

Article

“Why Do We Buy Green Products?” An Extended Theory of the Planned Behavior Model for Green Product Purchase Behavior

Piyanoot Kamalanon ¹, Ja-Shen Chen ^{1,*} and Tran-Thien-Y Le ²¹ College of Management, Yuan Ze University, Taoyuan City 32003, Taiwan; s1099410@mail.yzu.edu.tw² College of Economics, Can Tho University, Can Tho City 900000, Vietnam; ltty@ctu.edu.vn

* Correspondence: jchen@saturn.yzu.edu.tw

Abstract: Many consumers are concerned about environmental issues and have expressed interest in purchasing green products. However, actual sales of green products are still not as high as expected. Therefore, marketers of green products may need to investigate the factors driving green purchase behaviors. In this study, we proposed an extended theory of planned behavior (TPB) model that links consumers' environmental concerns, perceived image of the company, consumer innovativeness, and environmental knowledge with green product purchase behavior. We applied a quantitative approach to collect the data via online questionnaires through Amazon MTurk. With 974 useable samples, the data were analyzed with structural equation modeling (SEM) using Smart PLS. The results showed that green purchase intention positively and significantly affects green purchase behavior. Moreover, the multigroup analysis revealed that the direct influence of green purchase intention on green purchase behavior is higher in developing countries than in developed countries. Regarding the direct effect on green purchase intention, attitude toward green products, perceived consumer effectiveness (PCE), environmental concern, and company's perceived green image are significant antecedents of the intention to purchase, with attitude toward green products being the most robust antecedent among the three. However, subjective norms do not act as a direct antecedent of purchase intention. For the indirect effect on green purchase intention, four main antecedents (attitude toward green products, subjective norms, PCE, and environmental concerns) indirectly impact purchase intention via the mediating role of the perceived green image of the company. This study contributes to existing literatures via extending the TPB model. Regarding attitude-intention-behavior model, we found that environmental concern complements the model as an antecedent of green purchase intention. Moreover, a company's perceived green image mediates the relationship between four antecedents and green purchase intention. Therefore, marketers of green products may also enhance future purchases by promoting the green image of the company. Particularly, we found that environmental knowledge positively moderates the relationship between environmental concern and a company's perceived green image. We added on the empirical evidence that PCE plays a crucial role in stimulating green purchases as its direct positive influence on green purchase behavior is larger than that of green purchase intention. Moreover, consumer innovativeness positively moderates the relationship between PCE and green purchase intention.

Keywords: green product; green purchase behavior; perceived consumer effectiveness; perceived green image; consumer innovativeness



Citation: Kamalanon, P.; Chen, J.-S.; Le, T.-T.-Y. “Why Do We Buy Green Products?” An Extended Theory of the Planned Behavior Model for Green Product Purchase Behavior. *Sustainability* **2022**, *14*, 689. <https://doi.org/10.3390/su14020689>

Academic Editor: Colin Michael Hall

Received: 13 December 2021

Accepted: 6 January 2022

Published: 9 January 2022

Publisher's Note: MDPI stays neutral with regard to jurisdictional claims in published maps and institutional affiliations.



Copyright: © 2022 by the authors. Licensee MDPI, Basel, Switzerland. This article is an open access article distributed under the terms and conditions of the Creative Commons Attribution (CC BY) license (<https://creativecommons.org/licenses/by/4.0/>).

1. Introduction

Green consumers may choose to purchase green products to minimize pollution and mitigate the global environmental crisis [1]. While conventional consumers focus on maximizing immediate self-benefits, green consumers consider the long-term benefits of their purchases to others and the environment [2]. For example, green consumers may choose recycled or remanufactured products to contribute to green development toward global sustainability [3]. Meanwhile, businesses can engage in the green movement and

create a green brand image by offering green products [4]. There are many factors driving green purchase behaviors. According to the theory of planned behavior (TPB), behavior is directly influenced by behavioral intention. Specifically, the TPB identifies three antecedents of behavioral intention: (1) attitude, (2) subjective norms, and (3) perceived behavioral control. In the green product context, attitude has been the most important determinant of purchase intention. However, despite customers' growing positive attitude toward green products, actual purchases of green products are still relatively low. Previous studies revealed the discrepancy between consumers' favorable attitude toward green consumption and actual purchase behavior [5]. For example, White et al. [6] reported that 65% of participants in a recent survey stated that they would like to buy products that advocate sustainability, but only 26% of them did so. The gap between consumers' desire and their actual actions can be referred to as the "green attitude-behavior gap". The discrepancy between consumers' green positive attitudes toward the environmentally-friendly products and the purchase of green products has been studied in previous literatures [7–9]. Prior studies have attempted to close the "green attitude-behavior gap" by employing the TPB model [10,11]. Based on TPB, it has been proved that green purchase intention acts as the mediator of green attitudes and green purchase [12–14], thus, it is crucial to establish green purchase intention among consumers to create opportunities for green products. Consequently, identifying relevant direct and indirect factors linking with TPB determinants and driving green purchase intentions is an important contribution to sustainable product marketing and sustainability.

To complement the existing literature, this study proposed an extended TPB model with modifications in three aspects. First, we added environmental concerns as another antecedent of green purchase intention. In the green product context, apart from positive attitudes, subjective norms, and perceived behavioral control, consumers' environmental concerns may directly impact green purchase intention. Second, we added the company's perceived green image into the model to explore its plausible mediating role in encouraging green product purchase intention. Apart from the sales amount, which is the immediate goal of the business, marketers of green products should also focus on the company's positive green image because the reputation of the producer significantly influences the product selection, and perceived green brand image significantly influences consumers' green product selection [15]. Green corporate image has been widely studied in hospitality research [16,17], and we aimed to extend the study on the influence of a company's perceived green image on the consumer behavior in the context of green product purchase. Thus, marketers should increase the environmental value of products or services in the eyes of consumers to emphasize the distinction between green and non-green practices [18]. Third, we suggested that consumer innovativeness and environmental knowledge may exert moderating effects on certain relationships. Markets for environmentally friendly goods are expanding with new green innovation. Consumers with a high level of innovativeness tend to have a stronger intention to buy green products [19,20]. This study attempted to examine the moderating role of consumer innovativeness on the relationship between attitudes and perceived behavioral control and green purchase intention. Furthermore, cognitive factors such as environmental knowledge are plausible factors affecting the intention and action of green product purchases. Aspara et al. [21] identified that better knowledge leads to greater responsiveness and more engagement in environmentally friendly behaviors. Hence, we aimed to investigate the moderating effect of environmental knowledge on the relationship between environmental concerns and green purchase intention as well as the company's perceived green image. The empirical evidence derived from this extended TPB model provides a guideline for green marketers on the factors enhancing the intention to purchase sustainable products.

In accordance with previous studies [22–25], structural equation modeling (SEM) was used for data analysis due to its applicability to demonstrate structural relationships in a complex model. Unlike other methods of statistical modeling, SEM supports the inclusion of both interdependent variables and interactions in a given phenomenon. SEM has

been commonly applied in sustainability research such as supply chain management [24], construction and architecture [26], as well as green purchase intention [27]. Therefore, it is appropriate for analyzing the proposed extended TPB model, which consists of antecedents, dependent variables, mediators, and moderators.

The remainder of this paper presents the empirical study and analysis. First, Section 2 portrays the relevant literature review and hypotheses. Section 3 explains the research methodology, while Section 4 demonstrates the hypothesis testing results. Section 5 discusses the theoretical and managerial implications. Lastly, Section 6 concludes the main findings.

2. Literature Review and Hypothesis Development

2.1. Theory of Planned Behavior (TPB) and the Extended TPB Model

The theory of planned behavior, first proposed by Ajzen [28,29], assumes that our intentions to engage in behavior are influenced by attitudes, subjective norms, and perceived behavioral control. TPB emphasizes the importance of an individual's inherent personality and character when making choices. Hence, TPB supports the consideration of psychological factors in self-controlled and socially influenced decision-making [30].

The theory considers intention to be the most proximal predictor of human behavior, depending on the degree of volition and control that the individual has over the focal behavior. Accordingly, this study takes green purchase intention as a predictor of actual green purchase behavior. Attitudes are shaped by the characteristics the actions with which they are associated and how positively or negatively those characteristics are viewed. Subjective norms are social influences that recognize key referent persons' or groups' normative ideas about the action. The power of subjective norms in predicting behavioral intention is determined by the value placed on these normative ideas and willingness to conform to them. Perceived behavioral control represents the amount of resources and number of opportunities that the individual believes they possess, and how potent these resources are in the performance of the activity [29].

In the focal context, we applied TPB to evaluate the antecedents and moderating factors of green product purchases. The independent variables of green product purchase intention mainly included attitudes toward green products, subjective norms, and perceived consumer effectiveness. Additionally, we extended the TPB model by adding environmental concerns as another antecedent of green purchase intention. Environmental concerns have been studied in green consumer research [7,31]; therefore, we argue that environmental concerns have an antecedent role in the green product context. Moreover, our extended TPB model included the company's perceived green image as a new construct that acts as a mediator between the four main antecedents and green purchase intention and aims to reveal the role of green reputation in stimulating long-term performance of green marketing. Most of the existing literature regarding companies' green reputation focuses on financial performance evaluation [32], green branding [33,34], and use in service sector settings, such as restaurants, hotels, and airlines [16,17]. Our study attempted to broaden the investigation of green reputation into other aspects of green products. Finally, we extended the TPB model by adding two moderating factors: (1) consumer innovativeness and (2) environmental knowledge.

2.2. The Determinants of Extended TPB Model

2.2.1. Green Purchase Behavior

Green purchase behavior refers to consuming products that bring substantial benefits to the environment and demonstrate positive attitudes toward the environment [35]. For instance, young consumers have a strong desire to buy green products [36,37], and their decisions to buy organic food are affected by health and environmental concerns [38]. Studies have examined the factors that influence green purchases, such as green marketing orientations [39], environmental concerns [7], and product care [40]. Some previous research employed the theory of planned behavior to investigate green purchase behavior in various

aspects and locations. For example, Ruangkanjanases et al. [41] surveyed the impacts of relevant determinants of green purchase intention among Taiwanese consumers who have used green products, and identified precursors of attitudes, subjective norms, and perceived behavioral control. The finding suggested that apart from individual and social benefits, word-of-mouth marketing and environmental literacy should also be enhanced by policymakers, thus implying the importance of encouraging green purchase behaviors. In the same way, Nekmahmud and Fekete-Farkas [42] investigated the determinants of consumers' intention to make a green purchase decision in Bangladesh by exploring the influence of green marketing. The results revealed that, to market the green product in a new developing nation, environmental concern, green perceived benefits, green willingness to purchase, and green awareness should be promoted.

2.2.2. Green Purchase Intention

Green purchase intention is an indicator for measuring to what extent consumers are willing to or ready to adopt green alternatives [8]. According to TPB, an individual examines two categories of beliefs when making behavioral decisions: (1) behavioral and (2) normative. Behavioral beliefs influence attitudes toward behavior, while normative beliefs affect subjective norms [43]. The intention to act is shaped by these beliefs of the behavior's consequence, which result in positive or negative evaluation. Behavioral intention is considered a direct antecedent and the best proxy of actual behavior [12,44].

Many have revealed that intention plays a pivotal role in mediating the relationship between attitude and behavior [7,11,13,45–47] and confirmed that intention is a more practical predictor of actual behaviors than attitude. In the literature on intentions to purchase green products, some have proven that the intention to purchase green products is a significant predictor of green purchase behavior [48–50]. For instance, Fontes et al. [14] examined environmental-related antecedent of green purchase behavior of Portugal samples, and confirmed that purchase intention positively influences green purchase behavior, enhancing the important roles of green purchase intention in green marketing. Thus, it is essential for green product manufacturers and marketers to understand target customers' purchase intention, which usually foretells their actual purchase behaviors [51]. Hence, we attempted to reaffirm the antecedent role of green purchase intention on green purchase behavior with our first hypothesis, H1.

Hypothesis 1 (H1). *Green purchase intention positively influences green purchase behavior.*

2.2.3. Attitude toward Green Products

Attitude toward green products represents the degree to which the act of buying a green product is negatively or positively valued by an individual [52]. With greater awareness among customers, green consumers are increasingly conscious of the environment, health, safety, superb quality, and other people's needs while making a purchase [53]. Accordingly, the market for green products is viewed as a sector with enormous growth potential that generates economic benefits, including new jobs, and plays a critical part in the economic transition to sustainable development [54]. Consumers must first have an appreciation of the environment before being likely to decide to purchase environmentally friendly products. For instance, consumers with positive attitudes toward the ecological environment often buy sustainable clothing products [55]. Plenty of evidence shows that attitudes are strongly linked to the intentions and actions of purchasing green products [56,57]. Some researchers have proven that a positive attitude toward green products plays a vital role in the intention to purchase green products [13,48,50,58]. Meanwhile, Trivedi et al. [9] investigated the direct impact of environmental attitude on green purchasing intention by differentiating between inward environmental attitude and outward environmental attitude, and disclosed that the effects depends on type of attitude. Inward environmental attitudes regarding an individual's perceived needs to protect the environment [59] significantly lead to green purchasing intention. However, outward

environmental attitudes regarding perceived needs of other facets of the society such as social, legal, and political movements to protect the environment [59] do not significantly relate to green purchasing intention. Therefore, we aimed to clarify this inconsistency by hypothesizing H2 as follows.

Hypothesis 2 (H2). *Attitude toward green products positively influences green purchase intention.*

2.2.4. Subjective Norms

Subjective norms depict the social influence of others' perceived expectations [12]. Green products are perceived to be more environmentally friendly than other products and consumers will support or resist green products in the face of social pressure [41]. Accordingly, subjective norms are considered a notable variable in sustainability research on human decision-making that reflects the views of the social environment. Since ecologically destructive behaviors indirectly harm others, these behaviors may be avoided in the social environment or substituted with environmentally beneficial alternatives [12].

Previous literature has examined the influence of subjective norms on purchase intention. Park and Lin [44] revealed a positive effect of subjective norms on the intention to purchase recycled products. Jung et al. [60] reported a positive impact of social norms on Chinese consumers' intention to purchase sustainable apparel products. In addition, a significant relationship between subjective norms and purchase intention has been proven in the context of developing countries [50,61]. However, Kumar et al. [13] found that subjective norms had no significant impact on either consumers' intention to purchase green products or their consumption behavior in collectivist societies. Rausch and Kopplin [12] also found an insignificant effect of subjective norms on green purchase behavior. However, the factors intervening the relationship between subjective norms and green purchase intention are still unexplored. To clarify the inconsistencies of previous results, we hypothesized H3 as follows.

Hypothesis 3 (H3). *Subjective norms positively influence green purchase intention.*

2.2.5. Perceived Consumer Effectiveness

Perceived consumer effectiveness (PCE) is the consumer's perception of the extent to which their actions can make a difference in solving environmental issues [62]. PCE occurs when a consumer perceives that his or her action makes a difference; thus, intentions and actual behavior are based on the degree of PCE [63]. In the sustainability domain, PCE is the individual's evaluation of the degree to which his or her consumption activities contribute to solving and preventing environmental problems [64]. In the context of green purchase, socially conscious consumers feel engaged that they can take part in reducing pollution so that they tend to consider the social impact of their purchases [65]. Jaiswal and Kant [7] as well as Straughan and Roberts [66] have confirmed the power of PCE as an antecedent of green purchase intention and green purchase behaviors. PCE is a better predictor of green purchase behavior than environmental attitude alone, as its relationship with green purchase intention is more significant than that of environmental attitude. Moreover, PCE was also found to be a significant moderating factor of the relationship between green practices and green attitudes toward organizations that employ sustainable operations [17]. Higuera-Castillo et al. [65] investigated the effect of PCE on consumer attitude evaluation in the context of electromobility, and found that PCE positively moderates the relationship between consumer attitude formation and intention to adopt the green products. We aimed to confirm the influence of PCE on purchase intention and subsequently hypothesized H4a.

Hypothesis 4a (H4a). *Perceived consumer effectiveness positively influences green purchase intention.*

According to TPB, PCE is directly related to not only behavioral intention, but also the behavior [29]. The significant potential of PCE as an antecedent of green purchase behavior has been examined in previous research [7], reaffirming the positive influence of perceived behavioral control on green purchases. For instance, Sharma and Dayal [67] as well as Kim and Choi [68] found a significant relationship between PCE and green purchase behavior. However, Chen [69] and Chen and Tung [70] found that perceived behavior control was not a significant predictor of environmental behavior among Chinese people. Besides, Arias and Trujillo [71] employed PCE in a study on reusable bag usage and recycling behavior, and revealed that PCE does not directly influence the intention to adopt complex pro-environmental behavior such as recycling, but it indirectly relates to the intention via the mediating role of simple sustainable behavior such as reusable bag usage. We attempted to prove the direct effect of PCE on the action of green product purchase by hypothesizing H4b.

Hypothesis 4b (H4b). *Perceived consumer effectiveness positively influences green purchase behavior.*

2.2.6. Environmental Concern

Environmental concern describes the degree to which consumers believe that environment issues are important to the welfare of the nation [72]. It reflects an individual's attachment to ecological issues and environmental protection [44] and expresses feelings of involvement and awareness of environmental consequences [35,73,74]. Environmental concern is considered to be a social-altruistic value orientation, as people's underlying ecological concerns make them care more about the environment, which has an impact on other people's lives [56]. However, although environmental concerns have been studied for decades, consumption levels have continued to rise [75]. According to Kennedy et al. [76], consumers are aware of the gap between greater environmental concern and concurrent higher levels of consumption, which justifies deeper examination of how environmental concerns directly and indirectly drive intentions to engage in sustainable consumption behavior. The direct influence of environmental concern on purchasing intention of sustainable items is supported by a large body of evidence [44,77,78]. However, most previous research based on TPB employed environmental concern as the antecedent of attitude rather than of behavioral intention [31,79]. Based on TPB, we endeavored to confirm the direct influence of environmental concerns on consumers' intention to purchase green products by hypothesizing H5.

Hypothesis 5 (H5). *Environmental concern positively influences green purchase intention.*

2.2.7. Company's Perceived Green Image

Corporate image involves how the stakeholders perceive the firm as a business [80] and it relates to the general impression of the stakeholders of the organization. Businesses invest significantly in building a strong corporate image to secure their market positions and competitive advantage [81]. Corporate image plays important roles in strengthening brand position and enhancing positive attitudes that lead to adoption of the firm's products [82]. Marketing studies indicated that green practice such as green production process, green packaging, material recovery, and green product offering can contribute to development of the image of the company [83], specifically green corporate image. Green corporate image (GCI) is a combination of a company's concern for its business's image as environmentally conscious. It is established via the green branding or so-called sustainable branding. Green brands refer to green practice and green products offered by the business, while green corporate image refers to the green perception of the stakeholders [84].

In accordance with green corporate image (GCI), a company's perceived green image refers to the series of perceptions that consumers create in their memories about business-related environmental responsibilities and concerns [85]. Numerous businesses have begun

to recognize the prospects of the green market due to the advent of this reform movement and the rise in consumer demand for green products. The creation of green brands is seen as an inevitable future outcome [86]. Using green features to differentiate products can enhance a company's green reputation. Most of the existing consumer study literature examines green brands or green image of the company in various context such as green brand authenticity and self-concept [4] or a firm's corporate social responsibility initiative and green purchase intention [27], but there are still few studies on the relationship between green attitude and green image [17,87,88]. For instance, Han investigated the roles of attitudes toward green behaviors on the company's image in the aspect of eco-friendly decision making of hotel customers and indicated that customers with highly positive attitudes toward environmentally friendly behaviors would perceive the positive images of the company and accordingly tend to have higher level of willingness to choose the green hotel [87]. This finding supports the empirical evidence of the relationship between green attitudes and green image in hospitality industry businesses such as hotels and restaurants. However, there is still a lack of empirical studies in the contexts of green product purchase. We analyzed the impacts of green attitudes on a company's green image by hypothesizing H6a.

Hypothesis 6a (H6a). *Attitude toward green products positively influences a company's perceived green image.*

Subjective norms are strongly affected by the judgments of other people, such as parents, spouses, friends, and teachers, and therefore involve one's personal image. An individual would feel most comfortable when perceived with a positive reputation. Similarly, a high level of subjective norms would motivate a person to perceive companies that offer green products to be more environmentally conscious [41]. If a customer finds it meaningful for others to perform more environmentally conscious behaviors, then a high degree of subjective norms will lead to an increase in intention to behave according to a more positive reputation of the relevant parties. Accordingly, H6b was hypothesized.

Hypothesis 6 (H6b). *Subjective norms positively influence a company's perceived green image.*

The most significant component that distinguishes businesses from one another is their image, which is critical to their success. In this regard, firms with a positive image will build strong relationships with their customers to ensure customer loyalty [17]. Especially for a green consumer, the belief that his or her purchase of green products effectively contributes to global sustainability would stimulate positive self-perception. Consequently, a green consumer would perceive a company that offers green products with a positive reputation. Therefore, we examined the influence of perceived consumer effectiveness on green reputation by hypothesizing H6c.

Hypothesis 6c (H6c). *Perceived consumer effectiveness positively influences a company's perceived green image.*

People are becoming more reliant on environmentally friendly practices in their daily lives due to crises. Consumer demand began to shift as consumers became increasingly environmentally conscious. Those shifts in consumer demand and loyalty can potentially translate into marketing goals [16]. Accordingly, businesses need marketing strategies to enhance the company's green image and simultaneously promote sustainable consumer behaviors [88]. We aimed to investigate the relationship between consumers' environmental concerns and the green reputation of the company by hypothesizing H6d.

Hypothesis 6d (H6d). *Environmental concern positively influences a company's perceived green image.*

Behavioral intention is meaningful in predicting actual purchase behavior, while a positive corporate image tends to increase consumers' purchase intention [81]. In the same way, Flavián et al. [89] found that a positive image has a significant impact on purchase decisions. Based on TPB, an individual's belief directly translates to actual behavior; thus, if a consumer trusts a green company, then he or she will continue to purchase its products [90]. We examined the antecedent role of green reputation on the intention to purchase green products and hypothesized H7 as follows.

Hypothesis 7 (H7). *A company's perceived green image positively influences green purchase intention.*

2.3. The Determinants of Moderating Effects

2.3.1. Innovativeness

Innovativeness is one consumer trait that represents the degree to which an individual adopts an innovation relatively earlier than his or her peers [20]. Particularly, consumer innovativeness is defined as the degree to which the innovation is received independently [91]. Innovative individuals tend to adopt new products more readily. Consumer innovativeness reinforces perceived value, including promotion and experience. Meanwhile, consumers who are more traditional or conservative are less likely to buy new products until such product is embraced by the majority [92]. Innovativeness has been studied in various fields of research, including consumer behavior [93,94], as it plays an imperative role in consumers' intention to try new products. For instance, Li et al. [95] investigated the antecedent roles of consumer innovativeness on the intention to purchase sustainable products, and found that consumer innovativeness significantly relates the purchase intention both directly and indirectly via the mediating roles of personal norm, subjective norm, perceived behavioral control, and consumer attitude. Thus, consumer innovativeness is an influential factor of green product purchase.

Roehrich [96] portrayed consumer innovativeness as the consumption of novelty. Green products generally involve green innovations such as the use of non-toxic chemicals, recyclable materials, and biodegradable technologies [97]. Apart from newly innovated and environmentally friendly materials and production processes, green products are sometimes distinctive in appearance, functions, and brand image [98]. Different levels of innovativeness may indirectly impact consumers' attitudes toward green products and purchase intentions. An individual with relatively high consumer innovativeness would be more eager to try green products. Therefore, we predicted that consumer innovativeness would enhance the relationship between attitudes and purchase intentions of green products and consequently hypothesized H8a as follows.

Hypothesis 8a (H8a). *Innovativeness exerts a positive moderating effect on the relationship between attitude toward green products and green purchase intention.*

Seyed Esfahani and Raynolds [99] stated that innovativeness pertains to a willingness to change. New innovations may not be easily accepted by conventional consumers who may be reluctant to change. However, consumers tend to purchase new products and brands that are different from their previous choices and consumption patterns as their level of innovativeness increases [19,100]. For consumers with a distinguished level of PCE, innovativeness drives them to try newly innovated green products to expand the opportunities to contribute to sustainability. Hence, we hypothesized H8b as follows.

Hypothesis 8b (H8b). *Innovativeness exerts a positive moderating effect on the relationship between perceived consumer effectiveness and green purchase intention.*

2.3.2. Environmental Knowledge

Environmental knowledge is a cognitive factor that refers to the level of people's awareness about the environment, collective responsibilities necessary for sustainable development, and key relationships of environmental impacts [101]. In a recent study on sustainability, environmental knowledge is defined as the level of understanding of factors that impact the health and sustainability of the ecosystem in which we live [45]. Knowledge was a commonly studied variable in studies on green purchase behavior, but most previous studies took environmental knowledge as a predictor of either green attitude or purchase intention. Yadav and Pathak [50] found a precise relationship between environmental knowledge and attitudes toward green products. Meanwhile, Jaiswal and Kant [16] revealed that environmental knowledge did not significantly influence attitudes toward green products. Sun et al. [45] examined the recycled product market in Hong Kong and investigated the direct impact of environmental knowledge on attitudes toward environmental protection but found that the relationship was not statistically significant.

Some studies found that environmental knowledge positively relates to consumers' purchase intention and actual purchase of green products [11,102]. Other studies also found that a lack of knowledge on environmental issues negatively affected green purchase behavior [97,103]. Our study considers the indirect effect of environmental knowledge on the relationship between environmental concerns and green purchase intention. We predicted that an individual with a better understanding of environmental responsibility would have greater environmental concerns and thus have a different level of green purchase intention compared to those with a low level of environmental knowledge. Thus, we hypothesized H9a as follows.

Hypothesis 9a (H9a). *Environmental knowledge exerts a positive moderating effect on the relationship between environmental concerns and green purchase intention.*

In addition, consumers with unequal awareness of ecological sustainability factors tend to have different perceptions of the image of companies that offer green products. A company's green image perceived by a consumer is critical to green marketing. Banerjee [104] argued that the firm's integration of environmental and social responsibility is a key component of a business's long-term value to shareholders and customers. Green brand equity is established through green brand image, green satisfaction, and green trust [105,106]. These elements have resulted from consumers' environmental concerns, and consumers with a better understanding of environmental problems and sustainability issues would perceive a company offering green products in a relatively positive way. Therefore, we hypothesized H9b as follows.

Hypothesis 9b (H9b). *Environmental knowledge exerts a positive moderating effect on the relationship between environmental concerns and a company's perceived green image.*

According to the hypotheses, a research model is proposed and shown in Figure 1.

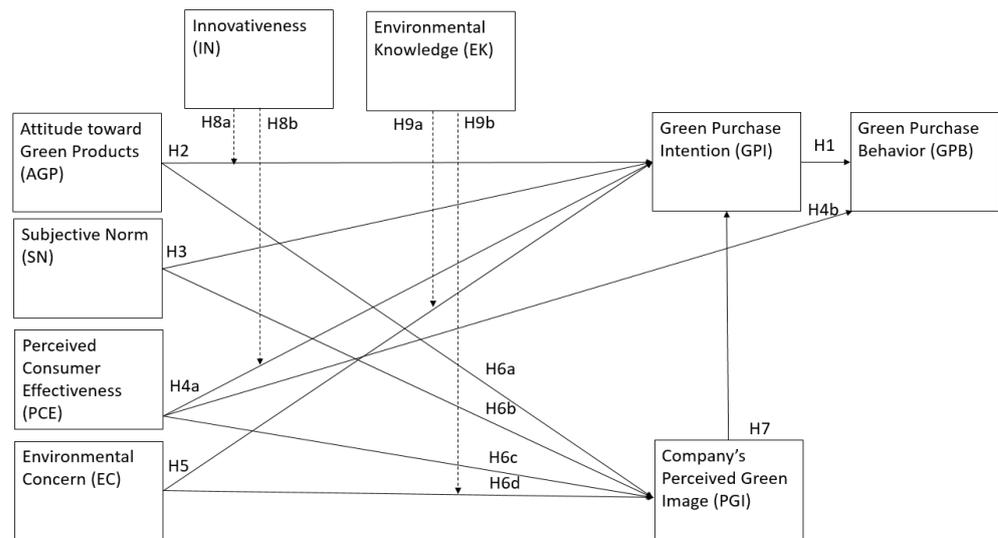


Figure 1. Hypothesized model.

3. Methodology

3.1. Sample and Data Collection

The self-administered questionnaire survey was conducted via Amazon Mechanical Turk (MTurk) in August 2021. We selected MTurk as the platform for survey distribution because it allows interactive composition of assorted respondents in online panels [107]. Moreover, we can recruit many participants relatively expeditiously [108]. MTurk has been widely utilized [109,110], and the data collected through this channel provide fitted samples that are more advantageous over other sampling methods [111].

This study employed the Harman single-factor test suggested by Podsakoff et al. [112] to control for common method bias (CMB). The Harman single-factor test was conducted by loading all the scaled measures used in the study into an exploratory factor analysis (EFA) with the assumption that the presence of CMB is identified by the emergence of either a single factor or a general factor accounting for the majority of covariance among measures.

As a diagnostic technique (and not a statistical control for the method effects), it is commonly assumed that common method bias is not problematic when the variance of the first factor is less than 50%. Our test result shows that the first factor explains only 44.625% of the variance. Thus, the concerns of common method bias are not significant.

We received a total of 1000 responses to the online survey. After cleaning the data set by removing records with missing data and outliers, we yielded the final sample of 974 valid responses, which is a usable response rate of 97.4%. Table 1 shows the demographic information of the sample. Most of the respondents were 30–39, who accounted for 36.65% of the sample, followed by respondents aged 20–29, who accounted for 34.39% of the sample. In terms of country of origin, 592 respondents were from the United States, accounting for 60.78%, while 306 respondents were from Asia, accounting for 31.42%. We further divided the sample into groups of 711 (73.00%) from a developed country, 255 (26.18%) from a developing country, and 8 (0.82%) from an underdeveloped country. Most of the respondents in the sample (66.60%) held a bachelor's degree. Moreover, 597 (61.29%) respondents were working in the private sector, while 266 (27.31%) were working in the public sector.

3.2. Measures

A structured questionnaire was generated in line with the existing literature on the green product purchase behavior. This questionnaire survey consisted of four parts. The first part surveyed environmental knowledge and concern, while the second part included questions relevant to purchasing a green product. The third part measured related consumer traits, while the last part collected background information. In Part 1 to Part 3, participants

were asked to rate their level of agreement with the statements using a five-point Likert-type scale, ranging from 1 = “strongly disagree” to 5 = “strongly agree.”

Table 1. Sample demographics.

Item	Category	Frequency	Rate (%)
Age	Under 20	1	0.10%
	20–29	335	34.39%
	30–39	357	36.65%
	40–49	183	18.79%
	50–59	60	6.26%
	60 or above	38	3.90%
	Aggregate	974	100%
Region	Asia	306	31.42%
	Europe	68	6.98%
	Australia	6	0.62%
	America	592	60.78%
	Africa	2	0.21%
	Aggregate	974	100%
Country	Developed country	711	73.00%
	Developing country	255	26.18%
	Underdeveloped country	8	0.82%
	Aggregate	974	100%
Education	Higher secondary level	61	6.26%
	Bachelor’s degree	600	61.60%
	Post-graduate degree	205	21.05%
	Professional degree	104	10.68%
	Others	4	0.41%
	Aggregate	974	100%
Occupation	Student	41	4.21%
	Public sector employee	266	27.31%
	Private sector employee	597	61.29%
	Others	70	7.19%
	Aggregate	974	100%

Each latent variable was measured using four-item scales modified from the existing literature. Green purchase behavior was measured by the tendency and frequency of action [35,113,114]. Meanwhile, green purchase intention was captured by the willingness to choose green alternatives [28,115–118]. Attitude toward green products was evaluated by a favorable outlook regarding environmentally friendly products [8,58,115,118–120]. Subjective norms were measured by how much one places precedence on others’ perception about his or her behavior [113,121]. Perceived consumer effectiveness was measured by confidence in contributing to sustainability through pro-environmental behavior [66]. Environmental concern was assessed by concerns about natural environments [35,42], while a company’s perceived green image was decided by their reputation for offering green products [17,122]. Latent constructs for moderating effects include innovativeness [93,123], which is a consumer trait, and environmental knowledge [118], which is a cognitive factor. Additionally, we also measured green purchase experience by surveying the respondents’ level of experience using green products [124] using three-item scales.

We conducted a pilot test with international samples recruited by the research company. After receiving feedback from a total of 70 samples from Europe, Asia, America, and Australia and checking the reliability of the preliminary questionnaires using Cronbach’s alpha, some modifications were made to improve the wording and reliability of the measurement items. Pilot test respondents were not included in the final samples. Items used in the data collection are shown in Appendix A.

4. Data Analysis and Results

4.1. Measurement Model

IBM SPSS 26 and Smart PLS 3.3 were applied to conduct the analyses and assess the quality of the measurement model. Confirmatory factor analysis (CFA) was adopted to check the convergent validity and discriminant validity of the model. First, the internal reliability of the measurement model was investigated by using Cronbach's alpha (α) and composite reliability (CR). Cronbach's alpha coefficients exceeding 0.7 [125] prove internal consistency. The CR for all constructs should be above 0.7 [126]. As shown in Table 2, Cronbach's alpha and CR for all constructs were above the threshold values. Then, convergent validity was evaluated by examining whether the average variance extracted (AVE) values were above 0.5 [127]. Table 2 illustrates that all AVE values are greater than 0.5, reaffirming that the items adequately reflect the constructs. Next, discriminant validity was tested using the Fornell–Larcker criterion [127]. Discriminant validity is proved when a latent variable demonstrates more variance in its associated indicator variables than the variance of the other latent constructs in the same model. Accordingly, the square root of AVE for each construct should be larger than the correlations with other latent constructs [128]. Table 3 shows that the square root of AVE for each construct is larger than the correlation between the constructs, thereby indicating the discriminant validity among constructs.

Table 2. Measurement properties.

Variables	Construct Identifier	Items	SFL	α	CR	AVE
Environmental Concern	EC	EC1	0.797	0.749	0.841	0.570
		EC2	0.731			
		EC3	0.750			
		EC4	0.739			
Attitude toward Green Products	AGP	AGP1	0.810	0.794	0.866	0.618
		AGP2	0.802			
		AGP3	0.757			
		AGP4	0.775			
Subjective Norm	SN	SN1	0.838	0.777	0.855	0.597
		SN2	0.771			
		SN3	0.764			
		SN4	0.711			
Perceived Consumer Effectiveness	PCE	PCE1	0.800	0.753	0.844	0.576
		PCE2	0.664			
		PCE3	0.788			
		PCE4	0.774			
Green Purchase Intention	GPI	GPI1	0.815	0.761	0.847	0.582
		GPI2	0.753			
		GPI3	0.763			
		GPI4	0.718			
Green Purchase Behavior	GPB	GPB1	0.835	0.756	0.844	0.576
		GPB2	0.767			
		GPB3	0.769			
		GPB4	0.654			
Company's Perceived Green Image	PGI	PGI1	0.825	0.798	0.869	0.623
		PGI2	0.763			
		PGI3	0.780			
		PGI4	0.790			

Notes: (1) SFL = standardized factor loading, α = Cronbach's alpha, CR = composite reliability; (2) All factor loadings are significant at the 0.05 level.

Table 3. Mean, SD, correlations, and discriminant validity.

	Mean	SD	EC	AGP	SN	PCE	GPI	GPB	PGI
EC	3.967	0.695	0.755						
AGP	4.077	0.695	0.654 **	0.786					
SN	3.809	0.744	0.527 **	0.500 **	0.773				
PCE	3.967	0.692	0.607 **	0.644 **	0.555 **	0.759			
GPI	4.050	0.699	0.601 **	0.681 **	0.447 **	0.643 **	0.763		
GPB	3.920	0.715	0.647 **	0.637 **	0.599 **	0.645 **	0.589 **	0.759	
PGI	3.960	0.698	0.594 **	0.617 **	0.531 **	0.640 **	0.607 **	0.661 **	0.789

Notes: (1) ** $p < 0.01$; (2) EC = Environmental Concern; AGP = Attitude toward Green Products; SN = Subjective Norm; PCE = Perceived Consumer Effectiveness; GPI = Green Purchase Intention; GPB = Green Purchase Behavior; PGI = Company's Perceived Green Image; (3) Inter-correlation coefficients are below the diagonal, and square roots of the AVE (in bold) are on the diagonal.

4.2. Structural Model

Structural equation modeling (SEM) was applied to test the hypothesized model. SEM is distinctive for its advantages of accounting for all covariance in the data, allowing the simultaneous analysis of correlations, shared variance, path coefficients, and their significance when testing for the main effects [25,129]. In accordance with previous studies [23,24,27,130,131], instead of covariance-based structural equation modelling (CB-SEM), we performed partial least square equation modelling (PLS-SEM) because of its suitability in handling non-normal data. Moreover, PLS-SEM is more flexible in identifying the relationship between measurement items and the constructs, comparing with CB-SEM [23,132–134]. Figure 2 and Table 4 show the results of the direct effects of the hypothesized model with the path coefficients in a standardized form. As displayed in Table 4, green purchase intention (GPI) had a significant positive effect on green purchase behavior (GPB) ($\beta = 0.320$, $t = 7.704$, $p < 0.001$), providing support for H1 that intention to purchase can be an effective predictor of the actual purchase of green products. Attitude toward green products (AGP) had a significant positive effect on green purchase intention (GPI) ($\beta = 0.442$, $t = 9.560$, $p < 0.001$), validating H2. However, the relationship between subjective norm (SN) and green purchase intention (GPI) was statistically significant but not supported since the direction of the relationship was negative ($\beta = -0.072$, $t = 2.488$, $p < 0.05$). Hence, H3 was not supported.

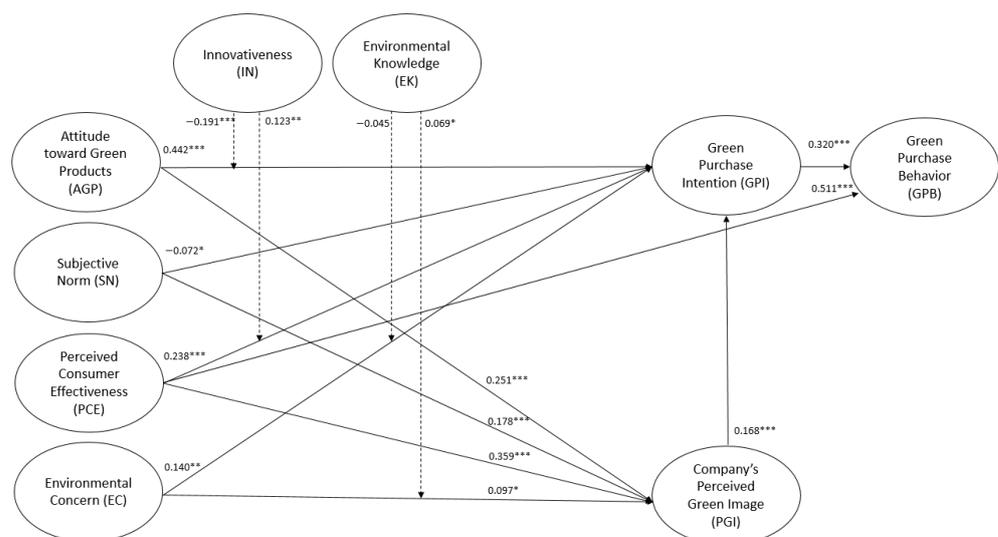


Figure 2. Results of the structural model. Notes: (1) * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$; (2) Dashed lines represent moderating effects.

Table 4. Results of direct effects.

Paths/Hypotheses	Path Coefficient	T Value	Results
GPI → GPB (H1)	0.320	7.704 ***	Supported
AGP → GPI (H2)	0.442	9.560 ***	Supported
SN → GPI (H3)	−0.072	2.488 *	Not supported
PCE → GPI (H4a)	0.238	4.846 ***	Supported
PCE → GPB (H4b)	0.511	11.602 ***	Supported
EC → GPI (H5)	0.140	3.418 **	Supported
AGP → PGI (H6a)	0.251	4.804 ***	Supported
SN → PGI (H6b)	0.178	4.589 ***	Supported
PCE → PGI (H6c)	0.359	7.112 ***	Supported
EC → PGI (H6d)	0.097	1.991 *	Supported
PGI → GPI (H7)	0.168	4.252 ***	Supported
R Square			
Green Purchase Intention (GPI)		0.728	
Green Purchase Behavior (GPB)		0.617	
Company's Perceived Green Image (PGI)		0.625	

Notes: (1) * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$; (2) EC = Environmental Concern; AGP = Attitude toward Green Products; SN = Subjective Norm; PCE = Perceived Consumer Effectiveness; GPI = Green Purchase Intention; GPB = Green Purchase Behavior; PGI = Company's Perceived Green Image.

Perceived consumer effectiveness significantly impacted both GPI ($\beta = 0.238$, $t = 4.846$, $p < 0.001$) and GPB ($\beta = 0.511$, $t = 11.602$, $p < 0.001$) in the positive direction. Thus, our findings supported H4a and H4b.

Environmental concern (EC) also showed a significant positive effect on green purchase intention (GPI) ($\beta = 0.140$, $t = 3.418$, $p < 0.01$); therefore, H5 was supported.

Regarding H6, we proved that all four antecedents had a significant positive influence on the company's perceived green image (PGI). Those four antecedents included attitude toward green products ($\beta = 0.251$, $t = 4.804$, $p < 0.001$), subjective norms ($\beta = 0.178$, $t = 4.589$, $p < 0.001$), perceived consumer effectiveness ($\beta = 0.359$, $t = 7.112$, $p < 0.001$), and environmental concerns ($\beta = 0.097$, $t = 1.991$, $p < 0.05$), providing support for H6a, H6b, H6c, and H6d. Last, we found that a company's perceived green image had a significant positive influence on green purchase intention ($\beta = 0.168$, $t = 4.252$, $p < 0.001$), implying that a positive green reputation eventually leads to purchase intention in the green product context.

4.3. The Results for Moderating Effects

We used the latent moderated effect model to test the moderating effect of innovativeness (IN) and environmental knowledge (EK). To examine the moderating effect of innovativeness, we added the interaction term of attitude toward green products \times innovativeness (AGP \times IN) and perceived consumer effectiveness \times innovativeness (AGP \times IN) into the model. As illustrated in Table 5, both interaction terms of IN showed statistically significant moderating effects. However, innovativeness negatively moderated the relationship between attitude toward green products and green purchase intention ($\beta = -0.191$, $t = 4.387$, $p < 0.001$), therefore H8a is not supported as we hypothesized that the moderating effect should be in the positive direction. Simultaneously, innovativeness positively moderated the relationship between perceived consumer effectiveness and green purchase intention ($\beta = 0.123$, $t = 2.800$, $p < 0.01$), thus, H8b is supported.

The moderating effect of environmental knowledge was investigated by adding the interaction terms of environmental concern \times environmental knowledge (EC \times EK) into the model. Table 5 provides evidence that environmental knowledge did not significantly moderate the relationship between environmental concerns and green purchase intention ($\beta = -0.045$, $t = 1.818$, $p > 0.05$), therefore, H9a is not supported. However, environmental knowledge exerted a positive moderating effect on the relationship between environmental

concerns and a company's perceived green image ($\beta = 0.069$, $t = 2.013$, $p < 0.05$), hence, H9b is supported.

Table 5. Results of the moderating effects.

Hypotheses	Paths	Path Coefficient	t Value	Results
H8a	AGP→GPI	0.524	14.008 ***	Not supported
	IN→GPI	0.056	2.036 *	
	AGP × IN→GPI	−0.191	4.387 ***	
H8b	PCE→GPI	0.310	7.748 ***	Supported
	IN→GPI	0.056	2.036 *	
	PCE × IN→GPI	0.123	2.800 **	
H9a	EC→GPI	0.692	18.130 ***	Not supported
	EK→GPI	0.031	0.743	
	EC × EK→GPI	−0.045	1.818	
H9b	EC→PGI	0.543	11.108 ***	Supported
	EK→PGI	0.237	4.856 ***	
	EC × EK→PGI	0.069	2.013 *	

Notes: (1) * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$; (2) AGP = Attitude toward Green Products; GPI = Green Purchase Intention; IN = Innovativeness; PCE = Perceived Consumer Effectiveness.

We followed the method of Dawson [135] to visualize the moderating effect in a plot diagram. Figure 3 shows that the positive relationship between attitude toward green products and green purchase intention weakened when consumer innovativeness increased. Figure 4 shows that the relationship between perceived consumer effectiveness and green purchase intention strengthened when consumer innovativeness increased. Figure 5 shows that the relationship between environmental concerns and a company's perceived green image strengthened when the consumer's level of environmental knowledge increased.

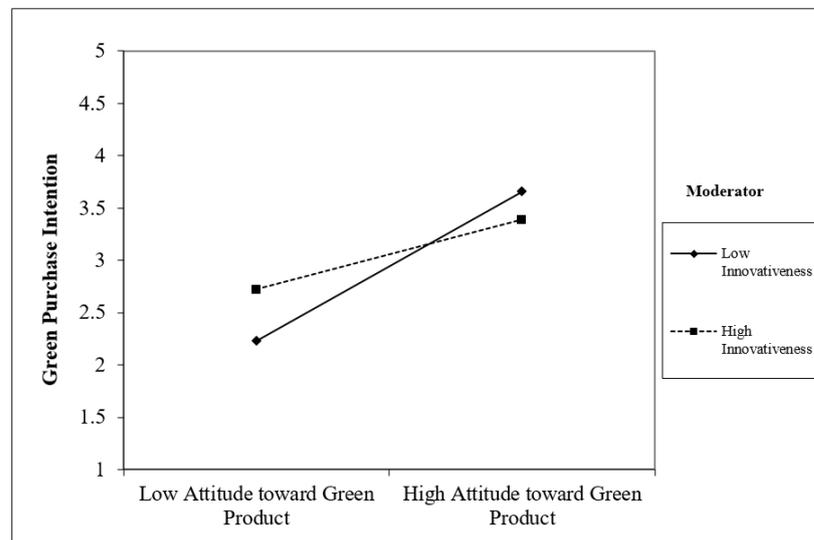


Figure 3. Interaction between innovativeness and attitude toward green products on green purchase intention (H8a).

4.4. Multigroup Analysis

Acceptance and adoption of green products may vary across geographical locations due to factors such as cultural values [31]. For instance, the recyclable materials are more relevant in the United States than in Germany, implying that consumers' expectations on green products differ depending on where they live; thus, companies need to explore how targeted segments value the environment and green products [136]. Previous studies have investigated the green purchase behaviors in developed countries such as the USA, Canada, Australia, New Zealand, and Japan [137–139]. Interestingly, in recent years, many

have examined consumers' selection of green products in developing economies [45,48,51], signaling the potential of developing countries in promoting green consumerism and long-term resource efficiency. Apart from geographical locations, a consumer's experience in using a green product also has a massive impact on whether they will continue to use it [140]. Consumer perceptions of new green products are established based on indirect experience, which is insufficient to make a purchase decision. Furthermore, consumers with a high level of experience using certain products tend to have more direct experience-based information than consumers with a low level of experience [141]. As a result, the amount of experience may have a distinct impact on the determinants of adopting green products.

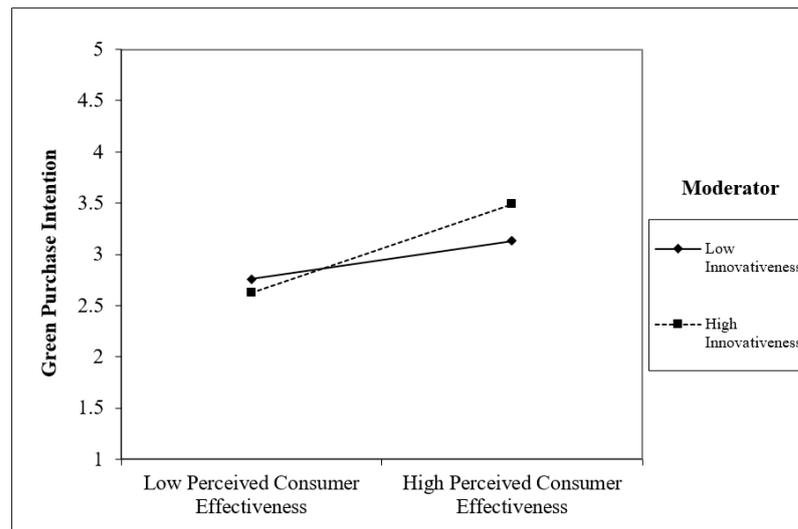


Figure 4. Interaction between innovativeness and perceived consumer effectiveness on green purchase intention (H8b).

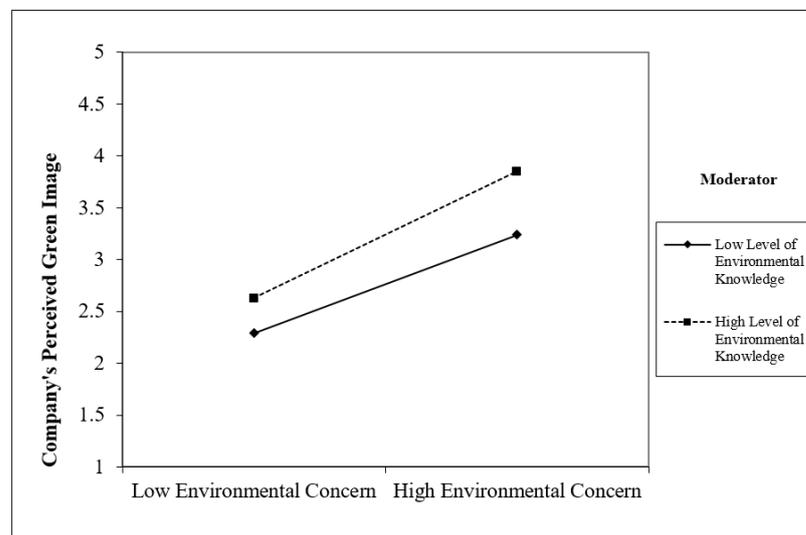


Figure 5. Interaction between environmental knowledge and environmental concern on a company's perceived green image (H9b).

Accordingly, we conducted two multigroup analyses to examine whether there is a difference between: (1) samples from developed and developing countries, and (2) samples with a high and low level of experience in purchasing and using green products.

Using the country as the grouping variable, we divided respondents into 711 (73.00%) from developed countries and 255 (26.18%) from developing countries. Table 6 presents the results of the multigroup analysis (MGA) regarding the respondents' country, pointing out one significant difference for the path of H1. The influence of green purchase intention

on green purchase behavior is higher in developing countries than in developed countries ($\beta = -0.059, p < 0.05$).

Using the level of use experience as the grouping variable, we considered a green purchase experience value greater than or equal to 4.00 to be a high level of experience. Table 7 explains the results of the multigroup analysis regarding the level of experience with green products, identifying the significant difference for the path of H6d. Environmental concern positively influences the company's perceived green image when consumers already have a high level of experience with green products. In contrast, consumers with a relatively low level of experience with green products showed negative influences on the company's green reputation ($\beta = 0.202, p < 0.05$).

Table 6. Multigroup Analysis (Developed Country and Developing Country).

Hypothesized Path	Path Coefficient			Results
	Developed Country	Developing Country	Difference	
GPI → GPB (H1)	0.304	0.363	−0.059 *	Supported
AGP → GPI (H2)	0.445	0.407	0.038	Not supported
SN → GPI (H3)	−0.082	−0.037	−0.045	Not supported
PCE → GPI (H4a)	0.24	0.188	0.052	Not supported
PCE → GPB (H4b)	0.514	0.517	−0.003	Not supported
EC → GPI (H5)	0.145	0.176	−0.032	Not supported
AGP → PGI (H6a)	0.169	0.451	−0.282	Not supported
SN → PGI (H6b)	0.19	0.14	0.050	Not supported
PCE → PGI (H6c)	0.399	0.28	0.119	Not supported
EC → PGI (H6d)	0.109	0.059	0.050	Not supported
PGI → GPI (H7)	0.159	0.208	−0.049	Not supported

Notes: (1) * $p < 0.05$; (2) EC = Environmental Concern; AGP = Attitude toward Green Products; SN = Subjective Norm; PCE = Perceived Consumer Effectiveness; GPI = Green Purchase Intention; GPB = Green Purchase Behavior; PGI = Company's Perceived Green Image.

Table 7. Multigroup Analysis (High Level of Experience and Low Level of Experience).

Hypothesized Path	Path Coefficient			Results
	High Level of Experience	Low Level of Experience	Difference	
GPI → GPB (H1)	0.270	0.254	0.016	Not supported
AGP → GPI (H2)	0.401	0.398	0.003	Not supported
SN → GPI (H3)	−0.056	−0.093	0.037	Not supported
PCE → GPI (H4a)	0.188	0.253	−0.064	Not supported
PCE → GPB (H4b)	0.438	0.444	−0.006	Not supported
EC → GPI (H5)	0.162	0.149	0.013	Not supported
AGP → PGI (H6a)	0.169	0.226	−0.057	Not supported
SN → PGI (H6b)	0.165	0.215	−0.05	Not supported
PCE → PGI (H6c)	0.326	0.364	−0.038	Not supported
EC → PGI (H6d)	0.167	−0.035	0.202 *	Supported
PGI → GPI (H7)	0.132	0.208	−0.076	Not supported

Notes: (1) * $p < 0.05$; (2) EC = Environmental Concern; AGP = Attitude toward Green Products; SN = Subjective Norm; PCE = Perceived Consumer Effectiveness; GPI = Green Purchase Intention; GPB = Green Purchase Behavior; PGI = Company's Perceived Green Image.

5. Discussion

5.1. General Discussion

We employed the theory of planned behavior to examine the direct and indirect antecedents of consumers' green product purchase behavior. As predicted in H1, green purchase intention appeared to be a meaningful predictor of green purchase behavior. Our model hypothesized four main antecedents of green purchase intention, and three of them, including attitude toward green products in H2, perceived consumer effectiveness

(PCE) in H4a, and environmental concern in H5, significantly led to the intention to purchase the environmentally friendly product. Moreover, PCE also directly influenced green purchase behavior in a positive direction, confirming H4b. However, subjective norms were significantly related to green purchase intention but in the negative direction. Therefore, H3 was rejected, which contrasts with existing literature [40,49,50]. The results implied that social norms do not necessarily play indispensable roles in the context of green purchases. Consumers might not pay attention to social influence when purchasing green product and individual self-driven and self-control (such as PCE) factors play more crucial roles in this context instead.

Our findings showed that all four antecedents, including attitude toward green products in H6a, subjective norms in H6b, perceived consumer effectiveness in H6c, and environmental concerns in H6d, significantly and positively influenced a company's perceived green image. Furthermore, perceived green image significantly and positively affected green purchase intention, as hypothesized in H7. These significant relationships showed that the four main antecedents also relate to long-term marketing management by stimulating the company's green reputation, and a positive reputation would eventually lead to actual future purchases through the mediating role of green purchase intention.

In addition, this study investigated the moderating role of consumer innovativeness, which is a consumer trait, and environmental knowledge, which is one of the cognitive factors. We found the negative interaction effect of attitude toward green products and innovativeness on green purchase intention. A negative interaction coefficient means that the two-variables effect is smaller than the sum of the single-variable effects. In this case, green purchase intention was established in both low- and high-innovativeness conditions. Consequently, the effect of attitude toward green products is more important than that of consumer innovativeness; therefore, H8a was not supported. Meanwhile, innovativeness positively moderates the relationship between perceived consumer effectiveness and green purchase intention; thus, H8b was supported. Accordingly, encouraging consumer innovativeness would be beneficial to targeting consumers with high PCE.

Finally, we explored the moderating effects of environmental knowledge. We found that environmental knowledge did not significantly moderate the relationship between environmental concerns and green purchase intention; therefore, H9a was not supported. However, environmental knowledge significantly and positively moderated the relationship between environmental concerns and the company's perceived green image; hence, H9b was supported. The findings identified the potential of environmental knowledge to facilitate green product purchase via the company's green reputation enhancement among environmentally conscious consumers.

5.2. Theoretical Contributions

This study contributed to the existing literature by proposing the extended theory of planned behavior model to investigate consumers' green product purchase behavior. First, while most previous TPB research identified that environmental concern acts as an antecedent of attitudes [31,79], our findings proved that environmental concern directly and positively relates to green purchase intention. Therefore, apart from attitudes, subjective norms, and perceived behavioral control, environmental concern is an impactful predictor of consumers' intention to purchase green products. Second, we found that the company's perceived green image mediates main antecedents and green purchase intention. Moreover, a company's perceived green image directly relates to green purchase intention, implying that it indirectly stimulates green purchase intention via the mediating role of purchase intention. While most previous studies examined the impact of a company's green image on customers' attitudes and behavior in the context of service providers such as restaurants, hotels, and airlines [16,17], our study broadened research on companies' green image in the context of green products. By boosting the company's green image, a business can stimulate actual future purchases through the mediating effect of the green purchase intention. Notable, subjective norms do not directly impact green purchase intention, but they indirectly

relate to future purchase intention via the mediating role of a company's perceived green image, as green corporate image involves long-term reputation management.

Third, we added consumer innovativeness, which is a consumer trait, into the model to examine its moderating effect. While prior studies have investigated the antecedent role of consumer innovativeness on new product purchase intention [19], our study proposed that consumer innovativeness plays a moderating role. We found a positive moderating effect of innovativeness on the relationship between perceived consumer effectiveness and green purchase intention. Therefore, for a consumer with high PCE, a higher level of innovativeness would positively enhance the purchase intention as one is more eager to try a new product. However, we found a negative moderating effect of innovativeness on the relationship between attitude toward green products and green purchase intention. It is possible that when a consumer already has a high sense of innovativeness, he or she tends to feel open and eager to try new products on the market. Hence, the relationship between attitude toward green products and green purchase intention weakens because the intention to buy the green product has already been influenced by innovativeness. Fourth, we added environmental knowledge, which is a cognitive factor, to the model to examine its moderating role. Previous studies have demonstrated that environmental knowledge is an antecedent of green purchase intention [7,77], while our study focuses more on the moderating effect. We found that environmental knowledge significantly and positively moderated the relationship between environmental concerns and the company's perceived green image. However, environmental knowledge did not significantly moderate the relationship between environmental concerns and green purchase intention, but the relationship approached the significance level ($p = 0.069$). The finding implies that a better understanding of environmental issues would indirectly enhance green purchases via the mediating role of green image. Thus, promoting environmental knowledge to consumers likely results in a positive green image of companies that offers green products and eventually results in consumers' green product purchases.

Last, in line with the theory and hypothesized model, our empirical results showed that PCE influenced the purchase of green products directly and indirectly via the mediating role of green purchase intention. However, unlike previous studies [7,63], our findings revealed that the direct effect of PCE on green purchase behavior is more prominent than the effect of purchase intention. Therefore, apart from green purchase intention, encouraging a tremendous level of PCE would effectively lead to actual purchases.

5.3. Managerial Implications

Some managerial implications can be derived from the current study. First, marketers may encourage green product purchase intention by enhancing consumers' environmental concerns. Apart from positive attitudes toward green products and perceived consumer effectiveness, our findings confirmed that environmental concerns also directly and positively influence green purchase intention. Therefore, promoting environmental concerns through advertising, marketing campaigns, and environmental education programs is recommended.

Second, marketers should also focus on not only consumers' green purchase intention, but also their companies' green image. Most of the time, businesses focus on generating income from sales without adequate focus on reputation management. A company's green image is a powerful driver of its reputation. However, this relationship has only been widely studied in service sector contexts such as hotels and restaurants. This study has proven that a company's green image also plays an influential role in sustaining a reputation for green products. It is recommended that marketers of environmentally friendly products pay attention to not only the sales amount but also the positive green image of the company. In the short run, marketers need to stimulate a positive attitude in consumers toward green products by enhancing the message framing by clearly explaining that green products are beneficial to customers, their families, and their communities. Encouraging more positive attitudes via messaging and advertising would lead to greater purchase intention

and higher actual sales. However, social influence might not effectively stimulate green purchase intention, as we fail to confirm the antecedent role of subjective norms. Hence, it is preferable to focus on the positive impact of making a difference toward sustainability and to emphasize the ecological benefits. In the long run, marketers can stimulate future sales of sustainable products by strengthening the positive green image of a company. Drivers of a company's green image include positive attitudes toward green products, subjective norms, perceived consumer effectiveness, and environmental concerns. By focusing on promoting green product features and benefits and companies' positive green image, marketers can contribute to sustaining the green product business and encouraging sustainable consumption.

Third, encouraging consumer innovativeness can be a useful strategy to increase green purchase intention, especially for consumers who have a high level of perceived consumer effectiveness. To target customers who have strong beliefs that they can contribute to environmental protection by buying green products, we suggest stimulating sales by promoting new and innovative green products, as consumers with high innovativeness would want to try newly launched products that are less harmful to the environment.

Fourth, green marketers may emphasize consumers' environmental knowledge to improve companies' green image and increase sales. Environmental education is recommended to increase consumers' awareness. As environmental knowledge positively moderates the relationship between environmental concerns and the company's perceived green image, an environmental education campaign would eventually drive more purchases of green products via the company's green image of offering ecologically friendly products.

Fifth, marketers of green products may choose to focus on a specific target market to increase green purchase behaviors in consumers. Consumers' acceptance and selection of green products varies by country. In this study, we attempted to reveal differences between samples from developed and developing countries using multigroup analysis. The results showed that the effect of green purchase intention on green purchase behavior is higher in developing countries than in developed countries. If the firm focuses mainly on the immediate sales amount, then it may be more beneficial to target markets in developing countries.

Last, we employed multigroup analysis to test whether different levels of experience using green products modify the hypothesized relationships in the main model. The results revealed that consumers with a relatively low level of experience using green products showed a negative influence of environmental concern on the company's green image. Meanwhile, consumers with a high level of experience showed a positive influence of environmental concern on the company's perceived green image. Therefore, marketers should provide more opportunities for consumers to try and become familiar with green products to enhance the company's positive green image and eventually result in future purchases.

5.4. Limitations and Future Research

Despite the adequate number of statistical samples, the generalizability of our findings may be limited. Among all 974 samples, 50% are from the United States, while 31% are from Asia. We lacked samples that represent Europe, Australia, and Africa; thus, the interpretation of the findings may not be applicable to these populations. Future research may adopt sampling methods that result in more globally representative samples. Alternatively, future research may be conducted in certain countries of interest to green products.

In addition, the measurement items used in this study were modified from the existing literature; therefore, they may fail to cover newly established aspects of the green consumer market. Future research might include add-ons to the field of green marketing by developing new measurement tools that reflect modern consumer perception and behaviors. Moreover, measurements other than questionnaire surveys may be applied to complement the empirical investigations. For instance, the measurement of environmental knowledge may be in the form of quizzes on environmental awareness.

Ultimately, using a one-time questionnaire survey may not perfectly eliminate concerns of common method bias. Furthermore, the results collected cannot reflect a causal relationship between the variables. Concerns of common method bias may be addressed by: (1) requesting the respondents to complete each part of the questionnaires at different time points and (2) using different data sources for each variable. For example, green purchase intention can be measured by a self-report questionnaire, while green purchase behavior can be captured by actual purchases of the respondents during a specified period. Meanwhile, quasi-experimental or experimental research should be conducted to empirically demonstrate a causal effect and enable manipulations of the relationship between relevant constructs.

6. Conclusions

The current study investigated the factors driving consumers' purchase of green products based on the Theory of Planned Behavior (TPB). We extended the TPB model by including environmental concern as a new antecedent, a company's perceived green image as a mediator, and consumer innovativeness and environmental knowledge as the moderators. The findings showed that in addition to green attitudes and perceived consumer effectiveness (PCE), environmental concern also influences consumers' intention to purchase green products. Furthermore, our empirical results confirm that a company's perceived green image mediates the relationship between other antecedents and green purchase intention. Therefore, to close the green attitude-behavior gap, green marketers should try to encourage purchase intention by promoting positive attitude toward green product, perceived consumer effectiveness, and environmental concern to drive immediate sales. At the same time, future sales can be encouraged by establishing a positive green image of the company. Particularly, marketers may focus on target consumers with high PCE by launching new types of green product, because consumer innovativeness positively moderates the relationship between PCE and purchase intention. For both marketers and policymakers, environmental knowledge should be promoted via educational institutions, broadcasts, press, social media, and other types of media, as it positively moderates the relationship between environmental concern and a company's perceived green image.

Author Contributions: Conceptualization, P.K. and J.-S.C.; methodology, P.K. and J.-S.C.; software, P.K. and T.-T.-Y.L.; validation, P.K., J.-S.C., and T.-T.-Y.L.; formal analysis, P.K., J.-S.C., and T.-T.-Y.L.; investigation, P.K., J.-S.C., and T.-T.-Y.L.; resources, P.K., J.-S.C.; data curation, P.K., J.-S.C., and T.-T.-Y.L.; writing—original draft preparation, P.K., J.-S.C., and T.-T.-Y.L.; writing—review and editing, P.K. and J.-S.C.; visualization, P.K.; supervision, J.-S.C.; project administration, J.-S.C.; funding acquisition, J.-S.C. All authors have read and agreed to the published version of the manuscript.

Funding: This research was funded by the Ministry of Science and Technology (MoST) in Taiwan. The funding number is MOST 110-2410-H-155-030-MY3.

Institutional Review Board Statement: Not applicable.

Informed Consent Statement: Not applicable.

Data Availability Statement: The data presented in this study are available on request from the corresponding author.

Conflicts of Interest: The authors declare no conflict of interest.

Appendix A

Table A1. List of Items in the Questionnaire.

Environmental knowledge	
1.	I am very knowledgeable about environmental issues.
2.	I know more about recycling than the average person.
3.	I know how to select products and packages that reduce the amount of landfill waste.
4.	I know that I buy products and packages that are environmentally safe.
Environmental concerns	
1.	I am a strong believer in the preservation of nature and wildlife.
2.	I would describe myself as an environmentally responsible person.
3.	I am worried about the worsening quality of the environment in my country.
4.	I am emotionally involved in environmental protection issues in my country.
Attitude toward green products	
1.	I like the idea of purchasing a green product.
2.	I have a favorable attitude toward purchasing a green product.
3.	Environmental protection is important to me when I purchase products.
4.	Purchasing green products can help to save nature and resources.
Subjective norms	
1.	People will have a good impression of me if I purchase green products.
2.	People will have a good perception of me if I purchase green products.
3.	Most people who are important to me would expect that I should buy green products.
4.	People around me influence me to buy green products.
Perceived consumer effectiveness	
1.	I can protect the environment by buying products that are friendly to the environment.
2.	Each consumer's behavior can affect how companies treat their employees.
3.	Each consumer can have a positive effect on society by purchasing products sold by socially responsible companies.
4.	Each person can have an effect on pollution and natural resource problems, so what I do can make the difference.
Green purchase intention	
1.	I am willing to buy an environmentally friendly product.
2.	If prices are not different from others, I may purchase environmentally friendly products.
3.	If qualities are not different from others, I may purchase environmentally friendly products.
4.	I would consider switching to other products for ecological reasons.
Green purchase behavior	
1.	I try to buy green products.
2.	I have switched to buy green products because of the environmental benefits.
3.	When I choose between the same types of products, I purchase the ones that are less harmful to the environment.
4.	I buy green products even if they are more expensive than nongreen ones.

Table A1. Cont.

Company's perceived green image	
1.	For the company that offers green products, I have the impression that the company is not only concerned about the profit, but also concerned about the environment and other consumers.
2.	For the company that offers green products, I have the impression that the company is concerned about the preservation of the environment.
3.	For the company that offers green products, I have the impression that the company is very responsive to environment issue.
4.	For the company that offers green products, I have the impression that the company behaves in a socially conscious way.
Innovativeness	
1.	I like to buy new things.
2.	If there is a new product available, I am among the first to try.
3.	In general, I am the first in my circle of friends to know the names of the latest products on the market.
4.	If I heard that a new product was available, I would be interested enough to buy it.
Green product experience	
1.	I have experience in buying green products.
2.	I have used green products before.
3.	I have used many types of green products.

References

1. Tseng, M.L.; Lin, C.W.R.; Sujanto, R.Y.; Lim, M.K.; Bui, T.D. Assessing sustainable consumption in packaged food in Indonesia: Corporate communication drives consumer perception and behavior. *Sustainability* **2021**, *13*, 8021. [CrossRef]
2. White, K.; Habib, R.; Hardisty, D.J. How to SHIFT consumer behaviors to be more sustainable: A literature review and guiding framework. *J. Mark.* **2019**, *83*, 22–49. [CrossRef]
3. Li, X.; Huang, R.; Dai, J.; Li, J.; Shen, Q. Research on the evolutionary game of construction and demolition waste (CDW) recycling units' green behavior, considering remanufacturing capability. *Int. J. Environ. Res. Public Health* **2021**, *18*, 9268. [CrossRef]
4. Xu, Y.; Du, J.; Shahzad, F.; Li, X. Untying the influence of green brand authenticity on electronic word-of-mouth intention: A moderation–mediation model. *Front. Psychol.* **2021**, *12*, 3812. [CrossRef]
5. De Silva, M.; Wang, P.; Kuah, A.T.H. Why wouldn't green appeal drive purchase intention? Moderation effects of consumption values in the UK and China. *J. Bus. Res.* **2021**, *122*, 713–724. [CrossRef]
6. White, C.; Hardisty, D.J.; Habib, R. The Elusive Green Consumer. *Harvard Bus. Rev.* **2019**, July–August 2019, 124–133. Available online: <https://hbr.org/2019/07/the-elusive-green-consumer> (accessed on 20 August 2021).
7. Jaiswal, D.; Kant, R. Green purchasing behaviour: A conceptual framework and empirical investigation of Indian consumers. *J. Retail. Consum. Serv.* **2018**, *41*, 60–69. [CrossRef]
8. Paul, J.; Modi, A.; Patel, J. Predicting green product consumption using Theory of Planned Behavior and Reasoned Action. *J. Retail. Consum. Serv.* **2016**, *29*, 123–134. [CrossRef]
9. Trivedi, R.; Patel, J.; Acharya, N. Causality analysis of media influence on environmental attitude, intention and behaviors leading to green purchasing. *J. Clean. Prod.* **2018**, *196*, 11–22. [CrossRef]
10. Piligrimiene, Ž.; Žukauskaite, A.; Korzilius, H.; Banyte, J.; Dovaliene, A. Internal and external determinants of consumer engagement in sustainable consumption. *Sustainability* **2020**, *12*, 1349. [CrossRef]
11. Testa, F.; Sarti, S.; Frey, M. Are green consumers really green? Exploring the factors behind the actual consumption of organic food products. *Bus. Strateg. Environ.* **2019**, *28*, 327–338. [CrossRef]
12. Rausch, T.M.; Kopplin, C.S. Bridge the gap: Consumers' purchase intention and behavior regarding sustainable clothing. *J. Clean. Prod.* **2021**, *278*, 123882. [CrossRef]
13. Kumar, B.; Manrai, A.K.; Manrai, L.A. Purchasing behaviour for environmentally sustainable products: A conceptual framework and empirical study. *J. Retail. Consum. Serv.* **2017**, *34*, 1–9. [CrossRef]
14. Fontes, E.; Moreira, A.C.; Carlos, V. The influence of ecological concern on green purchase behavior. *Manag. Mark.* **2021**, *16*, 246–267. [CrossRef]

15. Papista, E.; Chrysochou, P.; Krystallis, A.; Dimitriadis, S. Types of value and cost in consumer–green brands relationship and loyalty behaviour. *J. Consum. Behav.* **2018**, *17*, e101–e113. [[CrossRef](#)]
16. Hwang, J.; Lyu, S.O. Relationships among green image, consumer attitudes, desire, and customer citizenship behavior in the airline industry. *Int. J. Sustain. Transp.* **2020**, *14*, 437–447. [[CrossRef](#)]
17. Jeong, E.H.; Jang, S.C.; Day, J.; Ha, S. The impact of eco-friendly practices on green image and customer attitudes: An investigation in a café setting. *Int. J. Hosp. Manag.* **2014**, *41*, 10–20. [[CrossRef](#)]
18. Polonsky, M.J. Transformative green marketing: Impediments and opportunities. *J. Bus. Res.* **2011**, *64*, 1311–1319. [[CrossRef](#)]
19. Al-Jundi, S.A.; Shuhaiber, A.; Augustine, R. Effect of consumer innovativeness on new product purchase intentions through learning process and perceived value. *Cogent Bus. Manag.* **2019**, *6*, 1698849. [[CrossRef](#)]
20. Rogers, E.M.; Shoemaker, F.F. *Communication of Innovations: A Cross-Cultural Approach*, 2nd ed.; Free Press: New York, NY, USA, 1971.
21. Aspara, J.; Luo, X.; Dhar, R. Effect of intelligence on consumers’ responsiveness to a pro-environmental tax: Evidence from large-scale data on car acquisitions of male consumers. *J. Consum. Psychol.* **2017**, *27*, 448–455. [[CrossRef](#)]
22. Bednarek, P.T.; Orłowska, R.; Mańkowski, D.R.; Oleszczuk, S.; Zebrowski, J. Structural equation modeling (SEM) analysis of sequence variation and green plant regeneration via anther culture in barley. *Cells* **2021**, *10*, 2774. [[CrossRef](#)] [[PubMed](#)]
23. Li, X.; Du, J.; Long, H. Mechanism for green development behavior and performance of industrial enterprises (GDBP-IE) using partial least squares structural equation modeling (PLS-SEM). *Int. J. Environ. Res. Public Health* **2020**, *17*, 8450. [[CrossRef](#)]
24. Rehman Khan, S.A.; Yu, Z. Assessing the eco-environmental performance: An PLS-SEM approach with practice-based view. *Int. J. Logist. Res. Appl.* **2021**, *24*, 303–321. [[CrossRef](#)]
25. Tzang, R.F.; Chang, Y.C.; Chang, C.H. Structural equation modeling (SEM): Childhood aggression and irritable ADHD associated with parental psychiatric symptoms. *Int. J. Environ. Res. Public Health* **2021**, *18*, 10068. [[CrossRef](#)] [[PubMed](#)]
26. Mirpanahi, M.V.; Noorzai, E. Modeling the relationship between critical BIM attributes and environmental sustainability criteria using PLS-SEM technique. *J. Archit. Eng.* **2021**, *27*, 04021037. [[CrossRef](#)]
27. Munerah, S.; Koay, K.Y.; Thambiah, S. Factors influencing non-green consumers’ purchase intention: A partial least squares structural equation modelling (PLS-SEM) approach. *J. Clean. Prod.* **2021**, *280*, 124192. [[CrossRef](#)]
28. Ajzen, I. From Intentions to Actions: A Theory of Planned Behavior. In *Action Control*; Kuhl, J., Beckmann, J., Eds.; Springer: Berlin, Germany, 1985; pp. 11–39.
29. Ajzen, I. The Theory of Planned Behavior. *Organ. Behav. Hum. Decis. Process.* **1991**, *50*, 179–211. [[CrossRef](#)]
30. Juschten, M.; Jiricka-Pürre, A.; Unbehauen, W.; Hössinger, R. The mountains are calling! An extended TPB model for understanding metropolitan residents’ intentions to visit nearby alpine destinations in summer. *Tour. Manag.* **2019**, *17*, 293–306. [[CrossRef](#)]
31. Chwialkowska, A.; Bhatti, W.A.; Glowik, M. The influence of cultural values on pro-environmental behavior. *J. Clean. Prod.* **2020**, *268*, 122305. [[CrossRef](#)]
32. Datta, H.; Ailawadi, K.L.; Van Heerde, H.J. How well does consumer-based brand equity align with sales-based brand equity and marketing-mix response? *J. Mark.* **2017**, *81*, 1–20. [[CrossRef](#)]
33. Akturan, U. How does greenwashing affect green branding equity and purchase intention? An empirical research. *Mark. Intell. Plan.* **2018**, *36*, 809–824. [[CrossRef](#)]
34. Chapman, C.J.; Steenburgh, T.J. An investigation of earnings management through marketing actions. *Manage. Sci.* **2011**, *57*, 72–92. [[CrossRef](#)]
35. Lee, K. Opportunities for green marketing: Young consumers. *Mark. Intell. Plan.* **2008**, *26*, 573–586. [[CrossRef](#)]
36. Chekima, B.; Chekima, S.; Syed Khalid Wafa, S.A.W.; Igaua, O.A.; Sondoh, S.L. Sustainable consumption: The effects of knowledge, cultural values, environmental advertising, and demographics. *Int. J. Sustain. Dev. World Ecol.* **2016**, *23*, 210–220. [[CrossRef](#)]
37. Yadav, R.; Pathak, G.S. Determinants of consumers’ green purchase behavior in a developing nation: Applying and extending the Theory of Planned Behavior. *Ecol. Econ.* **2017**, *134*, 114–122. [[CrossRef](#)]
38. Rana, J.; Paul, J. Consumer behavior and purchase intention for organic food: A review and research agenda. *J. Retail. Consum. Serv.* **2017**, *38*, 157–165. [[CrossRef](#)]
39. Papadas, K.K.; Avlonitis, G.J.; Carrigan, M. Green marketing orientation: Conceptualization, scale development and validation. *J. Bus. Res.* **2017**, *80*, 236–246. [[CrossRef](#)]
40. Esmaeilpour, M.; Bahmiary, E. Investigating the impact of environmental attitude on the decision to purchase a green product with the mediating role of environmental concern and care for green products. *Manag. Mark.* **2017**, *12*, 297–315. [[CrossRef](#)]
41. Ruangkanjanases, A.; You, J.J.; Chien, S.W.; Ma, Y.; Chen, S.C.; Chao, L.C. Elucidating the effect of antecedents on consumers’ green purchase intention: An extension of the Theory of Planned Behavior. *Front. Psychol.* **2020**, *11*, 1433. [[CrossRef](#)]
42. Nekmahmud, M.; Fekete-Farkas, M. Why not green marketing? Determinates of consumers’ intention to green purchase decision in a new developing nation. *Sustainability* **2020**, *12*, 7880. [[CrossRef](#)]
43. Fishbein, M.; Ajzen, I. *Belief, Attitude, Intention and Behaviour: An Introduction to Theory and Research*; Addison-Wesley: Reading, MA, USA, 1975.
44. Park, H.J.; Lin, L.M. Exploring attitude–behavior gap in sustainable consumption: Comparison of recycled and upcycled fashion products. *J. Bus. Res.* **2020**, *117*, 623–628. [[CrossRef](#)]

45. Sun, H.; Teh, P.L.; Linton, J.D. Impact of environmental knowledge and product quality on student attitude toward products with recycled/remanufactured content: Implications for environmental education and green manufacturing. *Bus. Strateg. Environ.* **2018**, *27*, 935–945. [[CrossRef](#)]
46. Testa, F.; Pretner, G.; Iovino, R.; Bianchi, G.; Tessitore, S.; Iraldo, F. Drivers to green consumption: A systematic review. *Environ. Dev. Sustain.* **2021**, *23*, 4826–4880. [[CrossRef](#)]
47. Xu, L.; Ling, M.; Lu, Y.; Shen, M. Understanding household waste separation behaviour: Testing the roles of moral, past experience, and perceived policy effectiveness within the Theory of Planned Behaviour. *Sustainability* **2017**, *9*, 625. [[CrossRef](#)]
48. Al Mamun, A.; Mohamad, M.R.; Yaacob, M.R.B.; Mohiuddin, M. Intention and behavior towards green consumption among low-income households. *J. Environ. Manage.* **2018**, *227*, 73–86. [[CrossRef](#)] [[PubMed](#)]
49. Lai, C.K.M.; Cheng, E.W.L. Green purchase behavior of undergraduate students in Hong Kong. *Soc. Sci. J.* **2016**, *53*, 67–76. [[CrossRef](#)]
50. Yadav, R.; Pathak, G.S. Young consumers' intention towards buying green products in a developing nation: Extending the Theory of Planned Behavior. *J. Clean. Prod.* **2016**, *135*, 732–739. [[CrossRef](#)]
51. Hsu, C.L.; Chang, C.Y.; Yansritakul, C. Exploring purchase intention of green skincare products using the Theory of Planned Behavior: Testing the moderating effects of country of origin and price sensitivity. *J. Retail. Consum. Serv.* **2017**, *34*, 145–152. [[CrossRef](#)]
52. Chen, K.; Deng, T. Research on the green purchase intentions from the perspective of Product knowledge. *Sustainability* **2016**, *8*, 943. [[CrossRef](#)]
53. Bryła, P. Regional ethnocentrism on the food market as a pattern of sustainable consumption. *Sustainability* **2019**, *11*, 6408. [[CrossRef](#)]
54. Zimon, D.; Madzik, P.; Domingues, P. Development of key processes along the supply chain by implementing the ISO 22000 standard. *Sustainability* **2020**, *12*, 6176. [[CrossRef](#)]
55. Witek, L.; Kuźniar, W. Green purchase behavior: The effectiveness of sociodemographic variables for explaining green purchases in emerging market. *Sustainability* **2021**, *13*, 209. [[CrossRef](#)]
56. Jan, I.U.; Ji, S.; Yeo, C. Values and green product purchase behavior: The moderating effects of the role of government and media exposure. *Sustainability* **2019**, *11*, 6642. [[CrossRef](#)]
57. Young, W.; Hwang, K.; McDonald, S.; Oates, C.J. Sustainable consumption: Green consumer behaviour when purchasing products. *Sustain. Dev.* **2010**, *18*, 20–31. [[CrossRef](#)]
58. Sreen, N.; Purbey, S.; Sadarangani, P. Impact of culture, behavior and gender on green purchase intention. *J. Retail. Consum. Serv.* **2018**, *41*, 177–189. [[CrossRef](#)]
59. Leonidou, L.C.; Leonidou, C.N.; Kvasova, O. Antecedents and outcomes of consumer environmentally friendly attitudes and behaviour. *J. Mark. Manag.* **2010**, *26*, 1319–1344. [[CrossRef](#)]
60. Jung, H.J.; Oh, K.W.; Kim, H.M. Country differences in determinants of behavioral intention towards sustainable apparel products. *Sustainability* **2021**, *13*, 558. [[CrossRef](#)]
61. Saricam, C.; Okur, N. Analysing the consumer behavior regarding sustainable fashion using Theory of Planned Behavior. In *Consumer Behaviour and Sustainable Fashion Consumption*; Springer: Singapore, 2018; pp. 1–37.
62. Ellen, P.S.; Wiener, J.L.; Cobb-Walgreen, C. The role of perceived consumer effectiveness in motivating environmentally conscious behaviors. *J. Public Policy Mark.* **1991**, *10*, 102–117. [[CrossRef](#)]
63. Sharma, R.; Jha, M. Values influencing sustainable consumption behaviour: Exploring the contextual relationship. *J. Bus. Res.* **2017**, *76*, 77–88. [[CrossRef](#)]
64. Cleveland, M.; Kalamas, M.; Laroche, M. Shades of green: Linking environmental locus of control and pro-environmental behaviors. *J. Consum. Mark.* **2005**, *22*, 198–212. [[CrossRef](#)]
65. Higuera-Castillo, E.; Liébana-Cabanillas, F.J.; Muñoz-Leiva, F.; García-Maroto, I. Evaluating consumer attitudes toward electromobility and the moderating effect of perceived consumer effectiveness. *J. Retail. Consum. Serv.* **2019**, *51*, 387–398. [[CrossRef](#)]
66. Straughan, R.D.; Roberts, J.A. Environmental segmentation alternatives: A look at green consumer behavior in the new millennium. *J. Consum. Mark.* **1999**, *16*, 558–575. [[CrossRef](#)]
67. Sharma, N.; Dayal, R. Drivers of green purchase intentions: Green self-efficacy and perceived consumer effectiveness. *Glob. J. Enterp. Inf. Syst.* **2017**, *8*, 27–32. [[CrossRef](#)]
68. Kim, Y.; Choi, S.M. Antecedents of green purchase behavior: An examination of collectivism, environmental concern, and PCE. *Adv. Consum. Res.* **2005**, *32*, 592–599.
69. Chen, M.F. Extending the Theory of Planned Behavior model to explain people's energy savings and carbon reduction behavioral intentions to mitigate climate change in Taiwan—moral obligation matters. *J. Clean. Prod.* **2016**, *112*, 1746–1753. [[CrossRef](#)]
70. Chen, M.F.; Tung, P.J. The moderating effect of perceived lack of facilities on consumers' recycling intentions. *Environ. Behav.* **2010**, *42*, 824–844. [[CrossRef](#)]
71. Arias, C.; Trujillo, C.A. Perceived consumer effectiveness as a trigger of behavioral spillover effects: A path towards recycling. *Sustainability* **2020**, *12*, 4348. [[CrossRef](#)]
72. Bickart, B.A.; Ruth, J.A. Green eco-seals and advertising persuasion. *J. Advert.* **2012**, *41*, 51–67. [[CrossRef](#)]
73. Dagher, G.K.; Itani, O. Factors influencing green purchasing behaviour: Empirical evidence from the Lebanese consumers. *J. Consum. Behav.* **2014**, *13*, 188–195. [[CrossRef](#)]

74. Newton, J.D.; Tsarenko, Y.; Ferraro, C.; Sands, S. Environmental concern and environmental purchase intentions: The mediating role of learning strategy. *J. Bus. Res.* **2015**, *68*, 1974–1981. [[CrossRef](#)]
75. Grooten, M.; Almond, R.E.A. *Living Planet Report—2018: Aiming Higher*; WWF International: Gland, Switzerland, 2018.
76. Kennedy, E.H.; Beckley, T.M.; Mcfarlane, B.L.; Nadeau, S. Why we don't "walk the talk": Understanding the environmental values/behaviour gap in Canada. *Hum. Ecol. Rev.* **2009**, *16*, 151–160.
77. Goh, S.K.; Balaji, M.S. Linking green skepticism to green purchase behavior. *J. Clean. Prod.* **2016**, *131*, 629–638. [[CrossRef](#)]
78. Prakash, G.; Pathak, P. Intention to buy eco-friendly packaged products among young consumers of India: A study on developing nation. *J. Clean. Prod.* **2017**, *141*, 385–393. [[CrossRef](#)]
79. Chen, C.F.; Eccarius, T.; Su, P.C. The role of environmental concern in forming intentions for switching to electric scooters. *Transp. Res. Part A Policy Pract.* **2021**, *154*, 129–144. [[CrossRef](#)]
80. Amores-Salvadó, J.; De Castro, G.M.; Navas-López, J.E. Green corporate image: Moderating the connection between environmental product innovation and firm performance. *J. Clean. Prod.* **2014**, *83*, 356–365. [[CrossRef](#)]
81. Ko, E.; Hwang, Y.K.; Kim, E.Y. Green marketing' functions in building corporate image in the retail setting. *J. Bus. Res.* **2013**, *66*, 1709–1715. [[CrossRef](#)]
82. Van Osselaer, S.M.J.; Janiszewski, C. A connectionist model of brand-quality associations. *J. Mark. Res.* **2000**, *37*, 331–350.
83. Schwaiger, M. Components and parameters of corporate reputation—An empirical study. *Schmalenbach Bus. Rev.* **2004**, *56*, 46–71. [[CrossRef](#)]
84. Bathmanathan, V.; Hironaka, C. Sustainability and business: What is green corporate image? In Proceedings of the IOP Conference Series: Earth and Environmental Science, Putrajaya, Malaysia, 23–25 February 2016; IOP Publishing: Putrajaya, Malaysia, 2016; Volume 32, p. 12049. [[CrossRef](#)]
85. Martínez, P. Customer loyalty: Exploring its antecedents from a green marketing perspective. *Int. J. Contemp. Hosp. Manag.* **2015**, *27*, 896–917. [[CrossRef](#)]
86. Knight, H.; Megicks, P.; Agarwal, S.; Leenders, M.A.A.M. Firm resources and the development of environmental sustainability among small and medium-sized enterprises: Evidence from the Australian wine industry. *Bus. Strateg. Environ.* **2019**, *28*, 25–39. [[CrossRef](#)]
87. Han, H.; Hsu, L.T.J.; Lee, J.S. Empirical investigation of the roles of attitudes toward green behaviors, overall image, gender, and age in hotel customers' eco-friendly decision-making process. *Int. J. Hosp. Manag.* **2009**, *28*, 519–528. [[CrossRef](#)]
88. Melé, P.M.; Gómez, J.M.; Sousa, M.J. Influence of sustainability practices and green image on the re-visit intention of small and medium-size towns. *Sustainability* **2020**, *12*, 930. [[CrossRef](#)]
89. Flavián, C.; Guinalú, M.; Torres, E. The influence of corporate image on consumer trust: A comparative analysis in traditional versus internet banking. *Internet Res.* **2005**, *15*, 447–470. [[CrossRef](#)]
90. Zhuang, W.; Luo, X.; Riaz, M.U. On the factors influencing green purchase intention: A meta-analysis approach. *Front. Psychol.* **2021**, *12*, 1074. [[CrossRef](#)] [[PubMed](#)]
91. Kuswati, R. Irmawati Consumer innovativeness: Literature review and measurement scales. In Proceedings of the ICE-BEES 2018 International Conference on Economics, Business and Economic Education, Semarang City, Indonesia, 17–18 July 2018; Volume 3.
92. Lin, C.Y. Conceptualizing and measuring consumer perceptions of retailer innovativeness in Taiwan. *J. Retail. Consum. Serv.* **2015**, *24*, 33–41. [[CrossRef](#)]
93. Goldsmith, R.E.; Hofacker, C.F. Measuring consumer innovativeness. *J. Acad. Mark. Sci.* **1991**, *19*, 209–221. [[CrossRef](#)]
94. Jeong, S.C.; Kim, S.H.; Park, J.Y.; Choi, B. Domain-specific innovativeness and new product adoption: A case of wearable devices. *Telemat. Informatics* **2017**, *34*, 399–412. [[CrossRef](#)]
95. Li, L.; Wang, Z.; Li, Y.; Liao, A. Impacts of consumer innovativeness on the intention to purchase sustainable products. *Sustain. Prod. Consum.* **2021**, *27*, 774–786. [[CrossRef](#)]
96. Roehrich, G. Consumer innovativeness: Concepts and measurements. *J. Bus. Res.* **2004**, *57*, 671–677. [[CrossRef](#)]
97. Stucki, T. What hampers green product innovation: The effect of experience. *Ind. Innov.* **2019**, *26*, 1242–1270. [[CrossRef](#)]
98. Hubert, M.; Blut, M.; Brock, C.; Backhaus, C.; Eberhardt, T. Acceptance of smartphone-based mobile shopping: Mobile benefits, customer characteristics, perceived risks, and the impact of application context. *Psychol. Mark.* **2017**, *34*, 175–194. [[CrossRef](#)]
99. Seyed Esfahani, M.; Reynolds, N. Impact of consumer innovativeness on really new product adoption. *Mark. Intell. Plan.* **2020**, *39*, 589–612. [[CrossRef](#)]
100. Steenkamp, J.B.E.M.; Ter Hofstede, F.; Wedel, M. A Cross-national investigation into the individual and national cultural antecedents of consumer innovativeness. *J. Mark.* **1999**, *63*, 55–69. [[CrossRef](#)]
101. Fryxell, G.E.; Lo, C.W.H. The influence of environmental knowledge and values on managerial behaviours on behalf of the environment: An empirical examination of managers in China. *J. Bus. Ethics* **2003**, *46*, 45–69. [[CrossRef](#)]
102. Ramayah, T.; Rahbar, E. Greening the environment through recycling: An empirical study. *Manag. Environ. Qual. An Int. J.* **2013**, *24*, 782–801. [[CrossRef](#)]
103. Connell, K.Y.H. Internal and external barriers to eco-conscious apparel acquisition. *Int. J. Consum. Stud.* **2010**, *34*, 279–286. [[CrossRef](#)]
104. Banerjee, S.B. Organisational strategies for sustainable development: Developing a research agenda for the new millennium. *Aust. J. Manag.* **2002**, *27*, 105–117. [[CrossRef](#)]

105. Chen, Y.S. The drivers of green brand equity: Green brand image, green satisfaction, and green trust. *J. Bus. Ethics* **2010**, *93*, 307–319. [[CrossRef](#)]
106. Mehdikhani, R.; Valmohammadi, C. The effects of green brand equity on green word of mouth: The mediating roles of three green factors. *J. Bus. Ind. Mark.* **2021**, *37*, 294–308. [[CrossRef](#)]
107. Harrigan, P.; Evers, U.; Miles, M.; Daly, T. Customer engagement with tourism social media brands. *Tour. Manag.* **2017**, *59*, 597–609. [[CrossRef](#)]
108. Follmer, D.J.; Sperling, R.A.; Suen, H.K. The role of MTurk in education research: Advantages, issues, and future directions. *Educ. Res.* **2017**, *46*, 329–334. [[CrossRef](#)]
109. Buhrmester, M.; Kwang, T.; Gosling, S.D. Amazon’s mechanical Turk: A new source of inexpensive, yet high-quality, data? *Perspect. Psychol. Sci.* **2011**, *6*, 3–5. [[CrossRef](#)] [[PubMed](#)]
110. Mason, W.; Suri, S. Conducting behavioral research on Amazon’s Mechanical Turk. *Behav. Res. Methods* **2012**, *44*, 1–23. [[CrossRef](#)] [[PubMed](#)]
111. Kees, J.; Berry, C.; Burton, S.; Sheehan, K. Reply to “Amazon’s Mechanical Turk: A comment.” *J. Advert.* **2017**, *46*, 159–162. [[CrossRef](#)]
112. Podsakoff, P.M.; MacKenzie, S.B.; Lee, J.Y.; Podsakoff, N.P. Common method biases in behavioral research: A critical review of the literature and recommended remedies. *J. Appl. Psychol.* **2003**, *88*, 879–903. [[CrossRef](#)] [[PubMed](#)]
113. Ajzen, I. *Attitudes, Personality, and Behavior*; McGraw-Hill Education: New York, NY, USA, 2005.
114. Chen, M.F.; Tung, P.J. Developing an extended Theory of Planned Behavior model to predict consumers’ intention to visit green hotels. *Int. J. Hosp. Manag.* **2014**, *36*, 221–230. [[CrossRef](#)]
115. Chan, R.Y.K. Determinants of Chinese consumers’ green purchase behavior. *Psychol. Mark.* **2001**, *18*, 389–413. [[CrossRef](#)]
116. Chan, R.Y.K.; Lau, L.B.Y. Antecedents of green purchases: A survey in China. *J. Consum. Mark.* **2000**, *17*, 338–357. [[CrossRef](#)]
117. Chatzisarantis, N.L.D.; Hagger, M.S. Effects of a brief intervention based on the Theory of Planned Behavior on leisure-time physical activity participation. *J. Sport Exerc. Psychol.* **2005**, *27*, 470–487. [[CrossRef](#)]
118. Mostafa, M.M. Antecedents of Egyptian consumers’ green purchase intentions: A hierarchical multivariate regression model. *J. Int. Consum. Mark.* **2006**, *19*, 97–126. [[CrossRef](#)]
119. McCarty, J.A.; Shrum, L.J. The recycling of solid wastes: Personal values, value orientations, and attitudes about recycling as antecedents of recycling behavior. *J. Bus. Res.* **1994**, *30*, 53–62. [[CrossRef](#)]
120. Taylor, S.; Todd, P. Understanding household garbage reduction behavior: A test of an integrated model. *J. Public Policy Mark.* **1995**, *14*, 192–204. [[CrossRef](#)]
121. Armitage, C.J.; Conner, M. The Theory of Planned Behaviour: Assessment of predictive validity and “perceived control.” *Br. J. Soc. Psychol.* **1999**, *38*, 35–54. [[CrossRef](#)]
122. Baker, M.J.; Churchill, G.A. The impact of physically attractive models on advertising evaluations. *J. Mark. Res.* **1977**, *14*, 538–555. [[CrossRef](#)]
123. Oliver, R.L.; Bearden, W.O. Crossover effects in the Theory of Reasoned Action: A moderating influence attempt. *J. Consum. Res.* **1985**, *12*, 324–340. [[CrossRef](#)]
124. Yang, K. Consumer technology traits in determining mobile shopping adoption: An application of the extended Theory of Planned Behavior. *J. Retail. Consum. Serv.* **2012**, *19*, 484–491. [[CrossRef](#)]
125. Peterson, R.A. A Meta-analysis of Cronbach’s coefficient alpha. *J. Consum. Res.* **1994**, *21*, 381–391. [[CrossRef](#)]
126. Hair, J.F., Jr.; Anderson, R.; Atham, R.; Black, W. *Multivariate Data Analysis*; Macmillan: New York, NY, USA, 1995.
127. Fornell, C.; Larcker, D. Evaluating structural equation models with unobservable variables and measurement error. *J. Mark. Res.* **1981**, *18*, 39–50. [[CrossRef](#)]
128. Hair, J.; Hult, G.; Ringle, C.; Sarstedt, M. *A Primer on Partial Least Squares Structural Equation Modeling (PLS-SEM)*; SAGE Publications: Los Angeles, CA, USA, 2014.
129. Bollen, K. *Structural Equations with Latent Variables*; Wiley: New York, NY, USA, 1989.
130. Danks, N.P.; Sharma, P.N.; Sarstedt, M. Model selection uncertainty and multimodel inference in partial least squares structural equation modeling (PLS-SEM). *J. Bus. Res.* **2020**, *113*, 13–24. [[CrossRef](#)]
131. Dash, G.; Paul, J. CB-SEM vs PLS-SEM methods for research in social sciences and technology forecasting. *Technol. Forecast. Soc. Change* **2021**, *173*, 121092. [[CrossRef](#)]
132. Hair, J.F.; Hult, G.T.M.; Ringle, C.; Sarstedt, M.; Danks, N.; Ray, S. *Partial Least Squares Structural Equation Modeling (PLS-SEM) Using R: A Workbook*; Springer: Cham, Switzerland, 2021; ISBN 9783030805180.
133. Sarstedt, M.; Ringle, C.M.; Cheah, J.H.; Ting, H.; Moisescu, O.I.; Radomir, L. Structural model robustness checks in PLS-SEM. *Tour. Econ.* **2020**, *26*, 531–554. [[CrossRef](#)]
134. Purwanto, A.; Sudargini, Y. Partial least squares structural equation modeling (PLS-SEM) analysis for social and management research: A literature review. *J. Ind. Eng. Manag. Res.* **2021**, *2*, 114–123.
135. Dawson, J.F. Moderation in management research: What, why, when, and how. *J. Bus. Psychol.* **2014**, *29*, 1–19. [[CrossRef](#)]
136. Manget, J.; Roche, C.; Münnich, F. *Capturing the Green Advantage for Consumer Companies*; Boston Consulting Group: Boston, MA, USA, 2009.
137. De Vicente Bittar, A. Selling remanufactured products: Does consumer environmental consciousness matter? *J. Clean. Prod.* **2018**, *181*, 527–536. [[CrossRef](#)]

138. Failla, J.T.; Gopalakrishna, P. Moderator roles in green product purchase. *Atl. Mark. J.* **2014**, *3*, 14–22.
139. Tan, L.P.; Johnstone, M.L.; Yang, L. Barriers to green consumption behaviours: The roles of consumers' green perceptions. *Australas. Mark. J.* **2016**, *24*, 288–299. [[CrossRef](#)]
140. Jayawardhena, C. Measurement of service quality in internet banking: The development of an instrument. *J. Mark. Manag.* **2004**, *20*, 185–207. [[CrossRef](#)]
141. Karahanna, E.; Straub, D.W.; Chervany, N.L. Information technology adoption across time: A cross-sectional comparison of pre-adoption and post-adoption beliefs. *MIS Q.* **1999**, *23*, 183–213. [[CrossRef](#)]