

Factors Influencing Green Purchase Intention of Students: A Case Study at Vietnam National University of Agriculture

Chu Thi Kim Loan

Faculty of Accounting and Business Management, Vietnam National University of Agriculture, Hanoi 131000, Vietnam

Abstract

The objective of the paper was to analyze factors influencing the green purchase intention of students through a case study at the Vietnam National University of Agriculture (VNUA), Hanoi, Vietnam. The primary data were collected from a survey of 121 undergraduate students in 2020. The study employed descriptive statistics, exploratory factor analysis (EFA), and multiple regression analysis. The survey indicated that VNUA students were highly concerned about the environment. Their green buying intention was significantly and positively affected by two groups of factors, including: (i) social influence and product knowledge; and (ii) environmental concerns and subjective norms; in which, the later group of factors has shown greater effects in this study. The study would help managers in formulating and implementing key measures to encourage students' green purchase.

Keywords

Green purchase intention, students, factor scores, multiple regression

Introduction

Today, environmental problems are still the main worry for the whole world and human beings. Air pollution, conservatory effects, and ecological unbalance are the main environmental problems that have occurred so far as the consequences of human activities (Sharma, 2011). Humans now have to face environmental pollution and suffer from severe climate change. An image of a dead whale with 40kg of plastic bags inside its stomach in the Philippines (Dalton, 2019), or the status of worse drought and salinity in **Vietnam's** Mekong Delta last year, etc., has raised an urgent warning bell about environmental problems. People need to take prompt actions against the widespread use of environmentally unfriendly products. In other words, both producers and consumers should pay more attention to green products, of which consumers play a large role in environmental protection. This is supported by the evidence

Received: July 28, 2020
Accepted: November 14, 2020

Correspondence to
ctkloan@vnua.edu.vn

that 30-40% of environmental degradation has been brought about by the consumption activities of private households (Grunert, 1993). According to Bray *et al.* (2011), although the number of individuals willing to purchase green products has increased in the last few years, there is little evidence to suggest that purchase of green products has increased; despite environmental concern and positive attitude of customers towards sustainability and green products, market share of green products remains confined to just 1-3% of the entire market.

In Vietnam, the government has been implementing a number of activities related to sustainable production and consumption. Some documents were signed and enacted such as the International declaration and national action plan on sustainable production and consumption; the Law No. 50/2010/QH12 on economical and efficient use of energy; and Decision No. 1393 on National strategy on green growth for the 2011-2020 period with a vision to 2050; etc. Despite being in place, their actual effectiveness at the implementation level was still limited (Hoang Thi Bao Thoa, 2016). Reitman (1992) also found that producers have reacted to consumers' growing environmental consciousness by developing green products. Nevertheless, only a few green products have been successfully developed. In another study, Kirmani & Khan (2016) emphasized that, "*As of now, green products are expensive due to lack of economies of scale and slow adoption of cutting edge green technology. Hence, there is a pressing need to identify factors that can influence consumers' decision to pay a premium for the purchase of green products*".

Vietnam National University of Agriculture (VNUA) is the leading national university in human resource training and research on agriculture and rural development which is considered to be a large-scale multi-disciplinary university in Vietnam. VNUA annually enrolls around 6,000 undergraduate freshmen and roughly 1,200 other candidates (VNUA, 2020). The total numbers of VNUA's undergraduate students in April 2020 were about 18,600 (FABM, 2020). This also implies that their demand for shopping is large. Generally,

students are often said to be future owners of the country. They are young, dynamic, and ambitious. Ottman *et al.* (2006) and Tai & Tam (1997) believed that young people are more ready than older generations to accept new and innovative ideas. Moreover, supporters of environmental protection tend to be younger (Martinsons *et al.*, 1997). Therefore, students' knowledge, concern, and behavior towards green products play an important role in sustainable development. In Vietnam, there have been some researchers conducting studies related to this topic. For example, Hoang Trong Hung *et al.* (2018) analyzed factors affecting consumers' green purchase behavior in Hue city; Nguyen The Khai & Nguyen Thi Lan Anh (2016) studied consumers' green purchase intention in Ho Chi Minh city; etc. However, they mainly focused on interviewing consumers. Therefore, this research was conducted to explore factors influencing green purchase intention of students and to make some recommendations to encourage students' green buying.

Methodology

Theoretical background

Definitions of green products and green purchase intention

The concept of a green product or environmentally friendly product has been mentioned by some previous researchers. According to Shamdasani *et al.* (1993), a green product is one which satisfies consumers' needs without damaging the environment and contributes towards a more sustainable world. These products are environmentally superior and have a low environmental impact. Chen & Chai (2010) showed that green products use materials safer to the environment, are recyclable, and require less packaging.

Green purchase intentions refer to an individual's readiness to perform green buying behavior, mainly reflecting the consideration of less pollution. It is assumed to be an immediate antecedent of behavior (Wang *et al.*, 2019).

Factors affecting green purchase intention in previous studies

According to previous studies, green purchase intentions were affected by different factors, including environmental concerns, product knowledge/information, subject norms, social influence, environmental attitude, perceived behavior control, availability of products, and perceived consumer effectiveness, etc. (Joshi & Rahman, 2015). Their influence levels on green buying intention were found to be different in various studies.

Hessami & Yousefi (2013) argued that environmental concerns could be defined as an attitude towards environmental consequences. This attitude is influenced by direct personal experience, the experience of other people, and media's news. Consumers with a stronger concern for the environment are more likely to purchase products as a result of their environmental claims than those who are less concerned about environmental issues (Mainieri *et al.*, 1997). Environmental concern is a main and determinant factor in purchasing green and organic food in a number of studies (Grunert, 1993). Laroche *et al.* (2001) also pointed out that consumers with higher levels of environmental concerns would be more likely to exert environmentally friendly consumption.

Green product knowledge refers to subjective knowledge that is the consumers' understanding of the environmental attributes and environmental impacts of green products (Wang *et al.*, 2019). Barrutia & Gilsanz (2013) figured out that consumers' product knowledge could directly influence their cognition of product attributions and evaluation criterion, which would further influence consumers' abilities to collect and handle information. As stated by Wang *et al.* (2019), some previous studies also pointed out that green product knowledge is often regarded as a direct predictor of green purchase intention, which implies the assumption that consumers with green product knowledge will buy green products.

Social influence refers to the effects of the social environment on consumers' green purchasing behavior. That is, how much the person gains knowledge about green products through his/her family, how much he/she

discusses about environmental products with his/her friends, and how much he/she shares information about green products with their family (Finisterrado & Raposo, 2004). Perceived behavioral control refers to the capacity of an individual to perform a given behavior (Ajzen, 1988). The results of a review by Joshi & Rahman (2015) showed that perceived behavioral control, subjective norm, and social influence had positive effects on green purchase intention in some previous studies such as Tarkiainen & Sundqvist (2005) and Kang *et al.* (2013). In addition to these factors, the availability of organic food was found to be one of the independent variables in the studies by Tarkiainen & Sundqvist (2005) and Vermeir & Verbeke (2008). Another factor, namely perceived consumer effectiveness (PCE), was also pointed out to positively affect green purchase intention in the research of Gupta & Ogden (2009) and Gleim *et al.* (2013), etc.

Research model

Hypothesis

Based on the above discussions and characteristics of the study site, a research model was developed as shown in **Figure 1**. All of these factors were hypothesized to positively influence green purchase intention of the students studying at the Vietnam National University of Agriculture.

Observed variables

Most dependent variables were inherited from previous studies and were adjusted to better match the specific conditions of the study site. Specifically, they were mainly developed based on the studies of Kim & Choi (2005), Chen & Deng (2016), Puspitasari *et al.* (2018), and Hoang Trong Hung *et al.* (2018). Few other indicators were developed from discussions with Vietnamese specialists and students. All of the variable indicators were pretested before the official survey so that some necessary modifications could be performed. Finally, six dependent variables with 24 items were chosen (**Table 1**).

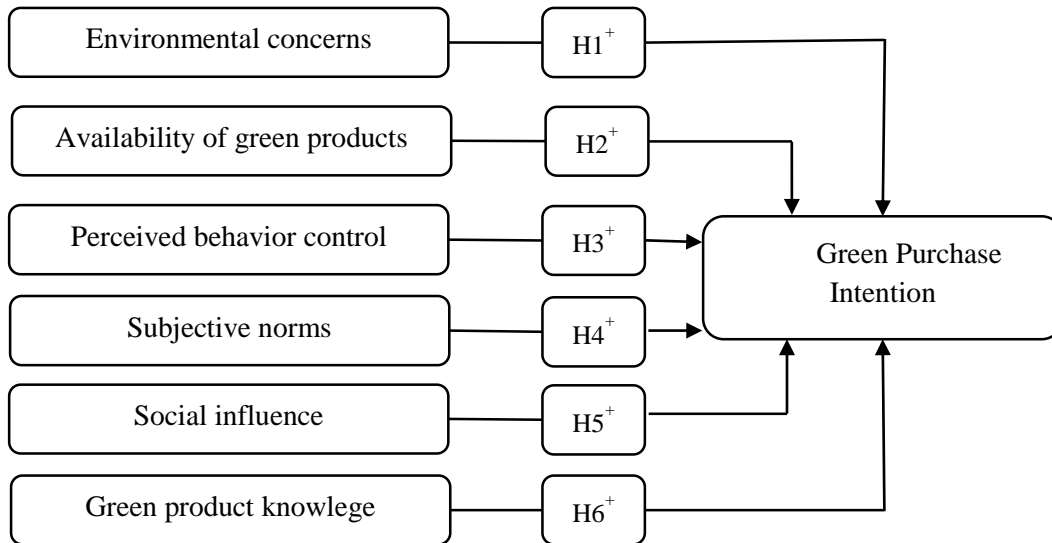


Figure 1. Research model

The indicators of the dependent variable (GPI) were mainly derived from the studies of Chen & Deng (2016) and Puspitasari *et al.* (2018). The five-point Likert scale between 1 to 5 was used to measure the observed variables.

Data collection and analysis

Data collection

For the sample size, Hair *et al.* (1995) indicated that as a general rule, the minimum is to have at least five times as many observations as there are variables to be analyzed, and the more acceptable range would be a ten-to-one ratio. In another case, Hair *et al.* (2010) suggested that sample sizes should be 100 or more. Based on these arguments, and due to the cost and time limitation, with 24 independent variables used for the EFA, the expected number of samples for this study would be 140. Only undergraduate students were chosen for the survey by convenience sampling method. An online survey was conducted in April and May 2020 to collect the primary data. A total of 135 questionnaires was obtained, of which only 121 were considered valid.

A questionnaire-based Google form was sent to the students via their emails and Microsoft Teams platform. The questionnaire consists of two parts: personal information and students' evaluation related to the green purchase. The second part consists of seven categories. Each

category contains a minimum of three statements up to a maximum of five ones. For each statement, respondents have five options to express their level of agreement: Strongly disagree, disagree, undecided, agree, and strongly agree. The respondents were required to choose only one option for each statement. Afterwards, an average point was calculated for each statement and each category separately, with 1 being the possible minimum result and 5 being the maximum possible result. The result was then concluded with an overall average.

Data analysis

(i) Descriptive statistics

Descriptive statistics in the form of percentage, mean, and frequency was used to analyze respondents' demographic characteristics and their evaluation toward green purchase.

(ii) Test of Cronbach's Alpha reliability

Cronbach's coefficient alpha is a measure of internal consistency or how closely related a set of items are. It eliminates unsatisfactory observation variables or scales in the survey. Variables that item-total correlation coefficient is less than 0.3 will be crossed out and the standard scale is Cronbach's alpha greater than or equal to 0.6 (Peterson, 1994).

(iii) Exploratory Factor Analysis (EFA)

Table 1. Variables of the research model

Variables (factors)	Variable Indicators	Code	Source
Environmental concerns (EC)	I am worried about the deterioration of Vietnam's environment.	EC1	Puspitasari <i>et al.</i> (2018) (Revised)
	Mankind is severely abusing the environment.	EC2	Kim & Choi (2005)
	Environmental pollution can only be eliminated when we work together.	EC3	Hung <i>et al.</i> (2018)
	When humans interfere with nature, it often produces disastrous consequences.	EC4	Kim & Choi (2005)
	Humans must live in harmony with nature in order to survive.	EC5	Kim & Choi (2005)
Availability of green products (AV)	Green products are available at the common stores where I usually do my shopping.	AV1	Paul <i>et al.</i> (2016)
	I know where green products are sold.	AV2	Hoang Trong Hung <i>et al.</i> (2018) (Revised)
	I do not find any inconvenience when purchasing green products instead of ordinary non-green products.	AV3	Hoang Trong Hung <i>et al.</i> (2018) (Revised)
Perceived behavior control (PBC)	I cannot decide whether to buy a green product.	PBC1	Chen & Deng (2016)
	Buying habits will have a strong impact on decision making.	PBC2	Chen & Deng (2016)
	I have time to search and consider buying green products.	PBC3	Hung <i>et al.</i> (2018)
Subjective norms (SN)	Environmental issues are very important to me.	SN1	Chen & Chai (2010)
	I think green products more in line with the wishes of my relatives and friends.	SN2	Chen & Deng (2016)
	I think green products are consistent with the trend of social development.	SN3	Chen & Deng (2016)
	I think green products are more in line with my moral values.	SN4	Chen & Deng (2016)
Social influence (SI)	I discuss with my friends about green products.	SI1	Lee (2008)
	Most of my relatives advised me to green consumer products.	SI2	Developed
	Mass media in Vietnam provide much information about green products.	SI3	Developed
	Vietnamese government is encouraging people to buy green products.	SI4	Developed
	I learn a lot about green products from my relatives and friends.	SI5	Puspitasari <i>et al.</i> (2018)
Green product knowledge (PK)	I am familiar with green products.	PK1	Chen & Deng (2016)
	Green products are harmless to human and environment.	PK2	Developed
	I believe in testing and identifying green products that are implemented by certification organizations.	PK3	Chen & Deng (2016)
	I know information about green products.	PK4	Puspitasari <i>et al.</i> (2018)
Green purchase intention (GPI)	I intend to buy a green product because it reduces pollution.	GPI1	Puspitasari <i>et al.</i> (2018)
	Comparing with ordinary non-green products, I am more willing to buy green products.	GPI 2	Chen & Deng (2016)
	I will suggest my relatives and friends buy green products.	GPI 3	Hoang Trong Hung <i>et al.</i> (2018)
	Next time I go shopping, it is very likely that I would choose green products.	GPI 4	Chen & Deng (2016)

Factor analysis is often used to identify a small number of factors that explain most of the

variance embedded in a large number of variables. According to Izquierdo *et al.* (2014),

Table 2. Five-point Likert scale

Mean	Level	Mean	Level
1.00 - 1.80	Strongly disagree	3.41 - 4. 20	Agree
1.81 - 2.60	Disagree	4.21 - 5.00	Strongly agree
2.61 - 3.40	Undecided		

the first step in conducting an EFA is to determine whether or not the data collected are adequate for this type of analysis, specifically determining whether the data are factorable. The first of these is the Kaiser-Meyer-Olkin (KMO) test that yields a qualitative index of the strength of relationship among variables based on zero-order and partial correlations while measuring sampling adequacy for each variable and the overall model. KMO test values range between 0 and 1, with higher numbers representing greater adequacy. The second a priori analysis is Bartlett’s test of sphericity that estimates the degree to which the intercorrelation matrix produced is an identity matrix.

Standards applied for the EFA in this study are as follows: (1) If the value of KMO is higher than 0.5, the EFA will be appropriate; (2) All variable with communalities less than 0.50 do not have sufficient explanation; (3) The numbers of factors are determined based on the eigenvalue index. The factors with eigenvalue less than 1 will be excluded from the research model; (4) Total variance explained must be greater than 50%; (5) In a sample size of 120, a factor loading of 0.50 is requested for significance (Hair *et al.*, 1995).

The EFA was used to reveal the number of factors and variables that belong to specific factors as follows:

$$F_i = w_{i1}X_1 + w_{i2}X_2 + \dots + w_{ik}X_k$$

Where, F_i is the factor estimation

w_{ik} is the weight or factor score coefficients

k is the number of variables

(iv) Multivariate regression analysis

The study used regression analysis to estimate the influences of different factors on students’ green purchase intention. The regression equation has the following form:

$$Y = b_0 + b_1F_1 + \dots + b_nF_n + u$$

Where, Y is the students’ green purchase intention;

$b_0, b_1, b_2, \dots, b_n$ are the estimated coefficients;

F_1, F_2, \dots, F_n are the factors affecting students’ green purchase intention (identified after an application of EFA);

u is the stochastic error term.

Results and Discussion

Overview of the respondents

Among the total of 121 respondents, the percentages of males and females were approximately 72% and 28%, respectively (**Table 3**). About 66% of the total sample were third- and fourth-year students. The monthly average income of the surveyed students mainly ranged from 1.5 to 3.0 VND million. In addition to family allowance, some students had a part-time job, so their income could reach over 3 VND million.

Based on VNUA’s secondary data of April 2020, the percentage of the first-year students was quite similar to that of the second-, third- and fourth-year students (e.g., from 20.1 to 28.7%). The number of over fourth-year students accounted for only 6.5% of the total population. As compared to the population’s characteristics, the ratio of the first-year students in the sample was much lower. Regarding gender, the ratio of surveyed male students was also lower than that of the population (e.g., 28% as compared to 45%). This can be explained by the fact that the study employed convenience sampling, thus the representative of the sample was affected.

Factors affecting students’ green purchase intention

Testing the reliability of scales and observed variables in the model

Table 3. The descriptive statistics of the sample

Item	Quantity (persons)	Percentage (%)
1. Gender		
Female	87	71.9
Male	34	28.1
2. Student year		
1st year	7	5.8
2nd year	26	21.5
3rd year	45	37.2
4th year	35	28.9
Over 4 th year	8	6.6
3. Average income (million VND per month)		
< 1.5	16	13.2
1.5 – 2.0	31	25.6
2.0 – 2.5	21	17.4
2.5 - 3.0	25	20.7
Over 3.0	28	23.1

Source: FAOSTAT (2018) and our calculations.

Reliability statistics was obtained by analyzing the collected data using SPSS software. The results showed that the factor of PBC had a Cronbach's alpha of 0.546 and the corrected item-total correlation coefficient of PBC_1 was only 0.14. Therefore, PBC_1 was deleted from the model. After that, the reliability test of PBC was performed again. The Cronbach's Alpha coefficients of 7 factors are shown in **Table 4**. All of the Alpha coefficients were greater than 0.6 and the total correlation coefficients of observed items were all greater than 0.3 (the lowest value was 0.334 for AV_1). Thus, it can be concluded that the scales for all measured factors were reliable and appropriate, and then continued to be used in factor analysis.

Exploratory factor analysis

The factor extraction method used in this study is the Principal component with Varimax rotation to extract the smallest number of factors.

Regarding the independent variables, the first EFA result indicated that 6 initial factors were grouped into four factors, which were extracted at

eigenvalue of 1.161. However, the item of SI_1 had a communality of 0.458 (lower than the acceptable level of 0.50). After that, the EFA continued to be implemented with the remaining items. SN_2 had the same problem as SI_1 (its communality was 0.498), so it was removed. Finally, the EFA results are shown as follows: The value for KMO was 0.877, the Bartlett's Test had a significant value at below 0.001; all of the remaining items with communalities were greater than 0.50; the factors were extracted at eigenvalue of 1.117 and the sum of extracted variance was 67.06%; the individual factor loadings were more than 0.50. Therefore, factor analysis could be conducted successfully for data reduction. The rotated factor matrix validated the underlying dimensions of independent variables into 4 major dimensions (**Table 5**). Two items of SN, namely SN_1 (Environmental issues are very important to me) and SN_3 (I think green products are consistent with the trend of social development), were grouped into the same dimension as EC. Then, the four significant factors were named social influence and product knowledge (10 items),

Table 4. Cronbach's Alpha coefficients of the factors

Factors	Cronbach's alpha (α)	Number of items
Environmental concerns (EC)	0.902	5
Availability of green products (AV)	0.629	3
Perceived behavior control (PBC)	0.772	2
Subjective norms (SN)	0.838	4
Social influence (SI)	0.816	5
Product knowledge (PK)	0.805	4
Green purchase intention (GPI)	0.946	4

Table 5. Rotated component matrix of the independent variables

New names of the factors	Item	Component			
		1	2	3	4
Social influence and product knowledge (F ₁)	SI ₅	0.788			
	SI ₂	0.781			
	PK ₄	0.750			
	PK ₁	0.748			
	PK ₃	0.726			
	SI ₃	0.700			
	PK ₂	0.671			
	SI ₄	0.619			
	AV ₁	0.560			
Environmental concerns and subjective norms (F ₂)	SN ₄	0.541			
	EC ₃		0.876		
	EC ₅		0.833		
	EC ₁		0.807		
	EC ₂		0.777		
	EC ₄		0.749		
	SN ₃		0.633		
Product availability (F ₃)	SN ₁		0.561		
	AV ₂			0.888	
	AV ₃			0.648	
Perceived behavior control (F ₄)	PBC ₃				0.860
	PBC ₂				0.753

environmental concerns and subjective norms (7 items), product availability (2 items), and

perceived behavior norms (2 items). Four of these factors were hypothesized to have a

positive and significant impact on green purchase intention of the students.

With regard to the dependent variable, the EFA showed that the KMO was 0.85, the Bartlett's test was significant (Chi-square = 466.78, $P < 0.001$). Four items converged into one dimension with the extracted variance total of 86.09%, which then was still named green purchase intention (GPI).

Students' evaluation of factors affecting green purchase intention

In this section, descriptive statistics was firstly used to explore the respondents' evaluation of the items of each factor. Furthermore, component score coefficients (w_i) of a factor were also calculated to determine the weights of the items. These coefficients were extracted from a component score coefficient matrix of the EFA process.

(i) Social influence and product knowledge (F₁)

Table 6 shows that the students evaluated six components of the factor F_1 at the neutral level (undecided) when their average scores ranged from 2.89 to 3.40. Notably, about 37.2% of the surveyed students strongly disagreed and disagreed with the statement of PK₁ (I am familiar with green products). Four remaining items were at the agreed level. These indicate that the students' green product knowledge was only moderate and the social influence on their green purchase was not so strong. The highest average point was devoted to SI₄, while PK₁ and SI₂ had the lowest mean. As regards the component score coefficients (w_i), PK₁ had the largest influence on the F_1 , followed by SI₅ and PK₄. If the students' evaluation towards PK₁ is increased by 1 score, the factor F_1 will be enhanced by 0.194 score (the other variables are supposed to be constant). This implies that if the F_1 has a positive effect on green purchase intention, we should firstly pay attention to those items to improve the students' readiness to perform green buying.

(ii) Environmental concerns and subjective norms (F₂)

The survey result indicates that VNUA's students were highly concerned about the

environment. The average scores of these items ranged from 3.9 to 4.45 (**Table 7**). Notably, about 71% of the survey students strongly agreed with EC₃ (Environmental pollution can only be eliminated when we work together). Regarding the component score coefficient, the factor F_2 was affected the most by variables of EC₃ and EC₅.

(iii) Product availability and perceived behavior control (F₃ and F₄)

The average scores of the items in the factor of product availability were around 3.1 on the five-point Likert scale (undecided). This implies that the students did not find it so easy to gain access to green products. Only one-third of the sample agreed and strongly agreed with the statement of AV₂ (I know where green products are sold). Between the two items, AV₂ had a higher effect on the F_3 when its component score coefficient was 0.589 (**Table 8**). If this indicator is improved by 1 score, the factor F_3 will increase by 0.589 score (the other variables are supposed to be constant).

Both of the indicators of the factor F_4 (perceived behavior control) were evaluated at the agreed level. As compared to employees or workers, students tend to have more free time, so PBC₃ (I have time to search and consider buying green products) was highly evaluated. Between these items, PBC₃ had a higher coefficient, so it would have a larger impact on F_4 .

Quantifying the effects of factors affecting students' green purchase intention

Multiple regression analysis was then used to analyze the factors (F_i) affecting the students' green purchase intention (GPI). The multiple regression model employed in the study is as follows:

$$GPI = b_0 + b_1F_1 + b_2F_2 + b_3F_3 + b_4F_4 + u$$

Based on the results of the FEA, the values of the factors were calculated and saved in the form of standardized data. Therefore, both independent and dependent variables in the study were standardized ones, and then the standardized regression coefficients (beta) were used to analyze the relationship between them.

Table 6. The students' evaluation of the factor of F_1

Item	Mean	Std. Deviation	Component score coefficient (w)
PK ₁	2.89	1.153	0.194
PK ₂	3.40	1.085	0.152
PK ₃	3.51	1.026	0.147
PK ₄	3.05	1.094	0.187
SI ₂	2.98	1.016	0.177
SI ₃	3.45	1.118	0.140
SI ₄	3.75	1.019	0.101
SI ₅	3.33	1.143	0.192
AV ₁	3.18	1.232	0.099
SN ₄	3.52	1.246	0.077

Note: $F_1 = 0.194 PK_1 + 0.152 PK_2 + 0.147 PK_3 + 0.187 PK_4 + 0.177 SI_2 + 0.14 SI_3 + 0.101 SI_4 + 0.192 SI_5 + 0.099 AV_1 + 0.077 SN_4$

Table 7. The students' evaluation of the factor of F_2

Item	Mean	Std. Deviation	Component score coefficient (w)
EC ₁	4.19	1.171	0.218
EC ₂	4.28	1.018	0.194
EC ₃	4.45	1.000	0.271
EC ₄	3.94	1.157	0.216
EC ₅	4.22	1.037	0.253
SN ₁	3.93	1.153	0.072
SN ₃	4.20	1.046	0.132

Note: $F_2 = 0.218EC_1 + 0.194EC_2 + 0.271EC_3 + 0.216EC_4 + 0.253EC_5 + 0.072SN_1 + 0.132SN_3$

After an application of OLS estimation, the predictive equation would be written as follows:

$$GPI = 0.486 F_1 + 0.552 F_2 + 0.0250 F_3 + 0.013 F_4$$

$$t \quad (7.736) \quad (8.777) \quad (0.405) \quad (0.207)$$

Adjusted R^2 was 0.526, which indicated that the overall regression equation explained 52.6% of the total variance, and the result was statistically significant at the 0.000 level $\{F_{(4,116)} = 34.275, P < 0.001\}$. Two estimated coefficients of F_1 (social influence and product knowledge) and F_2 (environmental concerns and subjective norms) were statistically significant at the 99% confidence level. Therefore, these variables had

significant impacts on the students' green purchase intention (i. e. the hypotheses stated for F_1 and F_2 were supported). In addition, the signs of the independent variables were in the hypothesized direction. This implies that we can improve these factors to increase the students' green purchase intention. Among the variables included in the model, F_2 (Environmental concerns and subjective norms) had the largest effect on the students' green purchase intention (beta = 0.552). The F_3 (product availability) and F_4 (perceived behavior control) variables were found to not significantly affect green purchase intention. Therefore, the hypotheses for F_3 and F_4 were rejected, although their signs were satisfied.

Table 8. The students' evaluation of the factors of F_3 and F_4

Item	Mean	Std. Deviation	Component score coefficient (w)
The factor of product availability (F_3)			
AV ₂	3.05	1.132	0.589
AV ₃	3.12	1.229	0.366
The factor of perceived behavior control (F_4)			
PBC ₂	3.69	1.017	0.478
PBC ₃	3.46	1.049	0.600

Note: $F_3 = 0.589 AV_2 + 0.366 AV_3$

$F_4 = 0.478 PBC_2 + 0.6 PBC_3$

Environmental concern is established as an important predictor of the consumers' attitude towards green products in almost all the studies. Laroche *et al.* (2001) pointed out that consumers with higher levels of environmental concerns would be more likely to exert environmentally friendly consumption. Environmental concerns were found to motivate the purchase of organic food products by Padel & Foster (2005). The results of this study are consistent with those of Smith & Paladino (2010), and Khai & Anh (2016), who identified environmental concern and subjective norm as major drivers towards the purchase of green products. The findings also agree with the result by Puspitasari *et al.* (2018) and Lee (2008) that environmental concern and social influence had significant influences on green purchase intention. The result suggests that interpersonal communication and mass media vehicles are effective tools for affecting students' green purchasing intentions.

Green product knowledge plays a key role in consumers' decision to purchase green products and is often considered as a direct prerequisite variable for green purchase intention (Wang *et al.*, 2019). The result of this study supported the previous studies when showing a significant positive relationship between green product knowledge and green purchase intention. However, besides acting as a predictor, several researchers have also confirmed its moderating roles between green purchase attitudes and behaviors, etc. (e.g., Chen & Deng, 2016). It was also found to have an indirect influence on consumers' green purchase intention as it

affected perceived consumer effectiveness as well as green trust that further affected green purchase intention (Wang *et al.*, 2019). Those roles of PK, however, were not tested in this research.

Some authors such as Wang *et al.* (2014) and Chen & Deng (2016) found that perceived behavioral control had a significant and positive impact on purchase intention of green products. However, a study by Arvola *et al.* (2008) reported that perceived behavioral control and consumer green purchase intention were not related. While reviewing articles related to attitude-behavior inconsistencies, in the context of green purchasing, Joshi & Rahman (2015) concluded, "it can be said although there is some evidence that perceived behavioral control positively influences green purchase behavior, yet further empirical investigation is warranted due to the limited research in the area".

Regarding product availability, most studies showed that limited availability and difficulties in accessing green products were major barriers to purchasing environmentally sustainable products (Joshi & Rahman, 2015). For example, the availability of organic food was found to have a positive relation with green purchase intention in two studies performed by Tarkiainen & Sundqvist (2005) and Vermeir & Verbeke (2008). Although the finding of this study contrasts with the above studies, it is consistent with the research conducted by Hoang Trong Hung *et al.* (2018). Their hypotheses that product availability, subjective norms, and perceived behavior control had positive effects on

consumer GPI, were also rejected because of low significant levels. This fact may be because of the students' unique characteristics. They usually have more free time than other consumers and enjoy exploring surrounding places, while their incomes are not so high.

Conclusions and Implications

The survey indicates that the students' green product knowledge was only moderate. The social influence on the students' green purchase was not so strong, especially their relatives' effect. It is a good sign to find that VNUA students were highly concerned about the environment. The students' evaluation of the availability of green products was also at a moderate level.

Based on the component score coefficients, PK₁ had the largest effect on the F₁ (social influence and product knowledge), while the factor F₂ (environmental concerns and subjective norms) was affected the most by variables of EC₃ (Environmental pollution can only be eliminated when we work together) and EC₅ (Humans must live in harmony with nature in order to survive). Between the two items included in the factor F₃, AV₂ had a higher effect. Similarly, PBC₃ (I have time to search and consider buying green products) had a larger impact on F₄ (Perceived behavior control). The results imply that managers should firstly pay attention to those items to improve the students' evaluation of the factors, and then stimulate their green buying intention.

The regression analysis shows that students' green buying intention is affected significantly and positively by two variable groups, namely the F₁ (social influence and product knowledge) and the F₂ (environmental concerns and subjective norms); in which, the variable of environmental concerns and subjective norms had the biggest influence on their green buying intention.

Based on the above findings, this paper makes the following recommendations to the government, companies, and universities:

Taking efforts to enhance students' green purchase intention by offering positive

information about green products and advocating the green lifestyle. Specifically, the government should pay more attention to deliver information on green products by suitable tools (i.e., YouTube, social networks, training courses, and contests related to environmental protection). Universities should form green consumption norms, such as buying green office supplies and printing theses and documents in double sided papers to save natural resources, etc. In addition, lecturers should provide students with more green knowledge through lectures and extracurricular activities.

Making green products more accessible to students. Vietnamese students generally have low incomes, so the higher prices of green products are one of the main obstacles to their green buying behavior. Therefore, companies should develop new green products at reasonable prices. Furthermore, the development of a wide distribution network for green products is also needed so that consumers, in general, and students, in particular, can purchase them more easily.

Enhancing the roles of social groups. Most of the students could decide their buying choices. However, those decisions are still affected by past experiences, families' tradition, and friends' behavior, etc. Thus, the government should do more campaigns to convince consumers that purchasing green products would make a difference in protecting the environment from further deterioration. When buying green products becomes a social trend, the students' green purchase would be positively influenced. On the other hand, companies should emphasize using authority certification of green products and designing labels carefully to create the consumers' confidence.

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