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Green Attributes in Young Consumers' Purchase Intentions: A Cross-Country, Cross-Product Comparative Study Using a Discrete Choice Experiment

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Abstract: As consumption behavior is one of the key human activities destabilizing the Earth system, green consumption is expected to increase. However, although consumers often show interest in green consumption, they tend to choose non-green alternatives. Presuming that one of the reasons for their inconsistency lies in the trade-offs between green attributes and other attributes (e.g., brand, performance, and price), this study adopted a discrete choice experiment to understand how green attributes play a role in consumers' purchase decisions. To obtain a deeper understanding, the study conducted a cross-country (young Japanese [n = 370] and Vietnamese [n = 403] consumers) and product (water bottles and T-shirts) comparative analysis. The findings showed that for both products, Japanese respondents were less appreciative of green attributes in both relative and absolute terms than Vietnamese respondents. Furthermore, the marginal willingness to pay (MWTP) for a low environmental impact was the highest among the other attributes in both products for Vietnamese respondents, while this was not the case for Japanese respondents. Utilizing the findings obtained from the conditional logit models and MWTP, this study proposes several policy implications for the promotion of green purchases suitable for each country's unique situation.

Keywords: conditional logit model; discrete choice experiment; environmental Kuznets curve; green attributes; green consumption; green products; Japan; Vietnam; T-shirts; water bottles

Citation: Dinh, C.T.; Uehara, T.; Tsuge, T. Green Attributes in Young Consumers' Purchase Intentions: A Cross-Country, Cross-Product Comparative Study Using a Discrete Choice Experiment. *Sustainability* **2021**, *13*, 9825. https://doi.org/10.3390/su13179825

Academic Editor: Anat Tchetchik

Received: 5 August 2021
Accepted: 28 August 2021
Published: 1 September 2021

1. Introduction

Since the mid-twentieth century, due to rapid economic growth, human activities have become the dominant driver of environmental changes [1]. Our heavy dependence on fossil fuels and industrialized agriculture has become so severe that it is destabilizing the Earth system on a planetary scale [2].

Consumption behavior is a key human activity that accelerates the degradation process. For the past century, the dramatic increase in the global consumption of goods and services has resulted in the severe exhaustion of natural resources, changes in global temperature, increases in pollution, and decreases in biodiversity [3]. If global consumption continues to push the Earth system beyond its safety boundaries, the consequences will be catastrophic for much of the planet [4].

People globally are starting to recognize this threat and have become more aware of their ability to prevent or reduce environmental damage by adopting environmentally friendly behaviors. As environmental issues are recognized as a priority among public opinion, green consumption has emerged as a consumption trend in the twenty-first century [5]. "Green consumption" or environmentally responsible consumption entails consumers considering the environmental impact of a product or service throughout their consumption, from purchasing to using and then disposing of it [6].

As green consumption increases in popularity, environmentally friendly products are becoming more common. Companies have begun to include "greenness" in their products to attract consumers who are concerned about the environment and governments have started to implement environmental policies to promote these products [7]. According to Peattie [8], a product is considered to be green when, throughout its life cycle, from production and consumption to disposal, its environmental and societal performance is significantly better than that of conventional or competitive product offerings. More specifically, Chen and Chang [9] defined "green products" as products that have less environmental impact and lower health risks, are made or partly made from recycled materials, are produced using a more energy-efficient process, or are sold in markets with less packaging. Examples include organic food, energy-efficient TVs, herbal goods, and high-efficiency washing machines. "Green purchases" generally refers to the purchase of green products [10].

However, while the majority of consumers support the idea of purchasing green products, this does not always result in purchasing intentions or behaviors [11]. Consumers often choose non-green or "browner" alternatives, and green products have gained limited success in the market [12,13]. This indicates the interference of other variables with consumers' perceived importance of green attributes in products. Indeed, when purchasing a product, consumers must consider an entire set of attributes. Apart from green attributes, there are other conventional attributes such as price, brand, size, performance, and accessibility. Purchase intention is determined after evaluating the importance of each attribute based on personal values [14].

As previous studies show, facing trade-offs between environmental concerns and other non-green product attributes, green products do not always have the advantage of conventional attributes (e.g., higher prices or poor accessibility) other than green features [10]. Therefore, the attribute trade-offs that consumers have to make when buying a green product may explain the failure to translate high environmental and social concerns into actual green purchase behaviors [15–17]. It is up to consumers' perceived importance of green attributes when choosing green products [18]. Consumers that prioritize environmental and social impacts emphasize green features, while those that assign higher importance to individual values usually go for functional attributes. In the latter case, customers prefer non-green products, even though they may also have environmental concerns. Most previous studies argue that green attributes are often ignored and pushed to the background when consumers make their decisions [11,14,19]. In other words, the consideration of individual consequences outweighs positive environmental and social attitudes [20]. Therefore, to promote green consumption, it is important to understand the influence of trade-offs involving green attributes [21].

While there have been studies on green products and consumers in general, there are a limited number of studies on young green consumers in developing countries [22,23]. Young consumers are said to be more conscious and responsible for environmental protection issues. They are also considered to be agents of change, as they are more receptive to new and innovative ideas such as green consumption [10,24,25]. Most studies focusing on new trends in green consumption have been conducted in developed countries, even though the market for green products in developing countries is growing, supporting the rising importance of understanding consumers in these countries. Thus, a comparative study that investigates the differences in consumption patterns between developed and developing countries would be beneficial [26]. However, few studies have investigated green purchase intentions in multiple countries [27]. Furthermore, studies comparing countries show that although the importance of considering environmental and social responsibility in consumer choices is increasing, it is not clear what value people place on these responsibilities or how things differ across markets and countries [28,29]. In addition, it could be beneficial to compare products, as consumers' green purchase intentions could differ by product, and findings could provide deeper implications for promoting green

purchase behavior. However, few studies have compared the influence of green attributes on consumers' green purchase intentions across products in different categories [30,31].

To fill this gap, this study investigated the influence of green attributes on consumers' green purchase intentions in developed and developing countries when facing trade-offs with other attributes to elucidate the similarities and differences between countries and products. It attempted to answer the following three research questions:

RQ1. How do young consumers' green purchase intentions differ across products and countries?
RQ2. How do young consumers' heterogeneities influence their preferences for green attributes?
RQ3. How can green purchases be promoted?

In addition to exploring cross-country and cross-product differences, we investigated the influence of sociodemographic characteristics, as they are also critical factors [32,33]. Based on the findings obtained from RQ1 and RQ2, we discuss their implications for promoting green purchases. The target population included young people in Japan and Vietnam. These target countries were selected because their economies and average incomes differ. Young people were chosen as the target sample because of their importance in the advancement of an environmentally aware population. Among young consumers, university students are a group with a high education level, suggesting a better understanding of green products and environmental problems [10].

The remainder of this paper is organized as follows. Section 2 explains in detail the method used to conduct the survey and analysis. Section 3 presents the results of the survey and analysis. In Section 4, the results are discussed. Finally, Section 5 presents concluding remarks summarizing the findings of the study and explaining its limitations.

2. Literature Review

There has been a growing body of the literature on green products and consumers in general, including review papers [10,22,34,35]. Previous studies have identified factors that affect green purchase behavior [10,22,33]. For example, Joshi and Rahman [10] identified 56 factors from the literature. These previous studies cover a variety of products, including apparel [23,36–40], wine [41], cars [18,42], furniture [42], water bottles [12], food [28], and electric appliances [12,18,43,44]. There have been two groups of studies on green purchase behavior: psychological theories such as the theory of planned behavior [23,29,45–47] and the theory of reasoned action [36], among others [39,42,43,48,49], and stated and revealed preference methods such as conjoint analysis, choice experiments, and experimental auctions [12,18,28,38,40,44,50,51].

3. Materials and Methods

This study adopted a discrete choice experiment (DCE) approach to investigate the influence of green attributes on young consumers' green purchase intentions in Japan and Vietnam as well as to compare these intentions across product categories.

3.1. Cases

Green consumption is seen as a consumption trend of the twenty-first century, when environmental degradation has become a great concern for many countries including Japan and Vietnam. The situations in these two countries are both similar and different. With sustainable development in mind, the green consumption of households has become increasingly popular in Vietnam [52]. However, although Vietnamese people generally worry about the environment, they simultaneously face limited opportunities and capabilities to practice sustainable consumption [53]. A consumer study conducted in Vietnam found that young Vietnamese usually ignore green attributes when purchasing expressive products such as clothes and personal electronic devices [54]. In Japan, green consumption has also gained increasing popularity as green procurement activities have progressed, and

bases have been found in multiple sectors. However, Japan is rather different from Vietnam. In Japan, the three main parties behind this movement are governments, companies, and non-governmental organizations, rather than individual consumers. Therefore, it is a challenge for Japan to raise awareness among general consumers and increase green consumption [55].

3.2. Discrete Choice Experiment

The DCE method, which is commonly used to analyze consumers' trade-offs [56], is an ideal approach to explore whether or how much consumers consider green attributes; DCEs estimate consumers' choices that vary with changes in the attributes of one alternative and elicit their degree of preference [25,57]. DCEs formulate questions or choice tasks to provide consumers with information on product preferences at the attribute level. In DCEs, a product is constructed using a set of attributes. In each question, there are several products or combinations of different product attributes for respondents to choose from [58]. Respondents jointly evaluate several important attributes and then select the alternative that they find the most attractive, such as the one that maximizes their utility in each choice task. In a real-life situation, consumers assess attributes such as the price, quality, and brand of available products and choose the product that is the most appealing to them.

3.2.1. DCE Model Specification

A DCE is based on the random utility maximization (RUM) model [59]. The RUM model assumes that researchers are unable to thoroughly observe all of the factors influencing people's utility, so utility is separated into two components: an observable systematic component and an unobservable random component. Given that, following the notations by Holmes et al. [56], the indirect utility (V) for individual k associated with chosen alternative i can be formalized by the sum of the following two components:

$$V_{ik} = \nu_{ik} + \varepsilon_{ik} \tag{1}$$

where ν_{ik} is the systematic component and ε_{ik} is the random component.

Respondents choose an alternative that grants them the highest utility. Therefore, an individual selects alternative i when and only when

$$\nu_{ik} + \varepsilon_{ik} > \nu_{jk} + \varepsilon_{jk};\ \forall j \in C \tag{2}$$

where C consists of all the alternatives in the choice set.

3.2.2. Marginal Willingness to Pay (MWTP) and Marginal Rate of Substitution

Assume a simple linear utility function for alternative i, where the alternative simply represents a certain state of the world, and respondent k:

$$V_{ik} = \beta Z_i + \lambda(y_k - p_i) + \varepsilon_{ik} \tag{3}$$

where β is the vector of the preference parameters, except for the cost of alternative i, (p_i). Z is a vector of the attributes. λ is the marginal utility of money.

The MWTP supposes that one conducts a choice experiment with three attributes, including the cost attribute, and the following utility function is estimated:

$$V_{ik} = \beta_1 z_{i1} + \beta_2 z_{i2} + \lambda(y_k - p_i) + \varepsilon_{ik} \tag{4}$$

β_1, β_2, z_{i1}, and z_{i2} are the attributes and preference parameters for attributes 1 and 2, respectively. Then, the MWTP for an attribute (e.g., attribute 1) becomes

$$MWTP_1 = -\frac{\beta_1}{\lambda} \tag{5}$$

This study applied a conditional logit model to estimate the coefficients and MWTP using R (x64 4.0.5) (https://www.r-project.org/ accessed on 31 August 2021), a statistical software package for DCEs [60].

3.3. Survey Design

3.3.1. Selection of Products

The first step in the choice experiment design was the selection of effective products to investigate. This selection was based on three criteria: the products chosen had to (1) have significant impacts on the environment [12], (2) be from different product categories [12,18], and (3) be gender neutral and relevant to young people. First, the selected products had to play a significant role in pushing Earth's ecosystem processes to their limit, which is a "safe operating space" for humanity without risking the stable environmental state of the Earth system [61]. Second, they had to belong to different product categories such as the convenience goods category (frequent purchases and lower prices) and the shopping goods category (less frequent purchases and higher prices). Since consumers may have different preferences (e.g., degree of trade-offs [18]) for different products, comparing a wide range of products should provide deeper implications by revealing the patterns of consumer behavior [31]. Third, the selected products could not be gender biased in the sense that one gender tended to use them more than the other. They also had to be relatively common items in daily life among young people, especially university students, who were the target population of the study.

This study selected T-shirts and water bottles, which satisfied these criteria. T-shirt production and consumption have great environmental impacts involving biodiversity loss and biogeochemical flow processes, both of which have a high risk of approaching their boundaries [4]. Chemicals are the main components of conventional clothes, even clothes made of "100% natural" fiber. Moreover, in most countries that produce clothes, untreated contaminated wastewater from textile factories is poured directly into rivers. Synthetic fibers such as polyester are plastic fibers that are non-biodegradable and take up to 200 years to decompose [62]. Concerning green alternatives (green clothes made of organic or recycled fabric), attribute trade-offs require intense consideration because green clothing is much more expensive, cannot keep up with trends, and cannot include specific features such as heat technology [63].

3.3.2. Selection of Attributes and Attribute Levels

Previous studies have suggested that selected attributes should be viewed as endpoints that directly result in consumer utility functions [64]; in other words, selected attributes and their levels should be directly connected to consumers' preferences for goods. Furthermore, attributes should be demand-relevant (what consumers deem valuable), measurable (can be translated into quantity), interpretable (easy to understand for non-scientist respondents), comprehensive (including all the key attributes), and policy-relevant (what decision-makers can influence) [65].

First, relevant attributes were shortlisted based on previous studies on green consumption intentions and behaviors with reference to the abovementioned criteria: brand, performance, availability, price, and environmental impact [10,14,18,33,66]. To finalize the attributes and their levels, three focus groups were conducted with Japanese college students on 25 February 2021, Vietnamese environmentally conscious consumers on February 26, and Vietnamese college students on March 4 and 5. Five attributes with different levels were selected for T-shirts and four were selected for water bottles (Table 1). The same levels, except for prices, were used for both countries to make them comparable.

- Brand: The popularity of a product influences consumers' purchase intentions. Familiar brands are believed to be of better quality and are therefore more reliable and valuable [14].
- Quality/function: Previous studies have shown that perceived product quality and function significantly influence consumers' purchase intentions [10]. The performance

of a product directly enters the utility function of consumers and, therefore, is a major determinant of green purchase intentions [10]. Given this notion, different available functions capturing quality/performance were assigned to each product as options for performance for T-shirts and water bottles.

- Accessibility: Time taken, accessibility, and convenience significantly affect consumers' purchase intentions [33,67]. Similarly, whether a green product is readily available directly changes green purchase intentions [33].
- Price: The results of previous research on whether consumers are willing to pay premium prices for green products have shown that their purchase intentions are noticeably sensitive to changes in price [10]. The price ranges for each product reflected the current market prices in Japan and Vietnam.
- Environmental impact: Environmental impact levels were adopted to investigate the sensitivity of consumer preferences to the green features of a product. The environmental impact of a selected product was presented to consumers as a rating verified by independent experts based on the product's contribution to (1) global warming, (2) water pollution, and (3) air pollution throughout its life cycle [68].

Table 1. Attributes and their levels for t-shirts and water bottles.

T-Shirts		
Attribute	**Levels**	
	Vietnam	**Japan**
Brand	Brand (e.g., Uniqlo, Canifa, Hanosimex)	Brand (e.g., Uniqlo, GU, GAP)
	No brand	No brand
Quality	Premium cotton	Premium cotton
	Regular cotton	Regular cotton
Accessibility	Available 60 min away	Available 60 min away
	Available 30 min away	Available 30 min away
	Available 10 min away	Available 10 min away
Price (tVND/JPY)	100	1000
	200	2000
	500	5000
	800	8000
Environmental impact	Low	Low
	Medium	Medium
	High	High
Water bottles		
Attribute	**Levels**	
	Vietnam	**Japan**
Brand	Brand (e.g., Lock&Lock, Lavie)	Brand (e.g., Thermos, Suntory)
	No brand	No brand
Thermal preservation	Yes	Yes
	No	No
Price (tVND/JPY)	50	500
	150	1000
	300	3000
	500	6000
Environmental impact	Low	Low
	Medium	Medium
	High	High

3.3.3. Questionnaire Design

After choosing the attributes and their levels, the next step was to build a set of possible alternatives with different attribute levels and then pair these profiles to make choice sets. The complete factorial design that incorporated every possible combination of all attributes is shown in Table 1, containing 48 possible choice combinations for water

bottles and 72 for T-shirts. To narrow this to a manageable number, a subset of these combinations was used.

For this purpose, a D-efficient design was constructed using Ngene version 1.2.1. A pilot study containing 20 choice questions (10 for each product) was conducted with 22 Japanese and 21 Vietnamese respondents to obtain prior values [69]. These prior values were then used to design the questions for the official survey. As the analysis of the pilot study was not pooled, the choice sets for Japanese and Vietnamese respondents were different. For each country, 16 choice sets with two product options (i.e., two products with different characteristics) and a no-choice option were generated for each product. As 16 choice sets for each product were too many for an individual to evaluate, they were randomly divided into two versions, so that each respondent was provided with eight choice sets for each product. Figure 1 presents an example of the choice sets used in the questionnaire.

	Shirt 1	**Shirt 2**
Brand	Brand (e.g., Uniqlo, GU, GAP)	No brand
Quality	Regular cotton	Premium cotton
Accessibility	Available 30 min away	Available 10 min away
Environmental impact	 Medium	 Low
Price (JPY)	1000	5000

I will choose to purchase:

- ○ Shirt 1
- ○ Shirt 2
- ○ None

Figure 1. Example of a choice set used in the questionnaire. Green, yellow, and red indicate low, medium, and high environmental impact accordingly.

The questionnaire comprised three main sections. The first section was the choice experiment with a description of the selected attributes and 16 choice sets (eight for each product). The second section asked consumers about their environmental knowledge, green purchase attitudes, and perceived personal environmental values. Finally, the last section of the questionnaire asked respondents about their individual demographic and socioeconomic characteristics. In addition to gender, we asked respondents about their disposable income and environmental concerns. While a previous study showed mixed results (i.e., its significance depended on the model specification) [25], income remains a key element of stated preference methods [70]. Each scale included three items drawn from previous studies [18,45,54,71–73]. The reliability of each scale was tested using Cronbach's α.

This study also conducted a follow-up survey of the same Japanese respondents based on the findings obtained from the questionnaire. A structured questionnaire was used to explore the reasons for these findings. A follow-up survey was not conducted with Vietnamese respondents, as we could not reach them.

3.4. Participants

The questionnaire was administered to young people from 17 to 25 years old in Japan and Vietnam using online questionnaire platforms from 6 to 20 May 2021. The questionnaire for Japanese respondents was conducted at the College of Policy Science at a university in Japan. The number of valid answers collected from Japan was 370. A total of 403 valid answers were collected from Vietnam from two sources: one was administered to

students in four classes, 180 students in total, in the Faculty of Education at a university in Vietnam and the rest of the Vietnamese respondents were collected through snowball sampling using an online survey and social media platforms, some of which were master's students or new graduates. The respondents whose answers were used for the analyses in this study provided informed consent. The data in Excel are available online as a supplementary material.

4. Results

4.1. Consumers' Characteristics

A total of 773 valid questionnaires were collected: 370 in Japan and 403 in Vietnam. Table 2 shows the basic sociodemographic characteristics of the participants. Because of limited access to young consumers, gender ratios deviated from the population to some extent. Although this study chose products that were not gender biased, there is still the possibility of sample selection bias. While the sex ratio for Japanese aged 18–21 is 1.06 [74], the ratio in the Japanese sample was 1.48. The sex ratio for Vietnamese aged 18–25 is 1.04 [75] and the ratio in the Vietnamese sample was 0.49. The disposable income for Japanese consumers may be similar to that of the national survey, which revealed that the monthly disposable income for college students at private universities is JPY 54,975 [76]. There are no national statistics on the average disposable income of Vietnamese college students.

Table 2. Sociodemographic characteristics of the sample.

	Japan (n = 370)		**Vietnam (n = 403)**	
Gender	Female	40.3%	Female	67.0%
	Male	59.7%	Male	33.0%
Disposable income (JPY/VND)	Below 50,000	60.3%	Below 2,000,000	46.6%
	50,000–below 100,000	34.1%	2,000,000–below 5,000,000	31.3%
	100,000–below 150,000	4.3%	5,000,000–below 7,000,000	9.7%
	Above 150,000	1.4%	7,000,000–below 10,000,000	5.5%
			Above 10,000,000	6.9%

Table 3 shows consumers' environmental knowledge, attitude, and values. Cronbach's α indicated that all of them were reliable scales (i.e., $\alpha > 0.7$) [77]. Comparing Japanese with Vietnamese respondents, Vietnamese respondents scored higher in all aspects of environmental concern; a t-test revealed that their mean values were statistically significantly different (p-values all < 0.001).

4.2. Model Estimates

Tables 4 and 5 show the conditional logit models for water bottles by country, with and without interaction terms. Tables 6 and 7 show the conditional logit models for T-shirts by country, with and without interaction terms. Tables 5 and 7 add the heterogeneity of the respondents' preferences based on their profiles (i.e., income and gender) to the models in Tables 4 and 6, respectively. Table 8 shows the MWTP for both products and countries. To make them comparable across countries, they were converted into U.S. dollars (USD) using the online service by the Money Converter (https://themoneyconverter.com/). The exchange rate at the time of access (30 July 2021) was VND 1000 = USD 0.04 and JPY 1 = USD 0.01.

For the Vietnamese respondents, all the choice attributes for both products were statistically significant at the 1% level (Tables 4 and 6). In Japan, most of the choice attributes were statistically significant at the 1% level, except for premium cotton for T-shirts (Tables 4 and 6).

Table 3. Environmental knowledge, attitude, and values.

	Japan		Vietnam	
	Mean	**Cronbach's α**	**Mean**	**Cronbach's α**
Environmental Knowledge	2.89	0.83	3.72	0.86
I am knowledgeable about environmental issues	3.18		3.74	
I am knowledgeable about green products	2.79		3.58	
I am knowledgeable about the environmental impacts of green products	2.71		3.85	
Green Purchase Attitude	2.8	0.71	3.79	0.87
I enjoy purchasing green products	2.64		3.87	
Green features are a very useful piece of information that I consider when I buy something	3.30		3.98	
I look for green alternatives when I want to buy something	2.47		3.52	
Personal Values	2.96	0.72	3.89	0.82
I feel personally obliged to buy green products to protect the environment	3.10		3.96	
I am deeply concerned about the environmental impact of my product consumption	2.79		3.83	
I feel guilty when I purchase products that harm the environment	2.98		3.87	

Table 4. Conditional logit models for water bottles including the choice attributes only.

	Japan		Vietnam	
	Coef. est.	**Sd. Error**	**Coef. est.**	**Sd. Error**
Alternative specific constant	−1.44991	0.08888 ***	−1.00127	0.06396 ***
Choice Attributes				
Brand	0.12647	0.02827 ***	0.32793	0.02691 ***
No brand	−0.12647		−0.32793	
Thermal preservation_Yes	0.51775	0.04825 ***	0.15875	0.02675 ***
Thermal preservation_No	−0.51775		−0.15875	
Environmental Impact_Low	0.11643	0.0415 ***	0.40959	0.04507 ***
Environmental Impact_Medium	0.30166	0.03293 ***	0.20366	0.03259 ***
Environmental Impact_High	−0.41809		−0.61325	
Price	−0.31947	0.02481 ***	−0.19448	0.01569 ***
Model summary statistics				
Log likelihood	−3001.711		−3541.926	
Adjusted rho-squared	0.0724027		0.0655693	
AIC	6065.504		6619.369	
BIC	6101.494		6655.839	
Number of observations	8880		9672	
Number of respondents	370		403	

*** $p < 0.01$; ** $p < 0.05$; * $p < 0.10$.

All the models except for the model for T-shirts of the Japanese sample were linear in terms of the choice attributes and interaction terms. As "Accessibility" alone was not statistically significant, we added "Accessibility^2," the quadratic term of "Accessibility." The reason for this functional form could be explained by our choice of attribute levels in the survey, while the attribute levels were set at 10, 30, and 60 min, and the follow-up survey with Japanese respondents (n = 382) indicated that most of them usually went shopping 30 min away (mean = 30.97, median and mode = 30). Therefore, their current shopping behavior could influence their preferences, or 30 min away could be a reflection of their preferences.

Table 5. Conditional logit models for water bottles including the interaction terms.

	Japan		Vietnam	
	Coef. est.	**Sd. Error**	**Coef. est.**	**Sd. Error**
Alternative specific constant	−1.43611	0.08912 ***	−1.002874	0.063998 ***
Choice Attributes				
Brand	0.12304	0.02841 ***	0.329737	0.026964 ***
No brand	−0.12304		−0.329737	
Thermal preservation_Yes	0.51448	0.04842 ***	0.158751	0.02675 ***
Thermal preservation_No	−0.51448		−0.158751	
Environmental Impact_Low	0.16467	0.11679	0.45435	0.084214 ***
Environmental Impact_Medium	0.37836	0.10658 ***	0.266158	0.073844 ***
Environmental Impact_High	−0.54303		−0.720508	
Price	−0.31593	0.02488 ***	−0.195173	0.0157 ***
Interaction terms				
Environmental Impact_Low * Income	−0.01502	0.01696	0.004676	0.013657
Environmental Impact_Medium * Income	−0.02137	0.0157	−0.005714	0.012752
Environmental Impact_Low * Gender	0.10365	0.07028	−0.09127	0.07066
Environmental Impact_Medium * Gender	0.15899	0.06629 **	−0.06037	0.0659
Model summary statistics				
Log likelihood	−3001.711		−3301.58	
Adjusted rho-squared	0.074		0.065	
AIC	6023.423		6623.16	
BIC	6083.352		6683.944	
Number of observations	8880		9672	
Number of respondents	370		403	

*** $p < 0.01$; ** $p < 0.05$; * $p < 0.10$.

Table 6. Conditional logit models for T-shirts including choice attributes only.

	Japan		Vietnam	
	Coef. est.	**Sd. Error**	**Coef. est.**	**Sd. Error**
Alternative specific constant	−1.514368	0.16685 ***	−1.92821	0.10127 ***
Choice Attributes				
Brand	0.295758	0.022731 ***	0.33791	0.02196 ***
No brand	−0.295758		−0.33791	
Quality_Premium cotton	0.009065	0.027333	0.22044	0.02876 ***
Quality_Regular cotton	−0.009065		−0.22044	
Accessibility	0.348977	0.095614 ***	−0.12068	0.01364 ***
Accessibility^2	−0.047667	0.01335 3 ***		
Environmental Impact_Low	0.06357	0.036497 *	0.52366	0.03792 ***
Environmental Impact_Medium	0.155646	0.037294 ***	0.13043	0.03226 ***
Environmental Impact_High	−0.219216		−0.65409	
Price	−0.287698	0.016384 ***	−0.26192	0.01391 ***
Model summary statistics				
Log likelihood	−2708.472		−3119.742	
Adjusted rho-squared	0.1646488		0.1172199	
AIC	5432.944		6253.484	
BIC	5480.888		6296.032	
Number of observations	8880		9672	
Number of respondents	370		403	

*** $p < 0.01$; ** $p < 0.05$; * $p < 0.10$.

Table 7. Conditional logit models for T-shirts including interaction terms.

	Japan		Vietnam	
	Coef. est.	**Sd. Error**	**Coef. est.**	**Sd. Error**
Alternative specific constant	−1.509827	0.167014 ***	−1.932243	0.10133 ***
Choice Attributes				
Brand	0.297470	0.022788 ***	0.337102	0.02204 ***
No brand	−0.297470		−0.337102	
Quality_Premium cotton	0.008158	0.027389	0.22238	0.028786 ***
Quality_Regular cotton	−0.008158		−0.22238	
Accessibility	0.349892	0.095670 ***	−0.121089	0.01365 ***
Accessibility^2	−0.047724	0.013359 ***		
Environmental Impact_Low	−0.174092	0.114185	0.594787	0.078872 ***
Environmental Impact_Medium	0.267333	0.121714 **	0.057333	0.075883
Environmental Impact_High	−0.093241		−0.65212	
Price	−0.287476	0.016393 ***	−0.262823	0.013923 ***
Interaction terms				
Environmental Impact_Low * Income	0.036653	0.016726 **	0.004815	0.013386
Environmental Impact_Medium * Income	−0.021341	0.017896	0.012512	0.013218
Environmental Impact_Low * Gender	0.016356	0.070441	−0.13315	0.068776 *
Environmental Impact_Medium * Gender	0.057338	0.075224	0.038711	0.06834
Model summary statistics				
Log likelihood	−2705.483		−3117.132	
Adjusted rho-squared	0.1643379		0.1168274	
AIC	5434.967		6256.264	
BIC	5506.882		6323.126	
Number of observations	8880		9672	
Number of respondents	370		403	

*** $p < 0.01$; ** $p < 0.05$; * $p < 0.10$.

Table 8. MWTP for water bottles and T-shirts by country in USD.

	Water Bottles		T-Shirts	
	Japan	**Vietnam**	**Japan**	**Vietnam**
Brand	7.22	14.65	18.75	11.21
Thermal preservation	29.56	7.09	-	-
Quality_Premium cotton	-	-	0.57	7.31
Accessibility	-	-	11.07	−2.01
Accessibility^2	-	-	−1.52	-
Environmental impact_Low	15.26	22.85	8.96	19.53
Environmental impact_Medium	20.54	18.25	11.88	13.01

The interaction terms in Tables 5 and 7 show how the heterogeneity of respondents' preferences based on their sociodemographic characteristics. Only the interaction term for medium environmental impact and gender for water bottles for Japanese respondents was statistically significant (Table 5). As for T-shirts, the interactions between low environmental impact and income for Japanese respondents and between low environmental impact and gender for Vietnamese consumers were statistically significant (Table 7).

The MWTP in Table 8 was estimated based on the corresponding conditional logit models, including the choice attributes only (Tables 4 and 6).

5. Discussion

5.1. Differences in Consumers' Green Purchase Intentions across Countries and Products

The comparison of the MWTP for Environmental Impact_Low and High in Table 8 shows a stark contrast between Japanese and Vietnamese respondents. While Vietnamese respondents valued low environmental impact more than medium for both water bottles (USD 22.85 and USD 18.25) and T-shirts (USD 19.53 and USD 13.01), Japanese respondents

valued low environmental impact less than medium for both products (USD 15.26 and USD 20.54 for water bottles; USD 8.96 and USD 11.88 for T-shirts). This indicates that green attributes (i.e., Environmental Impact_Low) contribute less to Japanese respondents' purchase intentions. There are two possible reasons for this finding. First, it could be that Vietnamese consumers are more concerned about their consumption than Japanese consumers. Their environmental knowledge, attitudes, and values were higher than those of the Japanese (Table 3). This is in accordance with the environmental Kuznets curve [78]; the improvement of environmental quality will be tapered at some point, as the marginal utility of additional improvement in environmental quality is declining as the economy grows. This is also supported by previous studies indicating that sustainable consumption trends influence consumers in emerging countries more than in developed ones [79,80]. This may be because developing countries, including Vietnam, are more exposed to environmental pollution and environmental damage from climate change [80–82]. Second, it could be that Japanese consumers take environmentally friendly products for granted. This was confirmed by the results of the follow-up survey, where 37% and 40% of Japanese respondents thought that water bottles and T-shirts available in Japan are already environmentally friendly, respectively (only 18% and 19% chose "disagree" or "strongly disagree," respectively). Since Japanese respondents are familiar with environmental regulations and eco-friendly practices in Japan, they thought that the average environmental impact is sufficiently environmentally friendly and that there is no need to pursue further environmental friendliness. As we could not conduct a follow-up survey of Vietnamese respondents, we cannot make a comparison, and no official data state whether products in Vietnam are not environmentally friendly. However, there is evidence to prove that the production practices of enterprises in Vietnam are not sustainable compared with those of other countries [83,84]. Moreover, the overall environmental performance index of Japan is also higher than that of Vietnam [85]. Therefore, Japanese people may be less sensitive to improvements in environmental impacts.

The comparison of the MWTP for environmental impacts in relation to that for the other attributes also showed a stark contrast between Japanese and Vietnamese respondents. As the MWTP in Table 8 shows, among all the attributes, Vietnamese respondents were willing to pay the most for low environmental impact (USD 22.85 for water bottles and USD 19.53 for T-shirts), followed by medium environmental impact for both products. By contrast, green attributes were not a priority for either product for Japanese respondents. Thermal preservation (USD 29.56) and brand (USD 18.75) were the most important for Japanese respondents for water bottles and T-shirts. Vietnamese respondents' preferences were in line with the results of a survey by Nielsen Vietnam in 2017, where 80% of the interviewed Vietnamese reported that they would pay more for environmentally friendly products [86].

As for the cross-product comparison, both Japanese and Vietnamese consumers valued the green attributes of water bottles more than those of T-shirts. As they were different types of products (e.g., their duration of use and utility), further investigation is needed to understand what this difference means. Another interesting point is that Vietnamese respondents with lower purchasing power were more willing to pay for green attributes. In comparison with consumers' average monthly disposable income, the estimated MWTP for low environmental impact accounted for 0.4% (T-shirts) to 0.6% (water bottles) of respondents' average monthly disposable income in the Japanese sample and 5.3% (T-shirts) to 5.6% (water bottles) in the Vietnamese sample. This means that Japanese respondents were willing to pay less for green attributes than Vietnamese respondents.

5.2. Heterogeneities of Green Purchase Intentions Due to Respondents' Profiles

The interaction terms in Tables 5 and 7 show how respondents' preferences differed according to their sociodemographic characteristics (i.e., gender and income). Interestingly, contrary to studies' claim that a gender gap exists (i.e., women tend to prefer green products more than men) [87–89], this study showed mixed results. The influence of environmental

impact on purchase intentions varied according to gender in the water bottle results for Japanese respondents and in the T-shirt results for Vietnamese respondents. Interestingly, while Japanese female respondents valued a medium (average) environmental impact of water bottles more than male respondents, contrary to the literature, Vietnamese male respondents valued a lower environmental impact of T-shirts than female respondents. There are various explanations for this gender gap. For example, traditional gender socialization is often used to explain this bias, with researchers stating that cultural norms and women's traditional role as caregivers have encouraged women to be cooperative and compassionate, as well as forming a nurturing nature that eventually leads to higher concern for maintaining the surrounding environment [90]. Another explanation is ascribed to the green feminine stereotype; both men and women tend to have the stereotype that green consumers are more feminine, which makes men avoid adopting green behaviors to maintain their gender identity [91]. However, due to the paucity of the literature explaining why men sometimes prefer green products more than women, it is difficult to address this finding. However, as the gender gap is explained by the context (e.g., socialization and stereotypes), Vietnamese society may be unique, and the validation of this notion awaits future study.

Overall, respondents' preferences did not differ by income, except for the low environmental impact of Japanese respondents. Vietnamese respondents had low environmental impact, irrespective of their income level. While income is often a definitive factor for explaining adults' willingness to pay for environmental protection [87–89], a recent study targeting young people receiving an allowance showed no statistical significance [25]. As most respondents in both countries were full-time students, they mostly depended on an allowance provided by, for example, their parents. In our study, it is interesting that while low environmental impact was not significant for Japanese consumers overall, the interaction term indicated that it varied according to income level: the higher income, the lower is environmental impact. Although this could not be validated, respondents with higher income may be more sensitive to or aware of environmental issues as they work part-time and become more concerned about social issues, including environmental issues. Learning about society is one of the reasons Japanese university students work part-time [92].

5.3. Implications for Promoting Green Purchases

As Japanese and Vietnamese respondents valued environmental impacts to different degrees, different implications or measures for promoting green purchases are expected. While Vietnamese respondents valued low levels of environmental impact, Japanese respondents valued medium (average) environmental impact, or the status quo, more than a better (i.e., lower) environmental impact. This indicates that Japanese consumers are less sensitive to environmental quality than Vietnamese consumers. Furthermore, low and medium environmental impacts were not as important as the other attributes of water bottles and T-shirts. This is a concern, as previous studies have shown that we are about to cross the threshold of Earth's safe operating space [93]. This indicates that Japan needs to make further efforts to protect the environment regardless of the extent to which Japanese consumers are satisfied with the current situation.

Therefore, it is critical to implement policy measures to help Japanese consumers become more aware that environmental issues are still serious and encourage them to adopt green behaviors. To do so, for example, environmental education has been proven to be effective [94]. A mass public information campaign about ecosystem services, environmental issues, and environmental quality could significantly improve people's environmental knowledge and values, in turn helping them make more informed choices to protect the environment [95]. Another way to promote sustainable behavior is to apply green nudges to people's daily activities. For example, the plastic bag charge has been successful in encouraging citizens to reuse shopping bags in Japan as well as in raising Japanese consumers' awareness of the issue of plastic waste [96]. Thus, similar nudges such as charges for plastic

cups, plastic straws, and other plastic cutlery in coffee shops, convenience stores, and restaurants could be applied. These nudges could spur other green practices in consumers, as one environmental behavior can lead to others [97].

Although green attributes were not as important for Japanese consumers as were the other attributes of water bottles and T-shirts, as indicated by the MWTP in Table 8, this can be utilized to promote green products. For example, brand was valued greatly in Japan, especially for T-shirts (USD 18.75 for Brand but USD 8.96 for Environmental Impact_Low in Table 8). This demonstrates that it is important to involve companies with famous brand images to produce and sell environmentally friendly products. To promote green purchases, the government could work toward a voluntary agreement with these big brands instead of all companies designing environmentally friendly products. Voluntary agreements are one of the key policy measures for conserving the Earth system [98].

Vietnamese respondents prioritized the environmental impact of products and were willing to purchase green products. This suggests that in contrast to the lack of environmental awareness as a key concern in Japan, for Vietnam, the slow pace of sustainable consumption may be due to deficiencies in product supply. Since market demand for environmentally friendly products seems to be high, as indicated by our findings, an increase in the availability or production of these products will increase green consumption practices. Indeed, brands and companies that commit to selling green and clean products such as Unilever Vietnam, Dien Quang Lamp Joint Stock Company, and Ecopark have a growth rate four times higher than that of other enterprises in the same industry [99]. However, the number of products considered to be green in Vietnam is small, making opportunities for Vietnamese consumers to practice sustainable consumption limited despite their high environmental awareness. Green products and services account for only approximately one-10th of GDP [100]. From 2009 to 2014, only four companies applied for and were certified with the Vietnam Green Label (VGL), the eco-label awarded to products that meet the government's criteria for eco-friendly products [98]. Therefore, the next step for the government should be to encourage companies to improve their production practices to meet the VGL criteria for eco-friendly products and popularize the existence of this label to companies and consumers [101]. The government can eventually certify the mandatory VGL environmental criteria in all production practices to reduce unsustainable products [93]. The government can also use subsidies to promote the creation of green products, as subsidies have been proven to be a highly effective policy instrument to increase not only green product innovations but also green innovations in production processes [102]. Moreover, the results indicated that green products can be more attractive to Vietnamese consumers by utilizing brand, function, or quality attributes. This means that green purchase intentions significantly increase when products have no disadvantages in terms of quality or performance compared with other conventional products on the market. This calls for measures to improve product innovation in firms. Similar to Japan, brands are also valued by Vietnamese consumers. Thus, a voluntary agreement between the government and big brands to produce and sell green products should also be applied in the country.

6. Conclusions

As environmental issues become more distressing, green consumption has emerged as a new consumption trend in many countries worldwide [22]. However, despite rising support for environmentally friendly products, consumers often opt for fewer green alternatives. This can be explained by the attribute trade-offs that consumers have to make when choosing a product. Therefore, knowing consumers' preferences can help promote the consumption of green products. This study applied a DCE to investigate the influence of green attributes on young consumers' green purchase intentions through comparisons by country (i.e., developed vs. developing) and product. Through cross-country and cross-product comparisons, this study provided a deeper understanding of the influence of greenness and its trade-offs with other key attributes to elicit policy implications for

encouraging young consumers to choose green products. Young consumers are key players in the Earth's future.

The findings showed a stark contrast between Japanese and Vietnamese respondents regarding their preferences for green attributes. Notably, Japanese respondents were less appreciative of the green attributes of both products than Vietnamese respondents, even though Japanese respondents' income levels were higher than those of Vietnamese respondents. Furthermore, as the MWTP indicated, not only low environmental impact but also even medium (average) or status quo environmental quality was not a priority among the other attributes for Japanese consumers, whereas better environmental quality was a priority for Vietnamese respondents (i.e., the highest MWTP for low environmental impact). Provided that consumption behavior is one of the key driving forces destabilizing the Earth system, the low preference for environmental quality by Japanese should be of particular concern. The conditional logit models demonstrated two possible solutions. One is to raise environmental awareness among Japanese consumers through public policy, including environmental education and information campaigns [94,95]. Another possibility is to sell products by taking advantage of other preferred attributes (e.g., sold by a well-known brand and with better performance) instead of advertising the "greenness." Although it is up to companies to decide what and how to sell their products, the government can encourage them to sell green products by informing them of what trade-offs lie in green products and how they can sell greener products and ask for voluntary agreements to produce green products. In contrast to Japan, Vietnamese respondents valued low environmental impact greatly in both products and were willing to pay more for green products. This indicates that it is crucial to improve the availability of green products in Vietnam. There may be strong demand, but a lack of supply. To do so, the government can implement stricter environmental regulations in production and subsidize green product innovations and green production process innovations. Moreover, as brands are also valued by Vietnamese respondents, the Vietnamese government can cooperate with famous brands to bring more green products to the market.

There are at least two limitations of this study that create possibilities for future studies. First, this study did not aim to fill the gap between intention and behavior [33]. Further studies are needed to fill this gap [33,103,104]. Second, this study intended to elicit policy implications for choosing green products and not reducing total consumption. However, as previous studies on plastic pollutants claim, reducing consumption is essential to protect the environment [105,106]. Therefore, more studies are needed to investigate how people choose products that can be used longer and how people use products for longer (e.g., object attachment [107] and product attachment [108]).

Supplementary Materials: The data for the paper are available online at https://www.mdpi.com/article/10.3390/su13179825/s1.

Author Contributions: Conceptualization, C.T.D.; Methodology, C.T.D., T.U. and T.T.; Software, C.T.D. and T.T.; Validation, T.T.; Formal Analysis, C.T.D.; Investigation, C.T.D.; Resources, C.T.D. and T.U.; Data Curation, C.T.D. and T.U.; Writing—Original Draft Preparation, C.T.D.; Writing—Review & Editing, C.T.D., T.U. and T.T.; Visualization, C.T.D.; Supervision, T.U. and T.T.; Project Administration, C.T.D.; Funding Acquisition, T.U. All authors have read and agreed to the published version of the manuscript.

Funding: This research was funded by Ritsumeikan University.

Institutional Review Board Statement: Ethical review and approval were waived for this study. It is not mandatory but optional to apply for the ethical review and approval at Ritsumeikan University (http://www.ritsumei.ac.jp/research/approach/ethics/mankind/).

Informed Consent Statement: Informed consent was obtained from all subjects involved in the study.

Data Availability Statement: The data presented in this study are available in the Supplementary Material.

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

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