the moderating effect was verified. In the group with a high perceived brand reputation, the perceived sustainability level directly affected purchase intention ( $\beta = 0.526$  \*\*\*), whereas, in the group with a low perceived brand reputation, the perceived sustainability level did not directly affect purchase intention (ns). Therefore, H5 was verified, as there was a difference in the influence of perceived sustainability level on purchase intention according to perceived brand reputation. Second, as a result of verifying the difference between the free model and the constraint model in the influence of the perceived sustainability level on the perceived skepticism, the  $\Delta\chi^2$  increment ( $\Delta\chi^2 = 7.329$ ) was smaller than the criterion of  $\Delta df = 6$ , and thus, the moderating effect was not confirmed. In other words, H6 was rejected, because there was no difference in the influence of perceived sustainability level on perceived skepticism according to perceived brand reputation. The influence of the perceived sustainability level on perceived skepticism was negative in both high ( $\beta = -0.834$  \*\*\*) and low ( $\beta = -0.756$  \*\*\*) groups of perceived brand reputation. Third, as a result of verifying the difference between models in the influence of perceived skepticism on purchase intention, the increase in  $\Delta\chi^2$  ( $\Delta\chi^2 = 13.461$ ) was greater than 12.5916, which is the criterion of  $\Delta df = 6$ , resulting in a moderating effect, thereby supporting H7. In the group with a high perceived brand reputation, perceived skepticism did not directly affect purchase intention (ns), but in the group with a low perceived brand reputation, perceived skepticism negatively affected purchase intention ( $\beta = -0.582$  \*\*\*)

The analysis confirmed that the influence of the perceived sustainability level on purchase intention and perceived skepticism on purchase intention changes according to the perceived brand reputation. When consumers perceive the brand reputation of a sportswear brand as high, the perceived sustainability level directly affected purchase intention, but perceived skepticism did not affect purchase intention. In the case of a sportswear brand with a high brand reputation, the higher the level of sustainability that was perceived, the higher the purchase intention; thus, it is important to establish a strategy that emphasizes the level of sustainability. In particular, there was no mediating effect of perceived skepticism in the group with a high perceived brand reputation, which means that even if consumers are strongly skeptical about sustainable sportswear products, such doubts did not reduce purchase intention. Therefore, the effects of brand reputation should be considered when establishing a strategy for sustainability. When consumers perceived the brand reputation of a sportswear brand to be low, then the perceived sustainability level did not directly affect purchase intention but instead influenced purchase intention through perceived skepticism. In the case of new or less reputable sportswear brands, a strategy to reduce skepticism is needed, because even if the level of sustainability is emphasized, it might not directly lead to purchase intention. It is possible to increase purchase

intention through, for example, marketing strategies, which make consumers less suspicious about a product's sustainability.

## 5. Discussion and Conclusions

With increasing demand for sustainable products from environmentally and socially conscious consumers, fashion companies have begun applying sustainable business strategies, such as the presentation of sustainability labels and marketing campaigns [28,71,72]. However, there are various obstacles that affect consumer interest in clothing [73] and consumer skepticism is one of the obstacles before purchasing. Fashion companies are introducing a variety of sustainable products, but there has been little research on consumer perceptions, emotions, and behaviors regarding the sustainability level of fashion products. Therefore, this study investigated how the sustainability level of sportswear products affects perceived skepticism and purchase intention and aimed to confirm the moderating effect of perceived brand reputation.

Based on the structural equation model analysis, this study found that the perceived sustainability level had a positive effect on purchase intention. In addition, the perceived sustainability level was confirmed to negatively affect perceived skepticism, and perceived skepticism to negatively affect purchase intention. Then, in analyzing the moderating effect of the perceived brand reputation, this study confirmed that the influence of the perceived sustainability level on purchase intention and the perceived skepticism on purchase intention changed according to the perceived brand reputation. When this reputation was perceived to be high, the perceived sustainability level had a direct effect on purchase intention, but perceived skepticism did not affect purchase intention. When the brand reputation was perceived to be low, the perceived sustainability level did not directly affect the purchase intention but influenced purchase intention by mediating perceived skepticism.

The results of this study have the following academic implications. First, this study established the academic basis for these relationships by uncovering the relationship between perceived sustainability level, perceived skepticism, and purchase intention by applying the C-A-B paradigm. In particular, by verifying that perceived skepticism (emotion) mediates the relationship between the perceived sustainability level (cognition) and purchase intention (behavior) of a sportswear brand, it was empirically revealed that perceived skepticism plays an important role in the purchasing behavior of sustainable products. Second, this study extended research on consumer skepticism about sustainability in the fashion category and confirmed its role in purchase intention. Among recent studies on green skepticism [11,31,45], few are in the fashion category. This study verified that consumers are skeptical about sustainable products of sportswear brands. Third, this study identified the role of brand reputation in sustainability strategy. While many studies have focused on sustainability, this study was able to analyze these impacts by subdividing them based on the perceived sustainability level according to the perceived brand reputation.

This study has the following implications for sports brands in practice. First, a low level of sustainability makes consumers suspicious and can affect purchase intentions, indicating that an appropriate strategy for sustainability level is needed. Even if a product with a high sustainability level is provided, it should be accompanied by constant efforts and marketing to ensure that consumers are not suspicious. Second, since the impact of the sustainability level varies depending on the degree of perceived brand reputation, it seems that different brands should have different strategies based on their reputation. When consumers perceive a brand's reputation as high, then the higher the sustainability level, the higher their purchase intention, and the mediating effect of perceived skepticism does not appear. In other words, if consumers perceive the sustainability level of a product to be low, they may be suspicious of the product. However, this suspicion does not directly affect purchase intention, whereas the perceived sustainability level directly affects the purchase intention. For this reason, a strategy that emphasizes the level of sustainability can achieve sufficient results. Meanwhile, when consumers perceive brand reputation to be low, then the perceived sustainability level does not directly affect purchase intention but influences purchase intention by mediating perceived skepticism. For new or

low-reputation brands, the lower the perceived sustainability level, the higher the perceived skepticism, which can negatively affect purchase intention. Therefore, a marketing strategy that removes any doubts by consumers about a product's sustainability would lower skepticism and increase purchase intention. In the long run, it is important to build a brand reputation through various activities and trust in sustainability to reduce the influence of such skepticism.

There are several limitations to this study. First, this study is based on a specific demographic group, and the research was conducted on sportswear brands rather than overall fashion brands. Future research would add meaningful insights by researching other sustainable product types, such as luxury goods and SPA brands. Second, it is necessary to further subdivide the sustainability level in future research and to develop a more sophisticated research design. Third, future studies could consider additional variables related to sustainability (e.g., PCE, environmental awareness, and brand attitude).

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