



# How Ho Chi Minh City students' green product consumption is affected by the application ICTs innovation nowadays: a case for Vietnamese business to enhance green product consumption by understanding the role of application ICTS.

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## Abstract

Green consumption is a consumption trend since environmental issues become a major concern for many countries. Vietnam has become a market where businesses carefully learn about the factors affecting the green consumption behavior of customers, especially university students. Along with the green wave, Information and Communication Technologies (ICTs) are considered a factor influencing green purchasing behavior. This article examines the role of perceived effectiveness, environmental concerns, and green consumption value in influencing students in Ho Chi Minh City to purchase green products with the moderating effect of application ICTs innovation. It builds upon existing research on the theory of planned behavior (TPB), and the theory of reasoned action (TRA) by providing insights into students' consumer behavior and offering management implications for the consumption practice of eco-friendly products.

We use the convenient sampling method to collect the primary data, then eliminate the incomplete response and unsuitable data and our research's sample size is 249 complete responses. We performed some tests like reliability testing Cronbach's Alpha scale; Exploratory Factor Analysis (EFA), Composite Reliability (CR), confirmatory factor analysis (CFA), convergent validity, Discriminant validity and SEM model test, Independent Sample T-Test, and One-way ANOVA. Finally, we have concluded that almost all hypotheses are supported but perceived effectiveness (FEE) has a positive impact on consumption attitude, Consumption attitude (AT) has a positive effect on consumption behavior of green products. In the end of our paper, we have some suggestions for businesses to know how to apply ICTs into attracting the customers to consume green products.

**Keywords:** Environmental concerns, green consumption value, green product consumption, ICTs innovation, perceived effectiveness

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## **1. Introduction**

### **1.1. Research statement and motivation**

Sustainability has emerged as one of the main themes of the modern era with many discussions focused on how sustainable consumption can help prevent negative environmental impacts (Dolan, 2002; Schaefer & Crane, 2005). Many studies have explored all major aspects related to sustainable consumption and production (Govindan, 2018; Stöckigt et al., 2019; Tseng et al., 2013). However, most studies have focused on either consumption or production individually, not both collectively. Nonetheless, the majority of research has concentrated on either production or consumption alone, not on both at the same time. This research topic delves into the intersection of environmental sustainability, consumer behavior, and digital innovation, against the backdrop of a world increasingly focused on sustainable practices and green consumption. The study zeroes in on students in Ho Chi Minh City, a city witnessing rapid development, burgeoning digital connectivity, and growing environmental consciousness.

The innovative application of Information and Communication Technologies (ICTs) has had a significant impact on people's lives and has become an important context for current theoretical research (Zhao et al., 2017). Based on the Attitude-Behavior-Context (ABC) theory (Guagnano et al., 1995), this study aims to explain the function and impact of ICTs innovation on an individual's choice to purchase environmentally friendly goods. The objective is to comprehend how ICTs innovation impacts these students' green product consumption, a crucial understanding for businesses aiming to effectively promote green products. The insights derived can guide businesses to align their strategies with consumer values and perceptions, thereby contributing to environmental sustainability. This topic is particularly germane in the current era marked by digital transformation and heightened environmental awareness. It adds value to the fields of green marketing, sustainable consumption, and digital business strategy. It also addresses the escalating environmental concerns and the value that consumers associate with green products, both proven influencers of green product consumption. The topic further explores the perceived effectiveness of green products and their actual environmental impact, factors that can significantly sway consumer purchase decisions. It also investigates the role of ICTs innovation in shaping green product consumption, offering valuable insights for businesses to bolster their digital strategies.

The emphasis on Ho Chi Minh City offers localized insights, vital for businesses operating in this region, which is making significant strides towards sustainable development. Ultimately, understanding these factors can aid businesses in enhancing their green product offerings, refining their marketing strategies, and fostering sustainable consumption. This topic not only enriches academic research in the field of green marketing and sustainable consumption but also offers practical insights for businesses seeking to promote green products.

## **2. Literature Review**

### **2.1. Theoretical framework**

The Theory of Reasoned Action (TRA), proposed by Martin Fishbein and Icek Ajzen in 1967, posits that behavior is influenced by an individual's intention, which is shaped by attitudes toward the behavior and subjective norms. This theory evolved into the Theory of Planned Behavior (TPB) by Ajzen in 1991 to address the limitations of TRA, particularly its exclusive focus on intention without considering behavioral control factors. TPB includes the TRA components of attitudes and subjective norms and introduces perceived behavioral control, which encompasses an individual's perception of their ability to perform the behavior and external factors influencing behavior. Thus, TPB offers a more comprehensive understanding of behavior by considering intention, social influences, and perceived control.

### **2.2. Literature review and hypothesis development**

#### **Concept of green products**

Many meanings of the word "green" have been discussed in many studies (e.g. Kleiner, 1991; McDonagh and Prothero, 1997; Miller and Szekely, 1995). McDonagh and Prothero (1996) identify several aspects of green, such as ecology, politics, social response of businesses, fair trade, conservation, non-profit, new consumerism, sustainability, and equality. However, there is still much confusion about what constitutes an environmentally friendly product (Baumann et al., 2002). According to Peattie (1995), a product is 'green' when "its environmental and social performance, during production, use, and disposal, is improved and improved significantly compared to other common or competitive products". This definition highlights the different stages of the life cycle during which a product can exhibit environmentally friendly features. That means green products are not only products with lower environmental impacts but also products that bring higher environmental benefits compared to conventional products (Dangelico et al., 2010). In another study, Albino et al.(2009)

pointed out that 'green products' are referred to as products designed to minimize environmental impact throughout their entire life cycle. As supposed by Peattie's (1995), which classifies products based on their ecological performance, distinguishing between different shades of 'green' (from dark green to black) and types of products (absolute green or relative green). Specifically, absolutely green products contribute to improving society or the environment, while relatively green products reduce the harm they cause to society or the environment.

### **Concept of green products consumption**

Peattie, 2010 indicated "consumption" involves some sort of devastation and "green" implies the preservation of environmental resources, the term "green consumption" by itself may be problematic.

In the context of green consumption research, **Antil.(1984), as well as, Antil & Bennett.(1979)** also supposed that the term "green consumption" refers to consumer purchasing and consuming practices that are connected to resource and environmental issues and are driven by concerns for the welfare of society as a whole in addition to the need to meet personal needs. This definition is similar to that for sustainable consumption declared by the United National Environment Programme in 1994 (cf. **Ceglia et al., 2015; Liu et al., 2017**).

### **Environmental Concerns (EC)**

The concept of environmental concern is mostly an operational definition, and different research has had different operational concepts (Yue et al.,2020). Scholars have found that individuals with a greater sense of environmental responsibility are more likely to demonstrate genuine concern, which translates into positive attitudes and intentions to purchase environmentally friendly products (Sadachar et al., 2016). In other words, a stronger sense of environmental responsibility will promote deeper concern about the environment, which directly affects consumers' attitudes. Therefore, the hypothesis formed is:

*Hypothesis 1.* Environmental concern is positively related to consumption attitudes of green products participating in environmentally responsible behaviors.

### **Green consumption value (GCV)**

As mentioned by **Zeithaml (1988)**, value is a person's assessment of the effectiveness of a product based on that person's perception of what is gained and what is lost. In other words, green consumer value refers to consumers' tendency to express

environmental protection values through their purchasing and consumption behavior (Rober et al. 2014). In a similar context, Han et al. (2018) described green value as a customer's cognitive assessment of the effectiveness of an environmentally friendly product/service on the basis of their perception of what is gained and what is sacrificed. Many previous studies (eg. Kunda, 1990; Haws et al.,2014) indicate that consumers with stronger green values tend to evaluate non-environmental attributes of green products more favorably, leading to a higher preference for these products. This phenomenon is attributed to motivated reasoning, within individuals interpreting information in a way that supports their existing beliefs. Therefore, the hypothesis formed is:

*Hypothesis 2.* Green consumption value positively influences the consumption attitude towards green products.

#### **Perceived effectiveness (FEE)**

Perceived effectiveness refers to customers' beliefs about the impact of their environmental conservation efforts/activities in minimizing harm to nature (Han & Yoon, 2015; Straughan & Roberts, 1999). Studies show that when consumers doubt the effectiveness of their green choices, they are less likely to engage in sustainable consumption behaviors. Perceived consumer effectiveness motivates consumers to translate positive attitudes toward sustainability into actual consumption actions. Research has established a direct link between perceived consumer effectiveness and environmentally and socially sustainable consumption practices such as purchasing organic foods, saving energy, and recycling. Factors such as perceived benefits, utility, fun, and ease of use contribute to individuals' decisions to engage in environmentally friendly consumption behavior. Thus, perceived consumer effectiveness is crucial for promoting greener attitudes leading to change in behavior, especially in the context of the growing sustainability movement. Therefore, the hypothesis formed is:

*Hypothesis 3.* Perceived effectiveness has a positive impact on consumption attitude towards green products.

#### **Consumption attitude of green products (AT)**

The definition of attitude is the favorable or unfavorable feelings associated with a certain action to carry out an activity. Additionally, attitude is defined as the evaluation of that activity, whether positive or negative. The term "attitude" refers to a group of thoughts, emotions, and actions that influence how people view and respond to others, circumstances, and events. It is also a psychological concept that has an

impact on one's ideas, feelings, and behavior. Many previous studies (eg. Higuera-Castillo et al., 2020; Ali et al., 2019; Bashir et al., 2019; Qi and Ploeger, 2019; Tan et al., 2019; Jaiswal and Kant, 2018; Lai and Cheng, 2016; Yadav and Pathak, 2016) have affirmed the key role of attitude in predicting consumers' intention to purchase green products, especially within the framework of the Theory of Planned Behavior (TPB). In other words, specific attitudes towards green shopping were identified as a stronger predictor of actual behavior than more general attitudes related to sustainability. (Paul et al., 2015, Geetika et al., 2017). Thus, improvements in consumer attitudes toward green products can lead to positive changes in intentions to engage in environmentally friendly consumption. Therefore, the hypothesis formed is:

*Hypothesis 4.* Consumption attitude of green products has a positive link to green purchase intentions to participate in environmentally responsible behaviors.

*Hypothesis 5.* Consumption attitude towards green products has a positive effect on consumption behavior of green products.

### **Environmental Concerns (EC)**

Environmental concern has been traditionally viewed as a unidimensional construct ranging from unconcerned about the environment at the low end to concerned at the high end, as measured by the new environmental paradigm (NEP) (Milfont and Duckitt, 2004). Hartmann and Apaolaza (2012) argue that there is a positive correlation between environmental concern and various actions, such as purchasing environmentally friendly products such as electric vehicles and biofuels, preferring green energy brands, and adopting environmentally responsible practices. Besides, environmental concern is associated with emotions, knowledge, and willingness to change behavior (Maloney et al., 1975). Put another way, a greater feeling of environmental responsibility will foster a more profound care for the environment, which in turn influences consumers' actions when they buy eco-friendly items. Therefore, the hypothesis formed is:

*Hypothesis 6.* Environmental concern significantly influences their intention to purchase green products.

### **The link between Green purchase intentions and Consumption behavior of green products**

According to Ajzen (1991), intentions include factors that can influence an individual's behavior. They are an indication of how much effort people are willing to put in, and how much effort they intend to exert to perform the behavior. As a general

rule, the stronger the intention to perform a behavior, the higher the likelihood of performing that behavior. Previous studies on consumer behavior towards green products in developed countries (eg. Ha and Janda, 2012, **Han et al., 2010, Kim et al, 2013, Kun-Shan and Teng, 2011**) emphasized Green shopper behavior is based on consumers' eagerness to buy green items. Furthermore, according to academicians and researchers (Ajzen, 1991; Taufique & Vaithianathan, 2018; Verma & Chandra, 2018), the theory of planned behavior (TPB) proposes purchase intentions, incorporated with a positive attitude, and determines consumer behavior. Within the setting of green items, Yadav and Pathak (2017) found back for a positive affiliation between behavioral eagerness and green buying behavior relationship between buying purpose and consumer behavior. Therefore, the hypothesis formed is:

*Hypothesis 7.* Green purchase intentions have a positive link to individuals' environmentally responsible consumption behaviors of green products.

#### **Perceived effectiveness (FEE)**

Gupta et al.(2009) indicated that perceived effectiveness is a critical variable influencing environmental behavior. According to previous studies (eg. Ellen, Weiner & Cobb-Walgren, 1991; Berger & Corbin, 1992; Roberts, 1996; Vermeir & Verbeke, 2006), it is fundamental to remind consumers to convert their positive attitudes into genuine purchases. Put another way, individuals with a positive state of mind for green utilization have a propensity to bolster green utilization behaviors more when they believe that they can make contribution to solving the environmental problem (Vermeir & Verbeke, 2006; **Cho, Thyroff, Rapert, Stop & Lee, 2013**; Lee, Kim & Choi, 2014). Therefore, the hypothesis formed is:

*Hypothesis 8.* Perceived effectiveness has a positive effect on the consumption behavior of green products.

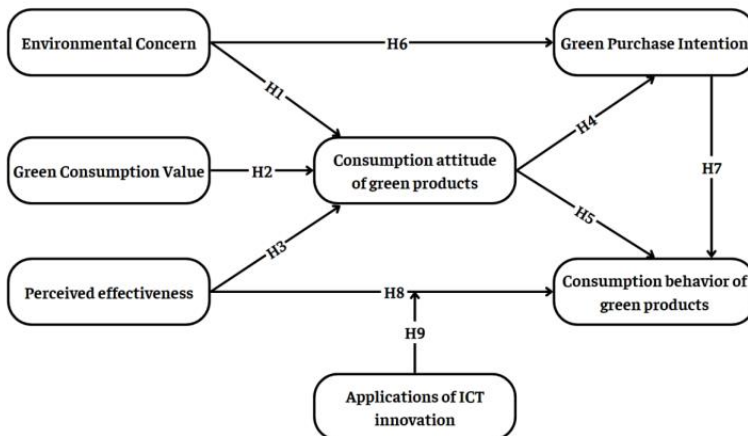
#### **The moderating role of ICTs in the relationship between Perceived effectiveness and Consumption behavior of green products.**

Over the years, information and communication technologies (ICTs) have improved the quality of life by becoming one of the important pillars of society. What is notable in the current context is the application of ICTs innovation to environmental protection. Based on the relationship applications among ICTs development, perceived effectiveness, and consumption behavior of green items, In spite of the fact that most scholars bolster that perceived effectiveness can advance an individual's utilization of eco-friendly items (Ajzen, 1985; Hiratsuka et al ., 2018). A few other researchers have

found that the relationship between the utilization behavior of eco-friendly items and factors such as the perceived effectiveness towards the environment is not critical. As such, a few researchers speculated that there could be a few components directing the relationship (Olson, 2013). The applications of ICTs development are thus the focus of this study, and its guiding influence on the relationship between an individual's perception and action is examined. Additionally, differences in media such as traditional platforms and emerging platforms, influence the relationship between individuals' perceived effectiveness and their actual behavior. (Adjei et al., 2010). Therefore, the hypothesis formed is:

*Hypothesis 9.* The applications of ICTs innovation play a moderating role in the relationship between the perceived effectiveness and consumption behavior of green products.

Based on the previous research models, the authors conducted scientific research to propose a research model for the topic “*How Ho Chi Minh City student's green product consumption is affected by application ICTs innovation nowadays: A case for businesses to enhance green product consumption by understanding the role of environmental concerns, green consumption value, and perceived effectiveness.*”. According to the figure:



**Figure 1. The research model proposed by the authors**  
(Source: The result from the authors' analysis)

### 3. Methodology and Data



### 3.1. Sampling method

Regarding Exploratory Factor Analysis - EFA: According to research by Hair et al.(2009) and **Hoang Trong and Chu Nguyen Mong Ngoc (2008)**, the formula is determined as follows:

$$N= 5*m$$

Where:

- m is the total number of observed variables in the study.
- N is the necessary sample size.

The authors decided to choose a representative sample of 257 students for the survey to obtain more precise results. After looking through incomplete response sheets and cleaning the data, the research sample kept 249 samples for analysis from students at universities in Ho Chi Minh City as a result of the survey.

### 3.2. Analytical plan

Following data cleansing and data entry on SPSS, the data analysis team performs the following steps: Cronbach's Alpha coefficient for all variables. Then we separately performed model analysis without moderating variables and the moderating role of ICTs. First, we put the results and data into Amos software to perform tests such as composite reliability (CR), Confirmatory factor analysis (CFA), Convergent validity, Discriminant validity, and SEM model test. Second, we analyze the moderating role of ICTs through Cronbach's Alpha coefficient, Exploratory Factor Analysis (EFA), and the moderating relationship of the ICTs test. Finally, we want to find out the differences between students studying at Universities in Ho Chi Minh City in their decision to consume green products. As a result, the authors conduct some t-tests in order to check the mean difference between each group of qualitative data.

### 3.3. Demographic Descriptive Statistics Results

After the authors eliminate unsatisfactory or duplicate answer samples, our sample comprises 249 valid participants who are students at Ho Chi Minh City, they are young individuals interested in or have knowledge about green products. There are 145 females, accounting for 58,2%, and 104 males, accounting for 41,8%. The participants who are in 4 batches come from many universities with the largest percentage of UEH University and followed by UFM, HCMUS, FTU2, UIT, FPT, and UEL with a decreasing percentage respectively.

**4. Results and Discussions**

**4.1. Reliability test: Cronbach’s Alpha**

The reliability of the scales used in the study was confirmed. All scales achieved a high level of reliability, with Cronbach's Alpha values ranging from 0.740 to 0.871 (higher than 0.7). Additionally, the observed variables within each scale demonstrated strong correlations, all exceeding 0.3, indicating that these variables are closely related and suitable for measuring their respective constructs. These reliable scales will be utilized in further analyses.

Objectives variable	Corrected item - Total correlation
Perceived effectiveness - FEE	0.829
Green consumption value - GCV	0.871
Environmental concern - EC	0.806
Consumption attitude of green products - AT	0.763
Green purchase intention - GPI	0.740
Consumption behavior of green products - BEH	0.844
Application of ICTs innovation - ICTs	0.786

**Table 1. Cronbach’s Alpha analysis results**

(Source: The result from the authors' analysis)

**4.2. Result of KMO and Bartlett Test**

<b>KMO and Bartlett's Test</b>		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy		0.874
Bartlett's Test of Sphericity	Approx. Chi-Square	2737.046
	df	351
	Sig.	0.000

**Table 2. Result of KMO and Bartlett Test**

(Source: The result from the authors' analysis)

By observing KMO and Bartlett's Test for independent variables table through EFA analysis, we have a KMO value equal to 0.874 in the range of (0.5; 1) and Sig. value equals 0.000 less than 0.05. As a result, the criteria have been satisfied. In other words, we accepted the null hypothesis H0: Observable variables in the factor have correlation with each other.

The 27 observable variables are grouped into 6 groups. The Total Variance Explained value is 62.526% greater than 50%. So we can conclude that these six factors explain 62.526% of the variation in the research data. In addition, the Eigenvalue index of the 27 observed variables, which are spread among six components, is higher than 1. The Loading Factor coefficients of the observable variables are all greater than 0.5.

**4.3. CFA Model**

After the authors performed CFA for the model, we obtained the following results:

- CMIN/df = 1.264 < 3.
- GFI (Goodness-of-Fit Index) = 0.895 > 0.8 (According to **Baumgartner, 1996 and Doll, 1992**)
- TLI rho2 (Tucker Lewis Index) = 0.963 > 0.9.
- CFI (Comparative Fit Index) = 0.967 > 9
- RMSEA (Root Mean Square Error of Approximation) = 0.033 < 0.05
- PCLOSE = 0.999 > 0.05.

Therefore, the authors concluded that the CFA model of our research is satisfactory.

**4.4. Composite reliability, discriminant and convergent validity of the measurement**

	CR	AVE	MSV	AT	GCV	FEE	BEH	EC	GPI
AT	0.764	0.519	0.213	0.721					
GCV	0.872	0.532	0.354	0.459	0.729				
FEE	0.831	0.502	0.149	0.202	0.386	0.709			

<b>BEH</b>	0.844	0.521	0.239	0.259	0.478	0.286	0.722		
<b>EC</b>	0.808	0.513	0.228	0.455	0.445	0.214	0.253	0.716	
<b>GPI</b>	0.739	0.510	0.354	0.462	0.595	0.247	0.489	0.478	0.714

**Table 3. Composite Reliability analysis results and discriminant validity analysis results**

(Source: The result from the authors' analysis)

- The authors obtained a Composite Reliability CR that is generally greater than 0.7. → So we conclude that the scales have high internal consistency reliability.
- All scales exhibit strong convergence and satisfy the necessary criteria ( $AVE > 0.5$ ).
- We can see from the table above that all MSV indicates are less than AVE. And the  $\sqrt{AVE}$  coefficient is greater than the remaining correlation coefficient. As a result, our scales ensure discriminant validity.

**4.5. SEM Analysis for the model without moderating variable**

	<b>Estimate (Standardized Regression Weights)</b>	<b>P</b>
AT ← EC	0.281	0.002
AT ← GCV	0.359	0.000
AT ← FEE	0.007	0.932
GPI ← AT	0.339	0.000
GPI ← EC	0.356	0.000
BEH ← AT	0.047	0.607
BEH ← FEE	0.203	0.005
BEH ← GPI	0.416	0.000

**Table 4. SEM model test results**

(Source: The result from the authors' analysis)

We see that the Sig value (P) of the two relationships between AT and FEE as well as AT and BEH respectively are 0.932 and 0.607, both Sig values are greater than 0.05. This means that those two variables have no relationship.

In addition, the estimated value of all relations is positive and Sig values are less than 0.05. As a result, all relationships are positive.

#### 4.6 Summary of SEM model without moderating variable results and topic hypotheses

<b>Hypothesis</b>	<b>The relationship content</b>	<b>Conclusion</b>
<b>H1</b>	Environmental concern is positively related to consumption attitudes of green products participating in environmentally responsible behaviors.	<b>Supported</b>
<b>H2</b>	Green consumption value positively influences the consumption attitude towards green products.	<b>Supported</b>
<b>H3</b>	Perceived effectiveness has a positive impact on consumption attitude towards green products.	<b>Unsupported</b>
<b>H4</b>	Consumption attitude of green products have a positive link towards green purchase intentions to participate in environmentally responsible behaviors.	<b>Supported</b>
<b>H5</b>	Consumption attitude towards green products has a positive effect on consumption behavior of green products.	<b>Unsupported</b>
<b>H6</b>	Environmental concern significantly influences their intention to purchase green products.	<b>Supported</b>
<b>H7</b>	Green purchase intentions have a positive link	<b>Supported</b>

	towards individuals’ environmentally responsible consumption behaviors of green products.	
<b>H8</b>	Perceived effectiveness has a positive effect on consumption behavior of green products.	<b>Supported</b>

**Table 5. Summary of research hypotheses without moderating relationship**

(Source: The result from the authors' analysis)

**4.7 Moderating Role of ICTs**

**Exploratory Factor Analysis for moderating variable**

After analyzing EFA for the dependent variable (ICTs1, ICTs2, ICTs3), we have a Total Variance Explained table. In this table, the Eigenvalue index is 2.112 greater than 1, and the Total Variance Explained is 70.388% greater than 50%. That means the statistics vary by 70.388%.

In the end, all 3 observed variables that were obtained through analysis satisfied the convergence and discriminant requirements. All observable variables are accepted and will be used in the next analysis.

<b>KMO and Bartlett's Test</b>		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy		0.697
Bartlett's Test of Sphericity	Approx. Chi-Square	220.336
	df	3
	Sig.	0.000

**Table 6. Result of KMO and Bartlett Test for moderating variable**

(Source: The result from the authors' analysis)

<b>Variable</b>	<b>Factor</b>
-----------------	---------------

ICTs1 - Low level of application of ICTs innovation	0.866
ICTs2 - Moderate level of application of ICTs innovation	0.837
ICTs3 - High level of application of ICTs innovation	0.813
Eigenvalue	2.112
<b>Total Variance Explained (%)</b>	<b>70.388</b>

**Table 7. The moderating variable's EFA result**

(Source: The result from the authors' analysis)

#### Analysis of the moderating relationship of ICTs by Amos

	<b>Estimate</b>	<b>P</b>
ZBEH ← ZFEE	0.287	0.000
ZBEH ← ZICTs	0.138	0.018
ZBEH ← MV	- 0.232	0.000

**Table 8. The moderating variable analysis result**

(Source: The result from the authors' analysis)

The value Sig. equals to  $0.000 < 0.05$  and the Estimate index = -0.232.

That means ICTs show a negative effect when moderating the relationship between Perceived effectiveness and Consumption behavior of eco-friendly products. In other words, a higher level of application of ICTs innovation leads to a decrease in the relationship from Perceived effectiveness to Consumption behavior of eco-friendly products.

#### 4.8. Mean Difference test by Independent Sample T-test and One-Way ANOVA

Testing the mean difference between the qualitative HCMC data on the decision on consuming green products was performed by using the Independent Sample T-test and

One-way ANOVA method. After analyzing by SPSS version 26 program, the authors have:

### **Gender**

After performing the Independent Sample T-test, we can conclude that the gender of students in HCM City has no influence on the Consumption behavior of eco-friendly products.

### **Students batch**

After performing the One-way ANOVA, we can conclude that the different batch of UEH students has an influence on the consumption behavior of eco-friendly products with a confidence level of 95%.

### **Income**

After performing the One-way ANOVA, we can conclude that different income levels don't have influence on the consumption behavior of eco-friendly products with a confidence level of 95%.

## **4.9. Discussion about the negative impact of the ICTs moderating variable results**

The growing global focus on environmental issues highlights the importance of awareness and behavior change. Since awareness is the foundation for action, information plays a critical role in shaping it. In simpler terms, the more people know about environmental challenges, the more likely they are to take action. In addition, the digital age is driven by information, with ICTs becoming essential for everything from shopping to manufacturing. This trend promises a modern and sustainable future, as shown by Vietnam's rapid growth in online consumers (from 28% in 2017 to nearly 50% in 2023). However, this surge in digital activity brings a significant challenge: information overload on digital platforms. Moreover, the success of translating environmental information into action requires balancing various interests. While ICTs offer the potential for eco-awareness, information overload and "greenwashing" can create distrust and hinder progress.

Social media trends, particularly those promoting individualism on platforms like TikTok, are negatively impacting environmental awareness among young Vietnamese people. This focus on self-interest overshadows environmental responsibility (FEE) and pro-environmental behavior (BEH). The high number of TikTok users in Vietnam (nearly 50 million) highlights the potential influence of social media in shaping young people's priorities. Besides, the widespread presence of green



movements online can backfire, creating a sense of passivity among viewers. Students, for example, may be exposed to numerous eco-friendly campaigns, but their consumption habits (like using plastic products) remain unchanged. This downplaying of individual impact ("broken window effect") undermines environmental efforts (FEE & BEH) despite the abundance of green information.

Therefore, we can state that: ICTs (Information and Communication Technologies) have a negative impact on BEH (Consumption behavior of green products) and FEE (Perceived effectiveness).

## **5. Conclusion**

### **5.1. Conclusion**

The research article "How Ho Chi Minh City students' green product consumption is affected by application ICTs innovation nowadays: A case for business to enhance green product consumption by understanding the role of environmental concerns, green consumption value, and perceived effectiveness." has almost achieved the set research goals. That is: the team built a successful research model to measure green consumption behavior for students in Ho Chi Minh City, learned about the role of each factor in the research, and also discovered some new points. In addition, the team performed testing to ensure the quality of the scale and measure factors in the model that have positive influences on the green consumption behavior of young people in Ho Chi Minh City. Specifically, the group's results are as follows: Student's green consumption behavior can be strongly promoted by building a strong enough green purchase intention as well as the perceived effectiveness of these products. In addition, we also know that this green purchase intention is also positively influenced by factors such as environmental concern, consumption attitude towards green products, and green consumption value. The consumption attitude factor doesn't have a direct positive impact on green consumption behavior, which is also consistent with the TPB theory that the group proposed previously. Additionally, the team also learned that factors such as gender and income do not influence green consumption behavior. However, there is one factor whose results go against the global trend: the moderating relationship of the ICTs factor on the relationship between perceived effectiveness and green consumption behavior. Therefore, the authors will have a small discussion to provide an explanation for this strange effect after surveying students in Ho Chi Minh City. Finally, there are some suggestions the group proposes to administrators through the research model to

promote more green consumption behavior in Ho Chi Minh City in particular and Vietnam in general.

## 5.2. Suggestions

The Information and Communications Technologies (ICTs) sector has grown rapidly over the last two decades and data flows are increasing exponentially. Accordingly, it can be said that the application of digital technology innovation is gradually becoming a global trend in many fields, not excluding the "green" context. In addition, previous green consumption studies in developed countries such as Europe or America have suggested that ICTs have a positive impact on people's green consumption values or environmental concerns. consumption, thereby increasing the intention to consume green products and leading to actual purchasing behavior. Placed in relation to green consumption in Vietnam, this research takes the survey subjects as students in Ho Chi Minh City. However, reality from survey data shows that innovation in ICTs applications has not really exploded to fully promote its regulatory role in the relationship between cognitive value and behavior. purchasing behavior in the context that the research is aiming at. Therefore, from the arguments made based on practical data as well as the current situation, the application of ICTs innovation is said to still face many limitations and barriers in developing countries like Vietnam, this project proposed a number of solutions to make the innovative application of ICTs become a tool to effectively promote the perception of consumers in general and students in particular with green products and consumer value. and protecting the environment in our country. To do this, it is necessary:

Firstly, strengthen ICTs in bringing product information to consumers. Websites, mobile applications, and social platforms create opportunities for consumers to access a diverse source of information about products, and consumers are allowed to rate and view reviews from other consumers. At the same time, there must be information about the origin, ingredients, production process, and "green" labels from reputable organizations.

Secondly, create an interactive experience with consumers. This aspect refers to the need to improve ICTs applications to allow users to interact with products in a more intuitive and interesting way. One thing is for sure, increasing interaction with products through ICTs applications will help consumers become clearer about product quality while increasing excitement and connection with it.

Thirdly, ICTs application platforms need to provide better services. This can promote automatic response features, answer questions, and handle consumer requests quickly and effectively. Optimizing the features of ICTs applications is extremely urgent, as this makes the purchasing experience smoother for consumers.

Fourthly, it is necessary to raise environmental concerns across communities and share information: innovative ICTs applications aim to provide consumers with opportunities to connect and share information and experiences about "green" products with each other. At the same time, through ICTs, it is possible to increase consumer concerns about the environment by providing information about programs that delve into the consequences of carbon emissions, and environmental pollution, or promotional programs. Encourage reuse and recycling, sending messages about the importance of green consumption to the living environment.

### **5.3. Limitations**

Due to the limited experience, the time to conduct the survey is still urgent, so there are still shortcomings in the research paper. First, the research topic is new and there isn't a lot of existing information on ICTs in this area. The second limitation comes from the author's reliance on convenient methods, the chosen participants likely don't accurately reflect the entire population of Ho Chi Minh City. In addition, we may have chosen to exclude some aspects of green consumption to simplify the research and make it more manageable for the team. In Vietnam, some of the questions might not be relevant to the specific context and cultural aspects.

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