

An Empirical Investigation of Sustainable Consumption Behavior Among Vietnamese Students: Integrating the Theory of Planned Behavior and Theory of Consumption Value

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Abstract. This study investigates the determinants of sustainable consumption behavior among Vietnamese students by integrating the Theory of Planned Behavior (TPB) and the Theory of Consumption Value (TCV). A quantitative approach using online surveys was employed, and data from 350 respondents were analyzed using PLS-SEM. The findings reveal that environmental knowledge, functional value, and emotional value positively influence attitudes towards sustainable consumption. Consumption trends and green communication positively impact subjective norms. However, the hypothesized relationships between sustainability perception and attitude and between functional value and purchase intention were not supported. The study highlights the importance of attitudes, perceived behavioral control, and subjective norms in shaping students' intentions to engage in sustainable consumption. The theoretical and practical implications of these findings are discussed, along with the limitations and future research directions. This study contributes to the understanding of sustainable consumption behavior among young consumers in the context of a developing country.

Keywords: Sustainable Consumption, SDGs, Theory of Consumption Value, Theory of Planned Behavior, Students.

1. Introduction

1.1. Overview

Environmental pollution has increased in recent years, accompanied by other problems such as global warming, climate change, and environmental degradation (Lee et al., 2010; Mohd Suki, 2015; Verma and Chandra, 2018). People have paid attention to protecting the environment, so sustainable consumption behavior has become crucial in the consumer market and research (Lee et al., 2010; Mohd Suki, 2015; Verma and Chandra, 2018). Almost 40% of environmental damage is caused by consumers' daily purchases (Ayodele et al., 2017). Waste is the main byproduct of urban living and is accelerating (Hoonweg et al., 2013). This alarming situation requires strict measures, and sustainable consumption practices are crucial (Kumar et al., 2021). Ramkissoon (2022) found that consumers consume products faster than the natural ecosystem, which can regenerate, recycle, or decompose. Thus, to preserve a green environment for the current and future generations, people's consumption habits must significantly shift (IPCC, 2021; Ramkissoon, 2022). Sustainable consumption, as a response, includes approaching, buying, and using products in an environmentally friendly way (Ramkissoon et al., 2013; Wang et al., 2020), attempts to reduce the environmental impact of consumption in order to minimize the impact of products on the environment (Kumar and Sreen, 2020). Therefore, sustainable consumption is considered the most crucial goal of the Sustainable Development Goals (SDGs), which includes preventing detrimental effects on the environment, minimizing waste generation, and ensuring an environmentally friendly lifestyle (Ramkissoon et al., 2013).

In addition, environmental concerns have gained popularity, leading to increased awareness of issues related to environmental contamination. Transferring this information raises awareness and fosters more significant concern among individuals on the relationship between consumption and sustainability (Verma and Chandra, 2018). Studying the sustainable consumption habits of consumers and examining some factors that influence consumers' sustainable consumption intention, specifically university students in Ho Chi Minh City. Another research objective is proposed, such as applying the theory of planned behavior (TPB) and the theory of consumption value (TCV) to determine the factors influencing sustainable consumption behavior regarding sustainable products. Sustainable consumption is a topic that attracts consumer and research attention to the importance of the environment (Lee et al., 2010; Mohd Suki, 2015; Verma and Chandra, 2018).

Previous studies on sustainability consumption have covered various domains such as sustainable fashion (Kumar and Sreen, 2020), energy saving, tourism, or perceptions related to sharing platforms and digital learning for sustainable behavior and value changes (Kumar and Sreen, 2020). These studies aim to address and provide solutions to environmental pollution and encourage sustainable consumption. Verma and Chandra (2018) mentioned behavior intervention as a solution that encourages sustainable low-carbon consumption, specifically reducing overall consumption and consumption-related carbon emissions. Research also highlights the significant role of knowledge, experience, energy, and money in purchasing low-carbon products (Edinger-Schons et al., 2018) and cultural elements (Verma and Chandra, 2018). Besides, research by Kong et al. (2021) shows a positive link between sustainability perception (including cultural, economic, environmental, and social aspects) and attitude and customers' behavior.

Interestingly, high levels of trust were associated with more favorable attitudes as sustainability perceptions increased. Although sustainability perception played a minor role in encouraging sharing behavior on social media, attitudes toward general social media engagement were critical drivers for content sharing. Recognizing that customers' behavior is not necessarily stable over time (Jiang and Rosenbloom, 2005) since they will change their ideas as a result of their past purchasing experience, various concerns like sustainable consumption production (Tseng et al., 2016), environmentally friendly consumption, and green consumption (Haraty and Bitar, 2019; Nam et al., 2017), and

environmental sustainability have become areas of concern for many global citizens.

1.2. Research gap

Although numerous research studies have been conducted to gain insights into sustainability consumption, some limitations remain. Notably, there exists a gap in extensive research across various variables, necessitating a more profound finding of multidimensional influencing factors and a deeper exploration into the relationships and features of the research. For instance, in the research by Kumar et al. (2021), data on convenience, trends, and social and personality traits were gathered from Indian consumers. However, the study also acknowledged certain shortcomings, including potential bias in the educated respondents and the need to analyze new variables in subsequent research, such as cultural nuances, willingness to pay, and consumption values. In our study, we opt to explore consumption values further to provide clarification. Another study, exemplified by Wei's research, also points out noteworthy considerations. However, this study was limited to examining only two key antecedent variables associated with sustainability, omitting a comprehensive investigation of the sustainability characteristics or interconnections.

The research objectives are to explore the different varieties of insights impacting students' intention to purchase green products across Vietnam and to fill the unsatisfactory gaps in the previous studies of Wei et al. (2023) and Sushant and Rambalak (2021). Furthermore, the theory of planned behavior (TPB) and the theory of consumption value (TCV) was also applied to consolidate the factors impacting sustainable consumption and fill the research mentioned above gaps. As a result, three main contributions were made through this study. Firstly, TPB and TCV were integrated to access the knowledge of consumers' sustainable consumption behavior to handle the existing research gaps as well as provide extensive and supplementary insights on the attitudes of consumers concerning sustainable consumption and how they make green product choices. Secondly, the discovery of the significant factors that impact the intention of sustainable consumption. Lastly, actions to motivate the consumers' green purchase intention are proposed, such as a marketing strategy about environmental protection ethics.

The remainder of this research is structured as follows: Section two presents a literature review of the article, including the theoretical background and hypothesis development. Next is the methodology part and the result. Finally, we will present our conclusion, which includes theoretical and practical contributions, limitations, and future research.

2. Literature Review and Hypothesis Development

2.1. Theory of Consumption Value (TCV)

The Theory of Consumption Value (TCV), introduced by Sheth et al. (1991), applies in the fields of marketing and the study of consumer behavior. Five consumption values significantly contribute to consumer preference: functional value (price and quality), social value, emotional value, epistemic value, and conditional value. Sheth identified functional value as “value through the possession of salient functional, utilitarian, or physical attributes.” Social value is “through association with positively or negatively stereotyped demographic, socioeconomic, and cultural ethnic groups.” Emotional value is “when associated with specific feelings or when they facilitate or perpetuate feelings.” Epistemic value is “value through the capacity to provide something new or different.” Conditional value is “in the presence of antecedent physical or social contingencies that enhance their functional or social value” (Sheth et al., pp. 1991). In this research, we will use two fundamental values out of the five values of TCV to address the research gap on consumption values affecting sustainable consumption intention, which was mentioned in the research article of Kumar et al (2021).

2.2. Theory of Planned Behavior (TPB)

The Theory of Planned Behavior (TPB) is a psychological model developed by psychologist Ajzen

(2009). It elucidates the impact of the intention to execute a specific behavior on the actual conduct, concurrently considering diverse factors that contribute to behavior intention formation (Ajzen, 2009). According to TPB, intention is the motivation of an individual to participate in a certain activity. It is determined by their attitude towards the conduct, the subjective norm, and perceived behavioral control (PBC) (Ajzen, 2009). Ajzen and his colleagues hypothesized that there is a positive correlation between the strength of intention and the likelihood of executing the intended behavior. The attitude towards behavior pertains to an individual's positive or negative evaluation of that behavior (Ajzen, 2009). The subjective norm is the perception of social pressure to either engage in or refrain from a particular action. This pressure is influenced by significant individuals such as family members or friends. PBC stands for an individual's subjective perception of the level of difficulty in carrying out a particular conduct (Ajzen, 2009). Within the scope of this study, the term "attitude" refers to the viewpoint of students toward sustainable consumption. The subjective norm pertains to individualized criteria for sustainable consumption. PBC stands for the extent to which consumers believe they have control over their decisions related to sustainable consumption.

While the TPB has traditionally been employed to forecast various deliberate behaviors, the TCV is commonly utilized to pinpoint factors influencing consumers' selection of products (Liang et al., 2019). To address the existing research gaps and thoroughly comprehend the fundamental intricacies of sustainable consumption, we integrated the Theory of Planned Behavior (TPB) and the Theory of Consumption Value (TCV) in assessing the knowledge of consumers' sustainable consumption behavior. In our study, we anticipate that our amalgamated research framework will offer comprehensive and complementary insights into consumers' values related to sustainable consumption and their behavior in choosing green products.

2.3. Hypothesis Development

Sustainability perception refers to the extent of individuals' cognitive understanding and subjective evaluation of sustainability-related concepts, including environmental, social, and economic dimensions (Caniato et al., 2012; Peattie and Belz, 2010). Sustainability perception can positively influence consumer attitudes through various psychological and behavioral mechanisms. Some influencing factors include environmental consciousness, ethical consideration, personal relevance, CSR (Corporate Social Responsibility), brand loyalty, positive emotional association, perceived quality, or market differentiation. As consumers place a growing emphasis on sustainability, manufacturer and retailer merchants respond by incorporating sustainable practices into their business, including launching new products and brands emphasizing positive social environmental attributes (Bezençon and Etemad-Sajadi, 2015). Today, consumers tend to prefer brands recognized for their commitment to sustainability and CSR (Lai, Chiu, Yang, and Pai, 2010). When environmentally friendly products evoke consumers' trust and positive attitudes toward the brand, they tend to make positive purchases (Chen and Chai, 2010) because consumers feel that the products meet their environmental needs (Netemeyer, Maxham, and Pullig, 2005). A positive sustainability perception fosters a sense of responsibility and an appreciation for the impact of students' actions and ability to innovate and solve environmental and societal problems. More sustainable knowledge empowers students to contribute significantly to the environment (Hamari et al., 2016). In other words, enhancing sustainability perception positively impacts students' attitudes and values toward sustainability, fostering a greater willingness to contribute to environmental protection via sustainable consumption (Hamari et al., 2016). Based on the information above, we propose the hypothesis:

- *H1: Sustainability perception positively influences consumer attitudes towards sustainable consumption.*

The Elaboration Likelihood Model (ELM), introduced by Petty and Cacioppo (1986), elucidates the relationship between environmental knowledge and attitude, revealing a positive inclination toward green products among those with environmental knowledge. Consumer adoption processes are influenced by environmental knowledge, and consumption fluctuations are affected by the degree of

environmental attitude (Gautam, 2020). The importance of environmental knowledge in changing people's unsustainable consumption behavior has been highlighted and proved (Pagiaslis and Krontalis, 2014), emphasizing its crucial role in actively influencing consumption behavior (Saari et al., 2021). Individuals with more excellent knowledge of environmental issues tend to show a more positive attitude toward the environment (Nekmahmud et al., 2022). This positive correlation extends to tourists being more willing to purchase green products if they have environmental knowledge and a favorable attitude toward the environment, climate, and health. (Nekmahmud et al., 2022). Moreover, even though environmental knowledge is responsible for inducing environmental concerns, people could be interested in learning more about environmental issues after showing initial environmental concerns (Saari et al., 2021). Based on the information above, we hypothesize that:

- *H2: Environmental knowledge positively influences consumer attitudes toward sustainable consumption.*

Sheth et al. (1991) assessed functional value as the primary driver of consumer choice. It can be defined as "functional value, which is the perceived utility acquired from an alternative's capacity for the functional, utilitarian, or physical performance of a product" (Sheth et al., 1991). The functional value of a product is often derived from product attributes such as durability, product quality, and price (Rahayu and Khiswari., 2023). Previous studies have demonstrated that consumers' attitudes toward purchasing behavior can be influenced by functional value (Moon et al., 2018; Rahayu and Khiswari, 2023). Many people choose to buy reusable or recyclable products because they believe that this will help them save a good amount of money instead of buying disposable plastic products (Schaefer and Crane, 2005). Some customers' frugality may also motivate them to buy green products (Schaefer and Crane, 2005; Naderi and Van Steenburg, 2018).

Furthermore, reusable products or products made from environmentally friendly materials are perceived by many consumers as good for both their health and the environment (Handayani and Prayogo, 2017). The perceived quality of green products affects the attitude and purchase intention. On the other hand, the price of sustainable products is often higher than that of conventional plastic products, so consumers often perceive that the quality of these products, or their effect on the environment, is better, leading to a better attitude (Khan and Mohsin, 2017). Emotional value is arousing feelings or affective states such as excitement, security, and comfort (Khan and Mohsin, 2017). Emotional value aims to satisfy consumers' mental or psychological needs for products through positive or negative emotions during the product purchase process (Caber et al., 2020). These emotional values can facilitate pro-environmental behaviors and intentions. The environmental impacts of sustainable consumption can arouse joy and responsibility in consumers, leading them to have a positive attitude towards it (Joshi et al., 2021). Sustainable consumption can arouse people's moral sense of environmental responsibility, causing them to have a positive attitude regarding purchasing sustainable products (Verma and Chandra, 2018). When using green products, consumers will see this as environmental protection behavior and experience positive feelings when doing good for themselves (Caber et al., 2020). From there, we propose the following hypotheses:

- *H3a: Functional value positively influences consumers' attitudes towards sustainable consumption.*

- *H3b: Emotional value positively influences consumer attitudes towards sustainable consumption.*

Novel green consumption is becoming a trend since consumer's awareness about protecting the environment is increasing. This trend influences the consumer community's awareness and changes consumers' intention from conventional to sustainable consumption (Ahmad et al., 2020; Brutting et al., 2020). Besides, the sustainability trend, which describes consumers who prioritize enhancing their health and sustainability by purchasing sustainable products and thereby helping the environment (Joshi et al., 2021), has been a popular consumer trend in recent years. Thus, they are inclined towards environmentally friendly products that can sustain their communities (Joshi et al., 2021) and make purchasing decisions that meet their standards for social and environmental responsibility (Urh, 2015). Social influence can come from various sources, such as family, friends, and media, and plays a

significant role in shaping individuals' consumption and production choices (Brutting et al., 2020). They found that when peers actively follow sustainable trends, individuals are three times more likely to intend to purchase sustainable products when they are influenced by peers than when they are not (Brutting et al., 2020). Consumers use celebrities as role models, so if a celebrity supports a sustainable trend, consumers will influence this trend and raise awareness about sustainability (Ahmad et al., 2020). Hence, we propose the hypothesis:

- H4: *Consumption trend positively influences subjective norms towards sustainable consumption.*

Green communication is mentioned as propaganda, influencing people about media content about green or eco-friendly products and highlighting their sustainable features, helping raise consumer awareness about sustainability and environmental protection issues (Paco et al., 2019). Marketers employ communication tactics to initiate a conversation, cultivate connections with consumers, enhance customer loyalty, and contribute to the value of customers. Consumers possess varying interpretations of phrases like "environmentally friendly" and "environmentally sustainable" (Paco et al., 2019), hence posing challenges for corporations in categorizing items and effectively communicating their intended messages (Paco et al., 2019). Zabkar and Hosta (2013) proposed that a successful green marketing approach effectively communicates the appropriate message to environmentally conscious consumers. Huang (2016) discovered a favorable correlation between consumers' willingness to accept green advertising and their intention to purchase green items. Joshi et al. (2021) unequivocally assert that there is a favorable correlation between consumers' inclination towards green advertising and their propensity to purchase eco-labeled products. The concept of green communication has a significant impact on the subjective standards that influence consumers' intention to engage in sustainable purchase (Huang, 2016). Multiple scholars have attested that green communication has a substantial impact on customers' inclinations towards sustainable products (Zhao et al., 2019). Consumers are expected to develop trust in sustainable products by often encountering and having positive experiences with green communication (Huang, 2016). Green advertising relies on green communication as a powerful tool, enabling interpersonal connections and networking that result in electronic and indirect interactions, surpassing traditional word-of-mouth communication (Huang, 2016). The following hypotheses are formulated:

- H5: *Green communication positively influences subjective norms towards sustainable consumption.*

Quality and price strongly impact the decision in choosing and purchasing goods (Nekmahmud, 2022). Especially for special items like green products and services, the quality and price of functional values play a significant role. Customers estimate them closely when deciding whether to buy green or recycled products, according to Amin and Tarun (2020). Although green goods usually have a relatively higher selling price relative to conventional ones, according to the study of Liu et al. (2019), consumers tend to pay premium prices for eco-friendly products to sustain the advantages for themselves and society, but only if the product's quality is upheld (Hur et al., 2012). Thus, both functional value-price and value-quality were found to positively influence the intention of purchasing green products (Wang et al., 2022).

Emotional value is the perception of the consumers of utility from a product that generates feelings or affective states such as excitement, security, and comfort (Khan and Mohsin, 2017). Moreover, this value also promotes actions and intentions that are environmentally friendly. According to Sheth et al. (1991), goods and services typically elicit feelings among consumers, such as roses raising romantic feelings and horror movies arousing fear. Positive feelings or emotional reactions may be influenced by trust in the excellent performance provided by goods or services (Ramkissoon, 2022). For example, purchasing sustainable items may lead consumers to believe that they are actively protecting the environment, (Caber et al., 2020). Therefore, consumers are motivated to purchase green products or services when perceiving strong positive moral and emotional values from using them. Although customers might not be interested in green purchasing, the good emotions they experience will significantly impact their subconscious decision-making (Hur et al., 2012).

Hence, we propose the following hypothesizes:

- *H6a: Functional value positively influences sustainable consumption intention.*
- *H6b: Emotional value positively influences sustainable consumption intention.*

Based on fundamental principles of the Theory of Planned Behavior, individuals' attitudes toward the behavior, their perceived behavioral control, and the influence of subjective norms will contribute to the formation of intentions (Ajzen, 2009). The Theory of Planned Behavior (TPB) states that an individual is likely to exhibit positive behavior when they hold a favorable attitude toward that behavior (Ajzen, 2009). Previous empirical research has verified that a positive environmental attitude substantially impacts the intention to purchase green products (Verma and Chandra., 2018). Individuals with a heightened concern for the environment and climate change have more intention to participate in pro-environmental behaviors such as purchasing sustainable products (Ramkissoon, 2020). According to Gautam (2020), customer attitudes towards environmentally friendly products positively impact purchase intention. Gautam also concluded that building a positive attitude towards environmentally friendly products is especially important and contributes to shaping purchase intention. For students, augmenting their attitude toward sustainable consumption via communication and educational initiatives escalates their intention toward sustainable consumption (Vantamay, 2018).

The TPB postulates that PBC, that is, individuals' perceived control over their choices, determines the formation of behavioral intention (Ajzen et al., 2009). According to Frommeyer et al. (2022), perceived self-efficacy refers to an individual's perception of "how well one can execute courses of action required to deal with prospective situations." PBC often refers to the availability of sustainable products at the point of sale, exerting a direct impact on the purchasing intentions of customers (Frommeyer et al., 2022). Establishing an environment that supports green-promoting norms, coupled with training and guidance in sustainable consumption skills, can facilitate the development of sustainable consumption intentions among students (Vantamay, 2018). The availability of sustainable products or the ease of affording them may help them buy them more easily (Naderi and Van Steenburg, 2018).

Previous researchers have indicated a positive correlation between subjective norms and customer purchase intentions (Ali et al., 2023). Consumers can modify their purchasing behavior towards a more sustainable orientation (Frommeyer et al., 2022). Regarding students, the influence of peers and the university environment is pivotal, fostering an awareness of the significance of sustainable consumption and setting a compelling example that significantly impacts students' intention to engage in sustainable consumption (Vantamay, 2018). Some people observe that peers expect them to purchase sustainably grown consumer goods, so they are motivated to comply with those expectations (Ali et al., 2023). Moreover, some studies (Frommeyer et al., 2022) indicate that the perspectives of individuals in one's social circle positively influence sustainable consumption behavior. Hence, we propose these hypothesizes:

- *H7a: Attitude positively influences consumers' intention to consume sustainably.*
- *H7b: PBC positively influences consumers' sustainable consumption intention.*
- *H7c: Subjective norm positively influences consumers' sustainable consumption intention.*

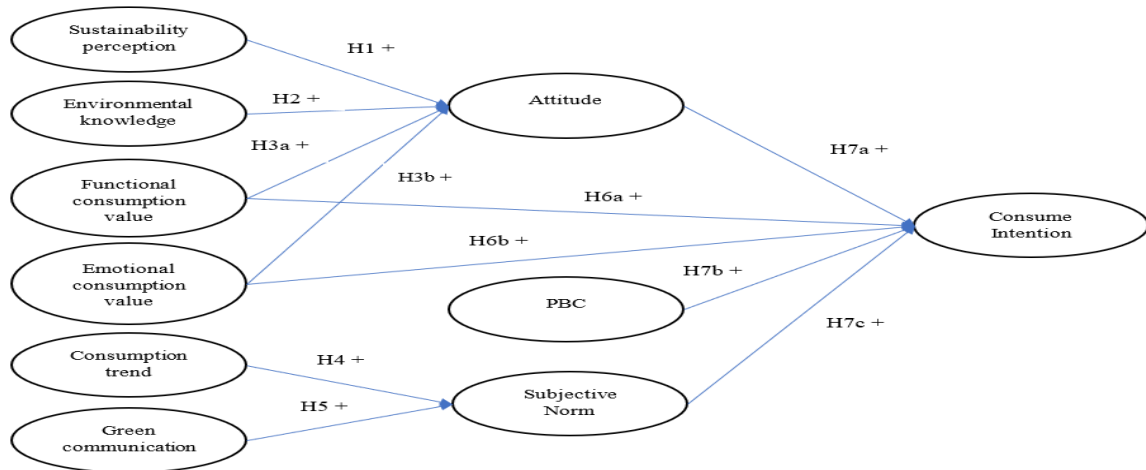


Fig. 1: Research Model (Authors' proposal, 2024).

3. Methodology

3.1. Research process

The research process includes three primary activities. Firstly, the research problems and research gaps were examined based on the literature review. Secondly, the author will propose the hypotheses development and the research model. Next, draft measurement scales were developed to measure the research variables. In this step, the measurement scales were adopted from previous well-established studies. Finally, a draft questionnaire was initially developed in English and later translated by the author into Vietnamese, using double- and reverse-translation procedures, in a coordinated manner for countries with language constraints.

3.2. Sampling method

To achieve the objectives of this study, it is crucial to select an appropriate sampling strategy. The efficacy of sample depends on a number of variables. In this research, the author will choose non-probability sampling. In non-probability method, respondents for study are selected at random by the researcher. This type of sampling is not a set or predetermined selection procedure. As a result, this makes it challenging for all components of a society to have equal chances of being included in a survey (Yin, 2003). Furthermore, this approach is efficient since neither the sample nor its selection criteria are unknown. In addition, researchers employ non-probability sampling to generate hypotheses. This strategy facilitates the quick return of data and lays the groundwork for future study (Denzin & Lincoln, 2000).

3.3. Sample size

According to Hair et al (2014), the minimum sample size to use EFA is 50, preferably 100 or more. The ratio of observations to an analytic variable is 5:1 or 10:1. "Number of observations" simply means the number of valid questionnaires required; "Measurement variable" is a measurement question in the survey. In this research, the final questionnaire has 52 questions using a 5-point Likert scale (corresponding to 52 observed variables of different factors), these 52 questions are used to analyze in EFA. Applying a 5:1 ratio, the minimum sample size will be $52 \times 5 = 260$, if the ratio is 10:1, the minimum sample size is $52 \times 10 = 520$. Hence, the total number of 350 samples are acceptable.

3.4. Participants and data collection

The data collection process was conducted via Google Forms in three months from September 2023 to December 2023. The participants consisted of students from many universities in Vietnam. Before

exporting the final version of the interview form, a pilot test was conducted involving a number of academic lecturers and experts in this field. This step guaranteed that the questions were formulated lucidly and comprehensibly for the respondents. The sampling process transpired in January 2024, with 380 samples. Of those responses obtained, 30 surveys still needed to meet the acceptance requirements. Therefore, we decided to eliminate these samples, leaving 350 selected samples to create the database necessary for future detailed analysis and evaluation.

3.5. Measurements

The authors adopted and revised the measurement items from previous studies and used a 5-point Likert scale (ranging from Strongly disagree to Strongly agree) for these measurement items. The measures of the relevant constructs for dependent variables were drawn from established measures or published research on similar subjects. Sustainability Perception includes five items from Liang et al. (2022). Environmental Knowledge, Functional Value, and Emotional Value have five items for each variable, adapted from Nekmahmud et al. (2022). Consumption Trend consists of five items adapted from Kumar et al. (2021). Green Communication has five items adapted from Shamsi et al. (2022). Attitude includes six items from Yadav and Pathak (2016) and Nekmahmud et al. (2022). Perceived Behavioral Control has six items adapted from Nekmahmud et al. (2022). Subjective Norm includes five items from Wang et al. (2022). Intention includes five items adapted from Shamsi et al. (2022). All items were modified to align with the context of our study.

In addition, the authors used SPSS 18.0 and SmartPLS 4.0 to analyze collected data and test hypotheses. Following the methodology proposed by Hair et al. (2017), construct reliability was determined through the evaluation of Composite Reliability (CR) and Cronbach's Alpha (CA). Descriptive statistical analyses conducted on SPSS were used to analyze demographic factors within the respondents' profiles. We employed Structural Equation Modeling (SEM) facilitated by the bootstrap procedure using SmartPLS to test the research hypotheses.

4. Results

4.1. Sample characteristics

In a survey of 350 participants, the gender distribution was relatively balanced with 47% males (n=164) and 53% females (n=186). The age distribution of the respondents varied, with 12% being 18 years old, 25% aged 19, 16% aged 20, 26% aged 21, and 21% older than 21 years. In terms of income, the majority of participants (26%) reported earning between 3-5 million VND per month, followed by 23% earning 5-7 million VND, 20% earning less than 3 million VND, 17% earning 7-9 million VND, and 14% earning more than 9 million VND.

These findings provide a comprehensive overview of the demographic and economic characteristics of the sample population, which can be valuable for further analysis and interpretation in the context of the study.

Table 1. Demographic statistic

Characteristics	Frequency (N=350)	Percent (100%)
Gender		
Male	164	47%
Female	186	53%
Total	350	100%
Age		
18 years old	43	12%
19 years old	86	25%
20 years old	57	16%
21 years old	93	26%
> 21 years old	71	21%
Total	350	100%

Characteristics	Frequency (N=350)	Percent (100%)
Income		
Less than 3 million VND/month	71	20%
3-5 million VND/month	92	26%
5-7 million VND/month	81	23%
7-9 million VND/month	59	17%
More than 9 million VND/month	47	14%
Total	350	100%

4.2. Reliability

Reliability means that an instrument's score is stable and consistent. The indicators measuring the reliability are Cronbach's Alpha value (α) and the CR-composite reliability. In which, the composite reliability (CR) represents the upper limit and Cronbach's Alpha represents the lower limit. The reliability will be in the middle of the two limits (Hair et al., 2017). In which, Cronbach's Alpha of 0.7 or higher is considered reliable and the composite reliability of CR of 0.7 or higher is considered acceptable.

During the data processing process for testing Factor Loading, we removed items with poor factor loading coefficients, resulting in Cronbach's Alpha and AVE being lower than the required level. After processing, we retained 49 items with satisfactory factor loading coefficients. All retained values range from 0.679 to 0.935, exceeding the minimum recommended threshold of 0.5 and so they are kept for further studies (Table 2).

For the reliability test, Cronbach's Alpha coefficient of all variables is in the range of 0.829 – 0.927, which is higher than the required value of 0.7. Composite Reliability results of the variables also have very good results when varying from 0.880 to 0.948, higher than the recommended value of 0.7. With the results of the convergence test, the AVE results of the variables are satisfactory – in the range of 0.595 – 0.821, which is higher than the recommended threshold of 0.5 (Table 2). Therefore, all variables have passed the reliability test and the convergence test, suitable for use in the following quantitative analysis.

Table 2. Measurement items and analysis results

Items	Cronbach's Alpha (>0.7)	CR (>0.7)	AVE (>0.5)
AT	0.863	0.901	0.645
CT	0.829	0.880	0.595
EK	0.913	0.935	0.741
EV	0.897	0.925	0.711
FV	0.845	0.906	0.762
GC	0.885	0.916	0.687
IT	0.900	0.923	0.666
PBC	0.874	0.905	0.615
SN	0.916	0.937	0.748
SP	0.927	0.948	0.821

4.3. Discriminant validity

The correlation coefficient is a specific measure that assesses the strength of a linear relationship between two variables in a correlation analysis. The value is always between -1 and 1 and measures both the magnitude and direction of the linear relationship between variables (Field, 2009). Positive coefficients represent a direct correlation and produce an upward slope on the chart and negative

coefficients represent an inverse correlation and create a downward slope on the chart. The correlation coefficient is best when it has a value between 0.4 and 0.7. In Table 3, we can see that most of the correlation coefficients have values from 0.425 to 0.700. That means the variables are medium-correlated. However, the correlation coefficient between Functional Value and Subjective Norm is 0.730, this is such a quite high correlation.

Table 3. Pair correlation matrix

	AT	CT	EK	EV	FV	GC	IT	PBC	SN	SP
AT	1.000									
CT	0.533	1.000								
EK	0.517	0.667	1.000							
EV	0.542	0.659	0.548	1.000						
FV	0.623	0.522	0.585	0.518	1.000					
GC	0.513	0.699	0.617	0.648	0.558	1.000				
IT	0.694	0.430	0.425	0.609	0.628	0.511	1.000			
PBC	0.564	0.674	0.558	0.700	0.635	0.592	0.664	1.000		
SN	0.682	0.557	0.548	0.557	0.730	0.620	0.677	0.677	1.000	
SP	0.426	0.684	0.662	0.678	0.469	0.625	0.485	0.677	0.501	1.000

In order to assure discriminant, the value of the discriminant reflecting the content of every observed variable must be distinct from the content of other variables. The study employed HTMT to assess discriminant validity. The Heterotrait-Monotrait ratio (HTMT) correlation method is an innovative method used to assess the accuracy of the discriminant (Henseler et al., 2015). In order to obtain a discriminant value between two latent variables, the HTMT index should not exceed 0.85 (Henseler et al., 2015). SMARTPLS places a high priority on the threshold of 0.85 during the assessment. Variables are classified as discriminant if their indices are below the threshold of 0.85 (Table 4).

Table 4. Heterotrait-Monotrait Ratio (HTMT)

	AT	CT	EK	EV	FV	GC	IT	PBC	SN	SP
AT										
CT	0.618									
EK	0.600	0.788								
EV	0.595	0.760	0.631							
FV	0.676	0.592	0.666	0.561						
GC	0.577	0.803	0.726	0.730	0.613					
IT	0.756	0.484	0.489	0.665	0.672	0.562				
PBC	0.633	0.797	0.672	0.788	0.683	0.672	0.724			
SN	0.752	0.620	0.639	0.606	0.778	0.678	0.724	0.742		
SP	0.474	0.805	0.772	0.771	0.527	0.719	0.542	0.799	0.558	

Notes: AT: Attitude; CT: Consumption Trend; EK: Environmental Knowledge; EV: Emotional Value; FV: Functional Value; GC: Green Communication; IT: Intention; PBC: Perceived Behavioral Control; SN: Subjective Norms; SP: Sustainability Perception.

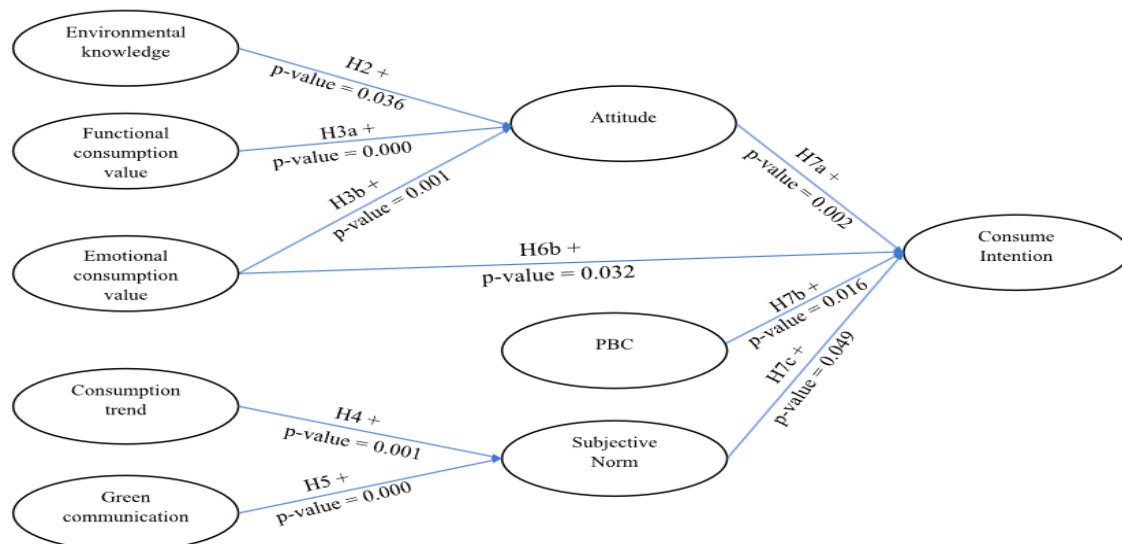
4.4. PLS-SEM

The p-value of the study hypothesis was calculated using the sample magnification approach in SmartPLS. The confidence interval frequently employed in marketing research is either 95% or 5%. This study will employ a 95% confidence level to evaluate the research hypotheses.

Table 5. Hypotheses Results

Hypothesis	Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	T statistics (O/STDEV)	P values	Result
H1	-0.071	-0.064	0.092	0.775	0.439	Rejected
H2	0.168	0.173	0.080	2.095	0.036	Supported
H3a	0.411	0.404	0.075	5.482	0.000	Supported
H3b	0.286	0.285	0.085	3.353	0.001	Supported
H4	0.242	0.245	0.073	3.322	0.001	Supported
H5	0.451	0.450	0.072	6.267	0.000	Supported
H6a	0.103	0.101	0.073	1.408	0.159	Rejected
H6b	0.147	0.150	0.069	2.148	0.032	Supported
H7a	0.327	0.323	0.104	3.140	0.002	Supported
H7b	0.204	0.207	0.085	2.408	0.016	Supported
H7c	0.158	0.160	0.080	1.974	0.049	Supported

In Table 5, the hypothesis testing results reveal that hypotheses H1 and H6a are rejected due to



their p-values (0.439 and 0.159, respectively) being above the 0.05 significance level, indicating non-significant effects. In contrast, hypotheses H2, H3a, H3b, H4, H5, H6b, H7a, H7b, and H7c are supported, with p-values below 0.05, signifying statistically significant effects. Specifically, H2, H3a, H3b, H4, H5, H6b, H7a, H7b, and H7c show p-values of 0.036, 0.000, 0.001, 0.001, 0.000, 0.032, 0.002, 0.016, and 0.049 respectively, confirming their significance.

Fig. 2: PLS-SEM results (Authors' calculation, 2024).

5. Discussions

Firstly, consumers' environmental knowledge will positively impact attitudes towards sustainable consumption ($p_{H2} < 0.05$). This result coincides with previous studies by Nekomahmud et al. (2022); Saari et al. (2021) and Gautam (2020). People who are more knowledgeable about environmental issues will have a more positive attitude towards environmentally friendly products and sustainable consumption (Gautam, 2020). Their environmental knowledge and positive attitudes about the environment, climate and health can even positively influence consumers' sustainable consumption intentions (Nekomahmud et al., 2022). For students, being provided with good environmental

knowledge will be positive for sustainable consumption attitudes, intentions and behaviors (Islam et al., 2021). Environmental knowledge can even make consumers give more priority to choosing environmentally friendly brands when shopping.

In addition, the functional value of the product positively impacts consumers' attitudes about sustainable consumption behavior ($pH3a < 0.05$). This coincides with previous studies by Moon et al. (2018); Rahayu and Khiswari (2023). Functional value is also the factor that has the strongest impact on consumers' attitude towards sustainable consumption among our variables. Ingredients from sustainable products make consumers believe that it is friendly to the environment and their health, so it has a positive influence on their attitudes about sustainable consumption (Handayani and Prayogo, 2017). For some sustainable products that can be used for a long time and even recycled, many people believe that purchasing these products helps them save in the long term (Bagozzi and Dabholkar, 1994).

Regarding emotional value, emotional value has a positive influence on both consumers' attitudes toward sustainable consumption ($pH3b < 0.05$) and sustainable consumption intention ($H6b < 0.05$). These findings are consistent with previous studies such as Ramkissoon et al. (2020); Joshi et al. (2021). The emotional values that consumers receive when practicing sustainable consumption will arouse their positive emotions, thereby promoting the way they perceive sustainable consumption as well as implement it (Ramkissoon et al., 2022). When buying sustainable products and consuming them, people perceive that these behaviors help them feel happy and responsible for the social environment. These are also the motivations (spiritual values, positive emotional values) that help them feel that they should perform this behavior (Joshi et al., 2021). Sustainable consumption also helps evoke ethics in consumers, helping them feel that they are actively protecting the environment and contributing to society, giving them a positive attitude about it as well as the intention to buy and use sustainable, environmentally friendly products (Verma and Chandra, 2018).

Moreover, Hypothesis 4 and Hypothesis 5 were accepted ($pH4 < 0.05$; $pH5 < 0.05$). Thus, subjective norm towards sustainable consumption is positively influenced by consumption trend and green communication. This result is similar to previous study by Cuomo et al. (2019). Consumption trends can affect consumers' subjective norms in different ways. When a sustainable consumption trend is taking place, perhaps starting from celebrities or influencers, it can impact everyone around the consumer, including friends, siblings, relatives, and contribute to forming positive opinions about sustainable consumption. These people will have an impact on consumer behavior, to some extent, in the form of a subjective norm (Ahmad et al., 2020). Likewise, green communication also impacts the perceptions of people around consumers. It can be advertisements about sustainable consumption, articles, or photos posted on social networks, and they all contribute to creating awareness, environmental standards and sustainable consumption behavior (Huang et al., 2016).

Additionally, the results show that all three factors Attitude, PBC and Subjective Norm have a positive influence on students' sustainable consumption intentions. This is consistent with previous studies that have applied the Theory of Planned Behavior in the context of sustainable consumption such as Nekomahmud et al (2022). Students' attitudes about environmental issues, as well as sustainable products, will positively influence their sustainable consumption intentions (Verma and Chandra, 2018; Ramkissoon, 2022). In particular, attitude is the factor that most strongly influences the intention to consume sustainably compared to other factors such as consumption values or PBC, subjective norms. Also, sustainable products are easily accessible, available at points of sale, and even affordable, increases students' sustainable consumption intentions (Frommeyer et al., 2022; Ramzan et al., 2021). Finally, subjective norms can be the opinions of people around about sustainable consumption, people's notions about environmental protection, which positively influence students' sustainable consumption intentions (Ali et al., 2023).

On the other hand, Hypothesis 1 was rejected ($pH1 > 0.05$). This is somewhat contrary to previous studies (Horng et al., 2022; Chen and Chai., 2010). We believe that this may be due to the

influence of other variables. Many people feel that their attitudes towards sustainable consumption, or towards purchasing sustainable products, are often influenced by their consumption values or needs rather than their perception of sustainability. Some previous studies with students in a Southeast Asian country also showed that students with a perception about sustainability have an average attitude towards sustainable consumption (Ahamad and Ariffin, 2018). However, there is still no research comparing the impact between sustainability perception and consumption values and this could be a direction for further research.

In addition, Hypothesis 6a is rejected ($p_{H6a} > 0.05$), meaning that functional value has no effect on purchase intention. Our finding also contrasts with previous study (Nekmahmud et al., 2022). A large number of our respondents view the quality of green, compostable products as inferior to conventional products due to their raw materials. In addition, our research was conducted on students, so price is also an issue that makes them unwilling to consume sustainably.

6. Conclusion

6.1. Theoretical contribution

The findings of this research have contributed additional understanding and affirmation to previously established models and theories, filling gaps with new variables and relationships while also opening up avenues for further research in sustainable consumption. The combination of the Theory of Planned Behavior (TPB) and the Theory of Consumption Value (TCV) is also a particular highlight of this study, offering more specific explanations and deeper insights into consumers' attitudes and behaviors related to sustainability consumption (Kumar et al., 2021; Liang et al., 2019).

Specifically, this research has reinforced several hypotheses from previous studies. Firstly, environmental knowledge positively influences consumers' attitudes, with those having a better understanding more likely to exhibit corresponding behaviors towards the environment. Secondly, consumption values, including functional and emotional values, are two influential factors that positively affect attitudes toward sustainable consumption (Ramkissoon et al., 2022). Both trends and communication impact consumers in various ways, but ultimately, they aim to establish common standards regarding environmental protection and sustainable consumption. Furthermore, the three factors in the TPB theory, attitude, subjective norm, and perceived behavioral control, positively influence students' intentions toward sustainable consumption (Ahmad et al., 2020).

Moreover, this study has uncovered a new finding that differs from previous research. The positive relationship between sustainability perception and attitude and the positive relationship between functional value and purchase intention was rejected (Horng et al., 2022; Chen and Chai., 2010). A plausible explanation for this is that product value influences consumer attitudes more than their perception of sustainability. Sustainable consumption behavior is influenced by various factors, each with different significance for different customer segments. For student consumers, functional value may be less pronounced due to the more decisive influence of other factors (Nekmahmud et al., 2022).

6.2. Practical implication

Regarding sustainability perception and environmental knowledge, all respondents acknowledged the importance of sustainable consumption, understood the harmful effects of plastic products, and expressed changes in their perspectives towards prioritizing long-lasting and environmentally friendly products. It is evident that education, from family, schools, and society, has been effective, with consumers, especially young people, becoming increasingly sensitive to environmental safety and considering long-term benefits when making consumption decisions. Hence, students need to get early education from schools and families to cultivate a proactive mindset, minimizing the consumption of environmentally harmful products. Also, brands and businesses should develop environmentally friendly certifications and concentrate on this factor and long-term value rather than

immediate benefits. Brands targeting students must also create student-friendly communication while effectively conveying sustainability messages. Consumers tend to feel happy and comfortable contributing to the environment while considering utility, function, and price values.

The conflicting reaction of functional value on purchase intention stems from the perception that green products may offer little benefits compared to their higher cost. To address this, investments in research and development to improve green product quality, safety, and functionality while reducing production costs are necessary for broader market adoption. Regarding consumption trends and green communication, these two factors have shown significant influence on the awareness and intention of students towards green consumption in various ways and to different degrees. Moreover, when communication spreads to friends and family, it will likely positively influence our attitudes. Communication can highlight the harmful effects of environmental degradation on individuals, families, and the world around us through figures and visual representations. In modifying students' purchasing behavior, the influence of peers and the university environment is significant in cultivating awareness of sustainable consumption and provides a compelling model that influences students' sustainability consumption. Creating an atmosphere that promotes environmentally friendly norms is necessary, along with providing education and guidance in sustainable consumption skills, can effectively encourage students' adoption of sustainable consumption intentions among students.

6.3. Limitation and Future Research

This study contributes to the understanding of sustainable consumption behavior among Vietnamese students by integrating the Theory of Planned Behavior and the Theory of Consumption Value. The findings highlight the significant roles of environmental knowledge, functional value, emotional value, consumption trends, and green communication in shaping attitudes and subjective norms towards sustainable consumption. Moreover, attitudes, perceived behavioral control, and subjective norms are found to be key determinants of students' intentions to engage in sustainable consumption.

The study offers several theoretical and practical implications. From a theoretical perspective, it demonstrates the applicability of integrating TPB and TCV in the context of sustainable consumption behavior. It also identifies the specific factors that influence Vietnamese students' attitudes, subjective norms, and intentions towards sustainable consumption. Practically, the findings suggest that educators and policymakers should focus on enhancing environmental knowledge, promoting the functional and emotional benefits of sustainable products, and leveraging consumption trends and green communication to encourage sustainable consumption among students.

However, our study has some limitations that need to be resolved in the future. Firstly, our research is aimed at individuals who are university students in Vietnam. This narrow demographic can limit the collection of various insights. Future research can expand the sample to all people in Vietnam, including all ages, jobs, and genders, to have a comprehensive picture of the sustainable consumption behavior of respondents in different groups. Secondly, in the qualitative research process, we discovered additional aspects within the functional value variable, such as price, quality of green products, and the durability of biodegradable products, which influence consumer attitudes when purchasing sustainable products.

Additionally, we also found that purchasing based on functionality affects consumer attitude. Future research should examine these variables more detail to clarify the factors affecting sustainable consumption intention. Thirdly, this study focuses on integrating the intention of sustainable consumption with the Theory of planned behavior (TPB) and the Theory of consumption value (TCV) to explain factors that affect consumers' sustainable consumption. Although this approach provides valuable insights, future research can explore more theoretical frames that are suitable for the context of sustainable consumption.

In conclusion, this study provides valuable insights into the determinants of sustainable consumption behavior among Vietnamese students. It highlights the importance of integrating different theoretical perspectives to gain a comprehensive understanding of this complex phenomenon.

The findings can inform the development of effective strategies and interventions to promote sustainable consumption among young consumers in Vietnam and beyond.

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References

- Amin, S., & Tarun, M. T. (2021). Effect of consumption values on customers' green purchase intention: a mediating role of green trust. *Social Responsibility Journal*, 17(8), 1320-1336.
- Ahmad, H., Markina, A. A., Porotnikov, M. V., & Ahmad, F. (2020, November). A review of carbon fiber materials in automotive industry. In *IOP Conference Series: Materials Science and Engineering* (Vol. 971, No. 3, p. 032011). IOP Publishing.
- Ahamad, N. R., & Ariffin, M. (2018). Assessment of knowledge, attitude and practice towards sustainable consumption among university students in Selangor, Malaysia. *Sustainable Production and Consumption*, 16, 88-98.
- Ali, O., Abdelbaki, W., Shrestha, A., Elbasi, E., Alryalat, M. A. A., & Dwivedi, Y. K. (2023). A systematic literature review of artificial intelligence in the healthcare sector: Benefits, challenges, methodologies, and functionalities. *Journal of Innovation & Knowledge*, 8(1), 100333.
- Ajzen, I., Czasch, C., & Flood, M. G. (2009). From intentions to behavior: Implementation intention, commitment, and conscientiousness 1. *Journal of applied social psychology*, 39(6), 1356-1372.
- Bagozzi, R. P. (2011). Measurement and meaning in information systems and organizational research: Methodological and philosophical foundations. *MIS quarterly*,
- Bagozzi, R. P., & Dabholkar, P. A. (1994). Consumer recycling goals and their effect on decisions to recycle: A means-end chain analysis. *Psychology & Marketing*, 11(4), 313-340.261-292.
- Bezençon, V., & Etemad-Sajadi, R. (2015). The effect of a sustainable label portfolio on consumer perception of ethicality and retail patronage. *International Journal of Retail & Distribution Management*, 43(4/5), 314-328.
- Brütting, J., Vandervaeren, C., Senatore, G., De Temmerman, N., & Fivet, C. (2020). Environmental impact minimization of reticular structures made of reused and new elements through Life Cycle Assessment and Mixed-Integer Linear Programming. *Energy and Buildings*, 215, 109827.
- Caniato, F., Caridi, M., Crippa, L., & Moretto, A. (2012). Environmental sustainability in fashion supply chains: An exploratory case. *International journal of production economics*, 135(2), 659-670.
- Caber, M., Albayrak, T., & Crawford, D. (2020). Perceived value and its impact on travel outcomes in youth tourism. *Journal of Outdoor Recreation and Tourism*, 31, 100327.
- Cuomo, M. T., Foroudi, P., Tortora, D., Hussain, S., & Melewar, T. C. (2019). Celebrity endorsement and the attitude towards luxury brands for sustainable consumption. *Sustainability*, 11(23), 6791.
- Edinger-Schons, L. M., Sipilä, J., Sen, S., Mende, G., & Wieseke, J. (2018). Are two reasons better than one? The role of appeal type in consumer responses to sustainable products. *Journal of Consumer Psychology*, 28(4), 644-664. Frommeyer et al., 2022
- Fornell, C., & Larcker, D. F. (1981). Evaluating structural equation models with unobservable variables and measurement error. *Journal of marketing research*, 18(1), 39-50.

- Frommeyer, B., Wagner, E., Hossiep, C. R., & Schewe, G. (2022). The utility of intention as a proxy for sustainable buying behavior—A necessary condition analysis. *Journal of Business Research*, 143, 201-213.
- Gautam, S. (2020). COVID-19: air pollution remains low as people stay at home. *Air Quality, Atmosphere & Health*, 13(7), 853-857.
- Haraty, R. A., & Bitar, G. (2019). Associating learning technology to sustain the environment through green mobile applications. *Heliyon*, 5(1).
- Hamari, J., Shernoff, D. J., Rowe, E., Coller, B., Asbell-Clarke, J., & Edwards, T. (2016). Challenging games help students learn: An empirical study on engagement, flow and immersion in game-based learning. *Computers in human behavior*, 54, 170-179.
- Handayani, W., & Prayogo, R. A. (2017). Green consumerism: an eco-friendly behaviour form through the green product consumption and green marketing. *Sinergi: Jurnal Ilmiah Ilmu Manajemen*, 7 (2), 25-29.
- Hair, J. F., Hult, G. T. M., Ringle, C. M., Sarstedt, M., & Thiele, K. O. (2017). Mirror, mirror on the wall: a comparative evaluation of composite-based structural equation modeling methods. *Journal of the academy of marketing science*, 45, 616-632.
- Henseler, J., Ringle, C. M., & Sarstedt, M. (2015). A new criterion for assessing discriminant validity in variance-based structural equation modeling. *Journal of the academy of marketing science*, 43, 115-135.
- Hoornweg, D., Bhada-Tata, P., & Kennedy, C. (2013). Environment: Waste production must peak this century. *Nature*, 502(7473), 615-617.
- Hong, J. S., Liu, C. H., Chou, S. F., Yu, T. Y., & Hu, D. C. (2022). Role of big data capabilities in enhancing competitive advantage and performance in the hospitality sector: Knowledge-based dynamic capabilities view. *Journal of Hospitality and Tourism Management*, 51, 22-38.
- Huang, Y. Q., Liang, C. H., He, L., Tian, J., Liang, C. S., Chen, X., ... & Liu, Z. Y. (2016). Development and validation of a radiomics nomogram for preoperative prediction of lymph node metastasis in colorectal cancer. *Journal of clinical oncology*, 34(18), 2157-2164.
- Hur, H., Sung, H., & Bessell, M. S. (2012). Distance and the initial mass function of young open clusters in the η Carina nebula: Tr 14 and Tr 16. *The Astronomical Journal*, 143(2), 41.
- Islam, T., Pitafi, A. H., Arya, V., Wang, Y., Akhtar, N., Mubarik, S., & Xiaobei, L. (2021). Panic buying in the COVID-19 pandemic: A multi-country examination. *Journal of Retailing and Consumer Services*, 59, 102357.
- Jiang, P., & Rosenbloom, B. (2005). Customer intention to return online: price perception, attribute-level performance, and satisfaction unfolding over time. *European journal of marketing*, 39(1/2), 150-174.
- Joshi, Y., Uniyal, D. P., & Sangroya, D. (2021). Investigating consumers' green purchase intention: Examining the role of economic value, emotional value and perceived marketplace influence. *Journal of Cleaner Production*, 328, 129638.
- Khan, S. N., & Mohsin, M. (2017). The power of emotional value: Exploring the effects of values on green product consumer choice behavior. *Journal of cleaner production*, 150, 65-74.
- Kumar, S., Sureka, R., Lim, W. M., Kumar Mangla, S., & Goyal, N. (2021). What do we know about business strategy and environmental research? Insights from Business Strategy and the Environment. *Business Strategy and the Environment*, 30(8), 3454-3469.

- Kumar, S., & Sreen, N. (2020). Role of internal and external values on green purchase. In *Green marketing as a positive driver toward business sustainability* (pp. 158-185). IGI Global.
- Legg, S. (2021). IPCC, 2021: Climate change 2021-the physical science basis. *Interaction*, 49(4), 44-45.
- Lai, C. S., Chiu, C. J., Yang, C. F., & Pai, D. C. (2010). The effects of corporate social responsibility on brand performance: The mediating effect of industrial brand equity and corporate reputation. *Journal of business ethics*, 95, 457-469.
- Lee, J. S., Hsu, L. T., Han, H., & Kim, Y. (2010). Understanding how consumers view green hotels: how a hotel's green image influence behavioural intentions. *Journal of sustainable tourism*, 18(7), 901-914.
- Liang, C., Umar, M., Ma, F., & Huynh, T. L. (2022). Climate policy uncertainty and world renewable energy index volatility forecasting. *Technological Forecasting and Social Change*, 182, 121810.
- Mohd Suki, N., & Mohd Suki, N. (2015). Consumers' environmental behaviour towards staying at a green hotel: Moderation of green hotel knowledge. *Management of Environmental Quality: An International Journal*, 26(1), 103-117.
- Moon, S., Neves, L., & Carvalho, V. (2018, July). Multimodal named entity disambiguation for noisy social media posts. In *Proceedings of the 56th Annual Meeting of the Association for Computational Linguistics (Volume 1: Long Papers)* (pp. 2000-2008).
- Nam, H., Ha, J. W., & Kim, J. (2017). Dual attention networks for multimodal reasoning and matching. In *Proceedings of the IEEE conference on computer vision and pattern recognition* (pp. 299-307).
- Naderi, I., & Van Steenburg, E. (2018). Me first, then the environment: Young Millennials as green consumers. *Young Consumers*, 19(3), 280-295.
- Netemeyer, R. G., Maxham III, J. G., & Pullig, C. (2005). Conflicts in the work-family interface: Links to job stress, customer service employee performance, and customer purchase intent. *Journal of marketing*, 69(2), 130-143.
- Nekmahmud, M., Naz, F., Ramkissoon, H., & Fekete-Farkas, M. (2022). Transforming consumers' intention to purchase green products: Role of social media. *Technological Forecasting and Social Change*, 185, 122067.
- Paco, A., Shiel, C., & Alves, H. (2019). A new model for testing green consumer behaviour. *Journal of cleaner production*, 207, 998-1006. Pagiaslis and Krontalis, 2014
- Peattie, K., & Belz, F. M. (2010). Sustainability marketing—An innovative conception of marketing. *Marketing Review St. Gallen*, 27(5), 8-15.
- Petty, R. E., Cacioppo, J. T., Petty, R. E., & Cacioppo, J. T. (1986). *The elaboration likelihood model of persuasion* (pp. 1-24). Springer New York.
- Ramkissoon, H., Nekmahmud, M., & Fekete-Farkas, M. (2022). Green purchase and sustainable consumption: A comparative study between European and non-European tourists. *Tourism Management Perspectives*, 43, 100980.
- Ramkissoon, H., Smith, L. D. G., & Weiler, B. (2013). Relationships between place attachment, place satisfaction and pro-environmental behaviour in an Australian national park. *Journal of Sustainable tourism*, 21(3), 434-457.

- Ramzan, M., Yuping, L., Xincheng, L., Murshed, M., Awosusi, A. A., Bah, S. I., & Adebayo, T. S. (2021). Determinants of carbon emissions in Argentina: The roles of renewable energy consumption and globalization. *Energy Reports*, 7, 4747-4760.
- Rahayu, S., & Khiswari, Z. (2023). Consumer Attitudes Towards Green Products: Exploration of the Role of Functional Values, Emotional Values, and Subjective Norms. *International Journal of Economics, Business and Accounting Research (IJEBAR)*, 7(4).
- Saari, U. A., Damberg, S., Frömbing, L., & Ringle, C. M. (2021). Sustainable consumption behavior of Europeans: The influence of environmental knowledge and risk perception on environmental concern and behavioral intention. *Ecological Economics*, 189, 107155.
- Shamsi, J. H., Al-Emran, M., & Shaalan, K. (2022). Understanding key drivers affecting students' use of artificial intelligence-based voice assistants. *Education and Information Technologies*, 27(6), 8071-8091.
- Schaefer, A., & Crane, A. (2005). Addressing sustainability and consumption. *Journal of macromarketing*, 25(1), 76-92.
- Sheth, J. N., Newman, B. I., & Gross, B. L. (1991). Why we buy what we buy: A theory of consumption values. *Journal of business research*, 22(2), 159-170.
- Tseng, L. M. (2016) & Yu, T. W. The role of salespeople in developing life insurance customer loyalty. *International Journal of Retail & Distribution Management*, 44(1), 22-37.
- Urh, B. (2015). Lifestyle of Health and sustainability-the importance of health consciousness impact on LOHAS market growth in ecotourism. *Quaestus*, (6), 167.
- Vantamay, N. (2018). Investigation and recommendations on the promotion of sustainable consumption behavior among young consumers in Thailand. *Kasetsart Journal of Social Sciences*, 39(1), 51-58.
- Verma, V. K., & Chandra, B. (2018). An application of theory of planned behavior to predict young Indian consumers' green hotel visit intention. *Journal of cleaner production*, 172, 1152-1162.
- Wang, H., Shen, M., Song, Y. A., & Phau, I. (2020). Do up-displayed eco-friendly products perform better? The moderating role of psychological distance. *Journal of Business Research*, 114, 198-212.
- Wang, Y., Kordi, Y., Mishra, S., Liu, A., Smith, N. A., Khashabi, D., & Hajishirzi, H. (2022). Self-instruct: Aligning language models with self-generated instructions. *arXiv preprint arXiv:2212.10560*.
- Saari, U. A., Damberg, S., Frömbing, L., & Ringle, C. M. (2021). Sustainable consumption behavior of Europeans: The influence of environmental knowledge and risk perception on environmental concern and behavioral intention. *Ecological Economics*, 189, 107155.
- Zabkar, V., & Hosta, M. (2013). Willingness to act and environmentally conscious consumer behaviour: can prosocial status perceptions help overcome the gap?. *International Journal of Consumer Studies*, 37(3), 257-264.
- Zhao, X., Zhou, Y., Yu, S., Jia, G., Li, H., & Li, W. (2019). Urban heat island impacts on building energy consumption: A review of approaches and findings. *Energy*, 174, 407-419.

Appendix

Appendix A. Final items for questionnaire

Construct	Number	Notation	Measurement
Sustainability Perception (SP)	1	SP1	Environmental sustainability is concerned with the maintenance of natural resources for future generations.
	2	SP2	The awareness of generations on environmental sustainability can minimize environmental impacts.
	3	SP3	Sustainability enables both resource conservation and environmental protection.
	4	SP4	The principle of fairness of sustainable consumption is manifested both between individuals within the same generation and between different generations.
	5	SP5	Green products emphasize the conservation and recycling of resources, environmental protection and human health.
Environmental Knowledge (EK)	6	EK1	I understand the harmful effects of plastic waste on the environment.
	7	EK2	I am very knowledgeable about environmental issues.
	8	EK3	Using environmental-friendly products/green products is one of the most effective ways to reduce pollution.
	9	EK4	Using environmental-friendly products/services is a substantial approach to minimizing waste of natural resources.
	10	EK5	Using environmentally sustainable products is one great approach to conserve natural resources.
Functional Value (FV)	11	FV1	I buy green products due to their consistent quality.
	12	FV2	I think green products have a quite good or acceptable standard of quality.
	13	FV3	I think the green products are good for the price.
	14	FV4	It is valuable to use the green products.
	15	FV5	I think using the green products will help me save money for the future.
Emotional Value (EV)	16	EV1	I feel as a better person when using the green products.
	17	EV2	I feel comfortable due to the contribution to the environment when buying and using the green products.
	18	EV3	I feel proud due to the contribution to the environment when buying and using the green products.
	19	EV4	I feel like I'm doing the right thing when buying and using the green products.
	20	EV5	Environmental-friendly products instead of conventional products would feel it is the morally right thing to do.
Consumption Trend (CT)	21	CT1	Common trend is switch to consuming green and environmentally friendly products.
	22	CT2	Society is tending to use renewable products.
	23	CT3	Sustainable consumption is trending.
Green Communication (GC)	24	GC1	Green communication provides sample content related to green consumption.
	25	GC2	I come across many posts on social media about green consumption.
	26	GC3	Green communication has enhanced people's knowledge about protecting the environment.
	27	GC4	I think green advertising is effective in influencing consumer purchase intention.
	28	GC5	People tend to support a brand that promotes environmental sustainability.
Attitude (AT)	29	AT1	To me buying sustainable consumption is very good.
	30	AT2	To me buying sustainable consumption is wisdom.

Construct	Number	Notation	Measurement
	31	AT3	To me buying sustainable consumption is favorable.
	32	AT4	To me buying sustainable consumption is pleasant.
	33	AT5	I am favorable to purchasing environmental-friendly products.
	34	AT6	I feel much better about myself when I purchase environmental-friendly products.
Perceived Behavioral Control (PBC)	35	PBC1	I usually have no problems in purchasing environmental-friendly products.
	36	PBC2	I have full control over whether or not I purchase environmental-friendly products.
	37	PBC3	It is completely up to me whether or not I purchase environmental-friendly products.
	38	PBC4	I have the time to purchase environmental-friendly products.
	39	PBC5	I have the opportunities to purchase environmental-friendly products.
	40	PBC6	I can afford slightly higher price to take environmental-friendly products.
Subjective Norms (SN)	41	SN1	Most people who are important to me think I should purchase environmental-friendly products.
	42	SN2	Most people who are important to me would want me to purchase environmental-friendly products.
	43	SN3	People whose opinions I value would prefer that I purchase environmental-friendly products.
	44	SN4	I believe that buying environmentally friendly products is a good example for others.
	45	SN5	Using environmentally friendly products is the right thing to do.
Consumption Intention (IT)	46	IT1	I will use environmental products for personal use.
	47	IT2	I expect to purchase green products to contribute to protecting the environment.
	48	IT3	I will make an effort to purchase environmental products.
	49	IT4	I intend to buy green products because of my environmental concern.