



# Theory of Planned Behavior Approach to Understand the Influence of Green Perceived Risk on Consumers' Green Product Purchase Intentions in an Emerging Country

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## ABSTRACT

Green products are increasingly prevalent in developing countries, however consumers are sometimes perceive their green purchasing decision as risky. The major problem seems to be linked to the greenwashing cases. Despite the fact that, up to now there still have no quantitative paper studying how consumers make judgments and decisions in relation to these risks. This paper applies the theory of planned behavior (TPB) to develop research framework under the circumstance of the green vegetable consumption in Vietnam as a whole in terms of green perceived risk. The present study focuses on 455 Vietnamese consumers who have been working and have experience buying green vegetable. The exploratory factor analysis technique and the confirmatory factor analysis (CFA) were performed using IBM SPSS and AMOS 23 software. Testing the hypotheses and a structural equation modeling method were conducted. This research finds out the answer for the questions of how green perceived risk affects consumer's green purchase intentions (GPI) under the circumstance of an emerging country. Supported the TPB model this paper provides better predictive power of the nexus between intentions and actual behaviors. Finally, this research provides some useful implications for corporates in the marketing strategy development in accordance with environmental trend.

**Keywords:** Green Perceived Risk, Theory of Planned Behavior, Green Purchase Intentions

**JEL Classification:** C12, L66, M3

## 1. INTRODUCTION

In the recent years, green marketing was a highly debated topic for consumers, firms, investors, governments, and society in general (Bailey et al., 2016). Companies are looking forward to take advantage of the green trend in support of more environmentally and socially responsible products and services (Chen and Chang, 2013a; Chen and Chang, 2013b; Chen and Chang, 2013c). These green initiatives are virtually available everywhere: green food, green energy, green packaging, green tourism, green buildings, green fashion, green architecture, green government, and so on (Leonidou and Skarmneas, 2015). Chen and Chang (2013a) argued that the green purchasing power forces business organizations to

innovate or to modify their business strategies in response to green demands for customer (Chen and Chang, 2013).

Regrettably, along with the acceleration of green marketing in recent years, greenwash has become one of popular tricks for corporates to lead their competitors (Parguel and Benoîtmoreau, 2013), in spite of customer has begun to take more notice of it (Horiuchi et al., 2009). Customers are more and more interested in green products in accordance with environmental trends and because of that they can increase simultaneously green perceived risk. Chen and Chang (2012) indicated that green perceived risk is the expectation of negative environmental consequences related purchase behavior (Chen and Chang, 2012). In spite

of the fact that the past research has investigated the relevant subjects about perceived risk, none has highlighted in applying the theory of planned behavior (TPB) for the examination of green perceived risk effects under the circumstance of the green vegetable consumption in an emerging market; Vietnam. Academic researchers have explored green perceived risk from different aspects. First, Featherman and Pavlou (2003) indicated that perceived risk is a subjective expectancy of a loss (Featherman and Pavlou, 2003). Second, the study of Chang and Chen (2008) argues that a reduction in green perceived risk leads to an growth in purchase probability, so a decrease in green perceived risk is useful for increasing customer trust (Chen and Chang, 2008). Third, Chang and Tseng (2013) stressed that perceived risk has an unfavorable effect on a customer buying decision process (Chang and Tseng, 2013), therefore it would influence customer behavior (Bettman, 1973; Mitchell, 1999). Fourth, Williams and Balá (2012) and Fatma et al., (2015) provided a comprehensive picture of the role of green perceived risk in the service sector. Finally, in the merely latest paper, by Casidy and Wymer (2016), they also reaffirmed the effect of green perceived risk on willingness to pay premium price, satisfaction and loyalty (Casidy and Wymer, 2016). Recently, almost all authors agreed that the buying decision process has usually four types of perceived risks such as psychological, social, financial and performance.

To sum up, there are a number of papers that discuss the consumers' green perceived risk issue but quantitative research papers are still few. Some of the major papers reviewed the role of perceived risk in green consumption in the developed nations, in service industry or a type of product in an emerging economy (Casidy and Wymer, 2016; Chang and Chen, 2014; Goh and Balaji, 2016; Marakanon and Panjakajornsak, 2017; Raska and Shaw, 2012). There are some papers that evaluated the perceived risk as a whole but there is no paper that indicates the nexus of consumers' green perceived risk and green vegetable purchase intentions in Vietnam. The paper will fill up the shortcomings in practice. The paper applies the TPB and further develop research framework under the circumstance of the green vegetable consumption in Vietnam as a whole in terms of green perceived risk. The previous researches have applied the TPB for green buying decision investigation, but up to now there is no quantitative paper studying the influence of green perceived risk to green purchase intentions (GPI). In fact, the situation of greenwashing becomes more seriously and leads to consumers perceived high risk towards a green product (Davis, 1992). Thus, in order to reduce consumers' green perceived risk and increase green consumption, it is necessary to study the role of green perceived risk through the lens of other theoretical frameworks such as the TPB, advance theory and management practice in the developing countries.

We selected Vietnam as a representative sample, because GPIs have attracted attention in Vietnam. Further, Vietnam is one of East Asia's most dynamic and one of the world's fastest growing economies. Vietnam is already facing a severe environmental crisis as one of the most burning challenges to emerge from the country's rapid industrialization. It presents important challenges in terms of economic, political, and social changes. Nowadays, Vietnam is the Southeast Asian country of approximately 92 million people.

Vietnam's steady economic growth at near 7% in 2017 year make it among the fastest-growing markets country in the Asia region, mainly on opening gates to export manufacturing. However, the opinion of Pham et al. (2018) that in Vietnam states that while many younger consumers are concerned with environmental issues as well as on psychological health but there is a greater number that have limited and superficial perceptions of green products. Thus, an examination of green perceived risk under the TPB framework through a comprehensive of consumers' green perceptions and their buying intentions in an emerging country can explain our understanding of how organizations can avoid the green risk perceived factors and encourage virtuous firms to continue in their green marketing strategies and increase positive consumer evaluations. Hitherto, in Vietnam, none of the studies discussed the influence of green perceived risk on consumers' green products purchase intentions. But in point of fact that green vegetable is one popular product that consumers buy for everyday needs and uses. Especially, in Vietnam more and more companies seek to apply green communication activities for vegetable products to gain brand differentiation and hold competitive advantage, as well as improve their consumer's perception of safety, health, environmental and brand awareness in the market. Therefore this study will fill in the gap left behind so far.

In light of theoretical framework of the green perceived risk's impacts on GPIs, the main objectives of the study are proposed. The first one is to provide a comprehensive picture of the role of green perceived risk in the process of green consumption development in Vietnam. The second one is to make easy for policy-maker and business managers to map out wise options to minimize the negative ones if any. The rest of the paper is arranged as follows. First, the paper introduces "Literature Review and Hypothesis Development." In "Research design and method" section, the paper describes "Research design," "Data collection" and "Data analysis." Next, we present measurement model, structural model and hypotheses testing are shown in "Results" section. Finally, the "Discussion," "Implications" and "Limitations and Future Research" sections are also presented.

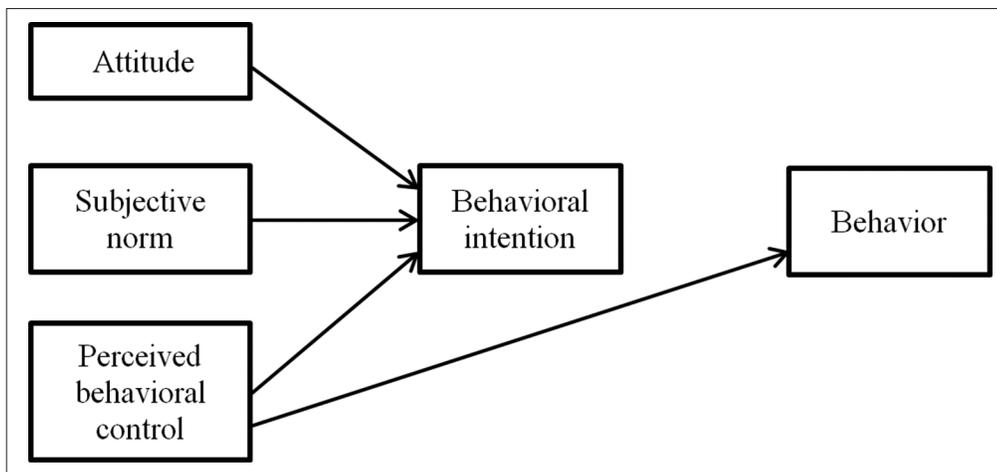
## 2. LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT

### 2.1. TPB

As presented above, the TPB of Ajzen (1985, 1991) are applied and extended in this study of framework (Ajzen, 1985, 1991). Figure 1 shows the TPB framework.

This paper applies the TPB as a framework for understanding green or non-green vegetable choice. In using the TPB, it is important not only to specify whether a person uses green vegetable but what it is used for. The paper will quantitatively indicate how the effect of customer green perceived risk can fluctuate their green buying intentions. Therefore, the critical point of testing the theory in the subject of healthy eating describes the main psychological causes of these behaviours and the contribution of the research will provide valuable knowledge that can be used for predicting and influencing behavior, for instance in terms of

**Figure 1:** Theory of planned behavior



influencing attitudes (AAT) or making it easier or more difficult in green vegetable consumption. The TPB is a judicious decision making model using ATT, subjective norm (SN), and perceived behavioural control (PBC) to predict behavioral's intention. This concept model mentions one's judgment to a specific behaviour, the perception of other people's effect as to whether they would approve or disapprove of the performance of that behaviour, and their perception of control over performing the behaviour respectively. With regard for buying green vegetable, they prefer to use healthy vegetable in a healthy environment if they assess it positively, they perceive social pressure to use it, and believe real green vegetable. The TPB discovers the reason of behavior through the individual's beliefs and it is very useful in explaining the environmental friendly behavior (Bamberg, 2003; Goh et al., 2017; Liobikienė et al., 2016; Sheppard et al, 1988). Based on the above discussion, one of the aims of this study is to use the TPB to explain the formation of Vietnamese customers' intentions to green vegetable products. The study therefore has the following hypotheses:

- H<sub>1</sub>: Consumers' ATT toward the green products greatly affects their GPIs.
- H<sub>2</sub>: SN greatly affects the consumers' GPIs.
- H<sub>3</sub>: Perceived behavioral control greatly affects the consumers' GPIs.

**2.2. Inclusion of Additional Constructs in the TPB**

The TPB model has been successfully applied in a wide diversity of consumption behavior. However, the TPB framework has been condemned for the weak relation between intentions and actual behaviors. Armitage et al. (2002) also reaffirmed that there are few domain with specific factors in this model (Armitage et al., 2002). In the merely latest papers, an increasing evident has been noticed in the psychological literature to include additional constructs in the TPB with various domains to improve the predictive power of the framework (Bryce et al., 2017; Yazdanpanah and Forouzani, 2015). Although the TPB overall has been found to be an effective tool for predicting pro-environmental or health behavior intentions, the model has some limitations. Further, the current literature has argued strongly that green perceived risk is an important part of our decision-making process and influences behaviour towards green products consumption (Chen and Chang, 2013a; Chen and

Chang, 2013c; Goh and Balaji, 2016). But there is no research that has examined the relationship between green perceived risk and GPIs in the context of an emerging country. Thus, the present paper tries to include an additional constructs green perceived risk in it to investigate the green vegetable purchase intentions in Vietnam.

There is a number of papers concerning the significantly influences of green perceived risk on consumer's ATT towards the green products and services, which further negatively impact their purchase behavior (Bettman, 1972; Chen and Chang, 2012; Kim and Lee, 2008; Minazzi, 2015; Mitchell, 1999; Vernberg and Murphy, 1996). The perceived risk was defined as "a combination of uncertainty and negative consequences" (Sharma and Amit, 2008). Kim and Lee (2008) indicated that perceived risk is a kind of various aspects of perception: Financial, physical, psychological, social risk and performance (Kim and Lee, 2008). Peter and Ryan (1976) concluded that perceived risk is considered on a consumers' subjective approximation and it is a result of of false purchase decisions (Peter and Ryan, 1976). On other hand, consumers often rely on organization that use green promotion to help consumers to make buying decision, so greenwash action is threaten as a consumer belief in that promotion (Rejikumar, 2016). Mitchell (1995) reaffirmed that when consumer feel high level of perceived risk, they avoid a purchase (Mitchell, 1995). Thereby, the paper focus on such research hypothesis also as:

- H<sub>4</sub>: Green perceived risk among consumers greatly affects their ATT toward green products.
- H<sub>5</sub>: Green perceived risk among consumers greatly affects their GPIs.

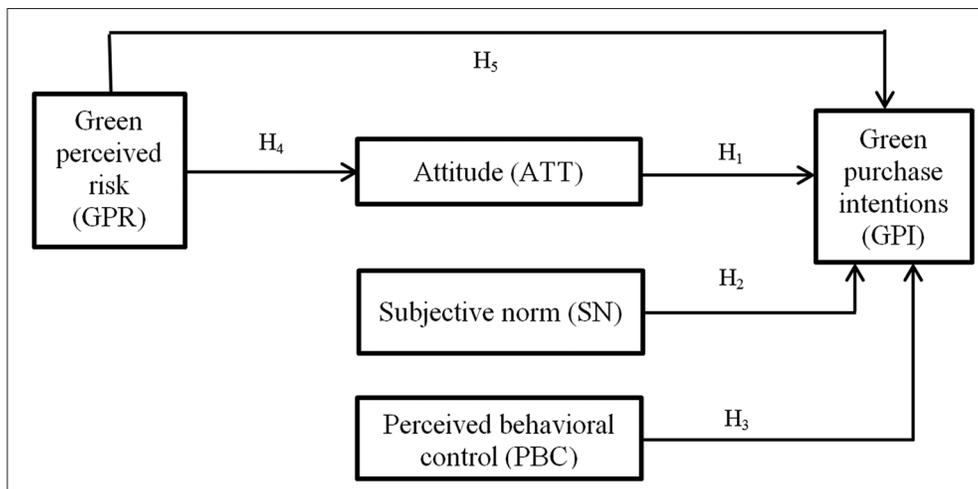
As presented above, a proposed model (Figure 2) is below:

**3. RESEARCH DESIGN AND METHOD**

**3.1. Research Design**

In order to get the best results from this investigation, all the constructs were measured while applying a multi-item scale adapted from the prior relevant researches. The question sheet has some useful changes for respondent in accordance with culture consumption in Vietnam. Most of the questionnaires were

**Figure 2:** The proposed model



designed by foreign researchers and are translated to evaluate their validity. The researcher explored their content of the completeness, comprehensibility, fluency and logic and evaluated each question of the clarity, length and importance. After analyzing the experts' opinions, the final questionnaires were prepared and approved. In requesting the participants to nominate their opinion agreeing or disagreeing with the statements present, this study used 5-point Likert-type scales, with 1 indicating "strongly disagree" and 5 "strongly agree." Following Ajzen and Fishbein (1980); Ajzen (1991); Grunert and Juhl (1995) a five items ATT measurement scale was used to measure consumers' ATT toward the green products (Ajzen, 1991; Ajzen and Fishbein, 1980; Grunert and Juhl, 1995). Five item perceived behavioral control scale was adopted from Ajzen and Fishbein (1980) (Ajzen and Fishbein, 1980). Following Sparks et al., (1997), a four items SN measurement scale was applied to find whether others would endorse a behavior and personal motivations about GPIs (Sparks et al., 1997). Four item GPI scale was adopted from Ajzen and Fishbein (1980); Chen and Chang (2008); Mostafa (2006); Taylor and Todd (1995) (Ajzen and Fishbein, 1980; Chen and Chang, 2008; Mostafa, 2006; Taylor and Todd, 1995). Based on Peter and Ryan (1976); Chen and Chang (2012) study, a five items were used to measure green perceived risk (GPR) (Chen and Chang, 2012; Peter and Ryan, 1976). The specific measurement items of the studied constructs are presented Table 1.

### 3.2. Data Collection

To test the developed, conceptual model we conducted a survey among the Vietnamese consumers who have been working and are interested in green vegetable. The questionnaire was translated into Vietnamese for the Vietnamese' consumers so that they can provide relevant answers and favorable condition for the survey. This questionnaire was supported by a translation and linguistic expert, along with some senior Vietnamese scholars who validated the translation for its fitting for the consumers in Vietnam. At the start, a pre-research was conducted and twenty question sheets were distributed among Vietnamese scholars. In reviewing process of this investigation, few changes were made in the final question sheet to make it more suitable for interviewees. First, participants were introduced to clarify the definition of green vegetable before answering the questionnaire. After reading the descriptions, the

subjects were asked to respond to the measures of green perceived risk for green products purchase intentions. Participants were also asked to fill out demographical information. The sample size required for this study was computed based on Molenaar and Boomsma (1987) and commended value of at least 400 for structural equation modeling (SEM) (Molenaar and Boomsma, 1987). So, this study used convenience-sampling method and 800 question sheets were distributed among the Vietnamese consumers of staffs, teachers and EMBA students of schools and universities or other people who have been working and are interested in green vegetable. In the end 496 responses were returned, representing a 62% response rate. Ultimately a total of 455 responses were examined during analysis, after removing incomplete responses and extreme outliers.

### 3.3. Data Analysis

#### 3.3.1. Demographic characteristics

From descriptive statistics, the profile of respondents includes gender, age, familial status, occupation, highest education and personal average monthly income (Table 2). The respondents were primarily female (58.8%). The respondents' age is mostly between 25 and 34 years old (62%). Most of the sample fell in married category and have children under 18 years old (51/2%). In terms of occupation, the majority of the respondents in the sample are working with the civil servant (47.3%) and teacher (22.4%). Regarding educational attainment, 55.8% had a graduate college degree/bachelor degree, 40.2% had a master or above, remainder of them had a graduate high school or below. The respondents' personal average monthly income belong to middle income group and higher as recommended by Global Database's Vietnam, earning between 10 and 15 million, Vietnamese Dong (VND) (43.5%) and 15-20 million VND (16.7%) and over 20 million VND (15.4%).

#### 3.3.2. Scale reliability

Firstly, this paper did an exploratory factor analysis (EFA) to identify the theoretical dimensions (factors) of GPIs as well as context factors. And then, Principal axis factoring method with a promax<sup>2</sup> rotation was used to extract the theoretical factors. In social psychological research, Cronbach's for the constructs of value over 0.7 is acceptable (Hair et al., 2006). Thus, in this paper,

**Table 1: Questionnaire**

Constructs and measuring items	Sources
ATT  ATT1: I prefer green vegetable because it is processed without any chemicals ATT2: I prefer green vegetable because it tastes better than non- green vegetable ATT3: I prefer green vegetable because it is environment friendly ATT4: I believe that price of green vegetable is quite justified ATT5: It is exciting for me to buy green vegetable	(Ajzen, 1991; Ajzen and Fishbein, 1980; Grunert and Juhl, 1995)
SN SN1: Most people who are important to me think I should purchase green vegetable when going for purchasing SN2: Most people who are important to me would want me to purchase green vegetable when going for purchasing SN3: People whose opinions I value would prefer that I purchase green vegetable SN4: My friend's positive opinion influences me to purchase green vegetable	(Sparks et al., 1997)
PBC PBC1: I can take the decision independently to buy green vegetable PBC2: I have the time to go for buying green vegetable PBC3: I have complete information and awareness regarding where to buy green vegetable PBC4: Green vegetable are generally available in the shops where I usually do my shopping PBC5: If it were entirely up to me, I am confident that I will purchase green vegetable	(Ajzen and Fishbein, 1980)
Green perceived risk (GPR)  GPR1: There is a chance that there will be something wrong with environmental performance of green vegetable GPR2: There is a chance that green vegetable will not work properly with respect to its environmental design	(Chen and Chang, 2012; Peter and Ryan, 1976)

(Contd...)

**Table 1: (Continued)**

Constructs and measuring items	Sources
GPR3: There is a chance that you would get environmental penalty or loss if you use green vegetable GPR4: There is a chance that using green vegetable will negatively affect the environment GPR5: Using green vegetable would damage your green reputation or image	
GPI  GPI1: I will consider buying green vegetable because they are less polluting incoming times GPI2: I will consider switching to environmental friendly green vegetable for healthy reasons GPI3: I definitely want to purchase green vegetable in near future GPI4: I would also recommend others to buy green vegetable	(Ajzen and Fishbein, 1980; Chang and Chen, 2008; Mostafa, 2006; Taylor and Todd, 1995)

ATT: Attitude, SN: Subjective norm, PBC: Perceived behavioural control, GPI: Green purchase intentions

the Cronbach's coefficients of all constructs value ranges from 0.786 to 0.876 in Table 3 were acceptable in reliability. Moreover, this paper also used the EFA technique to calculate and test the reliability scale in IBM SPSS 23 software. If "Corrected Item-Total Correlation" is <0.3, then the observed variables will be removed (Jabnoun and Al-Tamimi, 2003).

In most scholastic and business researches, one aspect in factor analysis is necessary to test KMO and Bartlett's. Meyers et al., (2013) demonstrated that the Bartlett's accepted index must be <0.05 and for the KMO test coefficient features, the value must be over 0.5 (Meyers et al., 2013). Therefore, in following results in Table 4, it shows the validity and suitability of the responses collected for the problem being addressed through this research. In other word, the data are reliable and sufficient for conducting analysis in the next steps.

Initially, this paper used 23 variables but according to Hair et al. (2006), factor loading estimates should be >0.5 and Jabnoun and Al-Tamimi (2003) suggested evidences that the factor loading coefficient of the variables is not <0.3, the author rejected the variables GPR5, GPI1 and PBC5 (Hair et al., 2006; Jabnoun and Al-Tamimi, 2003). Later, through analyzing process, five factors were chosen, whose percentage of variance reached 58.295%, higher than the standard value of 50%, as shown in Table 5 (Gerbing and Anderson, 1988).

According to EFA results, the proposed research framework (Figure 2) were analyzed using SEM tool (Gerbing and Anderson, 1988). This includes the measurement model equations as well as the structural model equations.

## 4. RESULTS

### 4.1. Measurement Model Results

This study used the CFA to access the information about validity in IBM AMOS 23 software. Thereby calculating CFA fit indices, this results represented a sufficient model fit ( $\chi^2 = 681.048$ ,  $\chi^2/df = 4.257$ , IFI = 0.887, GFI = 0.877, CFI = 0.886, TLI = 0.865, Root mean square error approximation [RMSEA] = 0.085). However, the paper of Hair et al. (2006) stressed that convergent validity was indicated by an item factor loading  $\geq 0.5$ , so green perceived risk (GPR4) item was deleted. And then, CFA was used once again on the modified TPB model, the results show a better model fit ( $\chi^2 = 443.539$ ,  $\chi^2/df = 3.124$ , IFI = 0.930, GFI = 0.908, CFI = 0.929, TLI = 0.915, RMSEA = 0.068).

**Table 2: Sample characteristics**

Variable	Categories	Frequency (n=455) (%)
Gender	Male	189 (41.5)
	Female	266 (58.8)
Age	Under 18 years old	0 (0)
	19-24 years old	15 (3.3)
	25-34 years old	282 (62.0)
	45-54 years old	66 (14.5)
	35-44 years old	83 (18.2)
	Over 55 years old	9 (2.0)
Familial status	Single	115 (25.3)
	Married none children	56 (12.3)
	Married and have children under 18 years old	233 (51.2)
	Married and have children over 18 years old	45 (9.9)
	Other	6 (1.3)
Occupation	Business owner/managers	74 (16.3)
	Teacher	102 (22.4)
	Student	6 (1.3)
	Freelance	24 (5.3)
	Civil servant	215 (47.3)
	Other	34 (7.5)
	Other	4 (0.9)
Highest education	High school or below	14 (3.1)
	Graduate high school	254 (55.8)
	Graduate college degree/ bachelor degree	183 (40.2)
	Master or above	5 (1.1)
Personal average monthly income	Under 5 million VND	106 (23.3)
	5-10 million VND	198 (43.5)
	10-15 million VND	76 (16.7)
	15-20 million VND	70 (15.4)
	Over 20 million VND	

VND: Vietnamese Dong

**Table 3: Reliability statistics**

Variables	ATT	SN	PBC	GPR	GPI
Cronbach's $\alpha$	0.876	0.874	0.815	0.786	0.796

PBC: Perceived behavioural control

Cronbach's was used to evaluate the internal consistency among items. Cronbach's for the constructs of value above 0.7 is acceptable (Hair et al., 2006). Thus, the Cronbach's a coefficients of all constructs in this paper are acceptable in reliability. Besides, Bagozzi and Yi (1988) have figured out that composite reliability (CR) should be  $>0.6$  (Bagozzi and Yi, 1988). In this study, the value of CR ranges from 0.798 to 0.881, so they are considered desirable. Furthermore, convergent validity and discriminant validity were also examined. This study utilized a factor loading and the average variance extracted (AVE) to assess the convergent and discriminant validity of the measurement. According to Fornell and Larcker (1981), if each AVE is  $>0.5$ , it means that the discriminant validity was acceptable (Fornell and Larcker, 1981). Table 6 displays the results of factor loadings ranges from 0.51 to 0.95 and the AVE value is from 0.511 to 0.642. Thus, the measurements in the research have both good reliability and acceptable validity.

The values of discriminant validity are shown in Table 7. According to Brown (2006), a factor correlation under 0.8 demonstrates that discriminant validity is acceptable (Brown, 2006). Moreover, based on the Fornell and Larcker (1981), to construct the requirement of the discriminant validity, the square root of a construct's AVE must be greater than the correlations between the construct and the other ones in the model (Fornell and Larcker, 1981). As presented above, this study's exam results found that the theoretical model represents an adequate validity and reliability. Tables 6 and 7 demonstrate that the square roots of all constructs' AVEs in Table 6 of this research are more than the

**Table 4: KMO and bartlett's test**

KMO and Bartlett's Test	
Kaiser-meyer-olkin measure of sampling adequacy	0.821
Sig.	0.000

**Table 5: Pattern matrix<sup>a</sup>**

Item	Factor				
	1	2	3	4	5
ATT1	0.914				
ATT5	0.912				
ATT2	0.777				
ATT3	0.615				
ATT4	0.588				
SN2		0.848			
SN4		0.831			
SN1		0.761			
SN3		0.732			
PBC3			0.815		
PBC4			0.746		
PBC2			0.699		
PBC1			0.590		
GPR1				0.776	
GPR2				0.726	
GPR3				0.701	
GPR4				0.612	
PI2					0.816
PI4					0.760
PI3					0.729

a: Rotation converged in 5 iterations. PBC: Perceived behavioural control

**Table 6: Measurement model: Reliability and validity**

Constructs	Factor loading	SMC	Cronbach's $\alpha$	C.R	AVE	The square root of AVE
Attitude (ATT)			0.876	0.881	0.603	0.776
ATT1	0.85	0.73				
ATT2	0.61	0.37				
ATT3	0.80	0.63				
ATT4	0.65	0.42				
ATT5	0.93	0.86				
SN			0.874	0.877	0.642	0.801
SN1	0.78	0.60				
SN2	0.82	0.68				
SN3	0.80	0.65				
SN4	0.80	0.64				
Perceived behavioral control (PBC)			0.798	0.802	0.511	0.715
PBC1	0.52	0.27				
PBC2	0.64	0.41				
PBC3	0.85	0.72				
PBC4	0.80	0.64				
Green perceived risk (GPR)			0.772	0.798	0.583	0.763
GPR1	0.95	0.90				
GPR2	0.51	0.26				
GPR3	0.77	0.59				
GPI			0.820	0.822	0.606	0.778
GPI2	0.77	0.60				
GPI3	0.74	0.55				
GPI4	0.82	0.67				

SMC: Squared multiple correlation, ATT: Attitude, SN: Subjective norm, PBC: Perceived behavioural control, GPI: Green purchase intentions

correlations among constructs in Table 7. Hence, the measurement has good discriminant validity.

**4.2. Structural Model Results**

The next step is a goodness of fit test. At first, structural analysis displayed a relatively poor model fit. Hence, according to Gerbing and Anderson (1988), modification indices were tested for the re-specification of the proposed framework (Gerbing and Anderson, 1988). After using modification index, the model fit was made better and results indicate that the proposed model deputizes a good model fit ( $\chi^2 = 289.469$ ,  $\chi^2/df = 2.068$ , IFI = 0.965, GFI = 0.939, CFI = 0.965, TLI = 0.957, RMSEA = 0.048). Moreover, the TPB model was examined for goodness of fit statistics ( $\chi^2 = 370.340$ ,  $\chi^2/df = 3.779$ , IFI = 0.928, GFI = 0.910, CFI = 0.928, TLI = 0.911, RMSEA = 0.078). At last, the two models were compared for their explanatory power. This result demonstrated that including green perceived risk in the proposed model has better explanatory power for GPIs (Adjusted  $R^2 = 0.314$ ) than the TPB model (Adjusted  $R^2 = 0.230$ ). Moreover, the fit statistics of the proposed model were higher-level ( $\chi^2/df = 2.068$ , RMSEA = 0.048) to the TPB ( $\chi^2/df = 3.779$ , RMSEA = 0.078). Table 8 displays the goodness of fit indices. This discovery helped the inclusion of green perceived risk in the TPB in the field of green consumption. Through this research results, the TPB model has been more successfully applied in a wide diversity of consumption behavior as well as it significantly improved the nexus between intentions and actual behaviors.

**4.3. Hypothesis Testing**

The Figure 3 shows the results concerning the postulated hypothesis. All the variables of TPB; ATT ( $\beta=0.356$ ,  $p<0.01$ ), SN ( $\beta=0.525$ ,  $p<0.01$ ) and perceived behavioral control ( $\beta=0.301$ ,  $p<0.01$ ) were significantly related to GPIs, thereby supporting the

**Table 7: Correlation between the constructs and descriptive statistics**

Construct	ATT	SN	PBC	GPR	PI
ATT	0.776				
SN	0.456*	0.801			
PBC	0.178*	0.289*	0.715		
GPR	-0.086**	-0.026**	-0.141*	0.763	
PI	0.417*	0.617*	0.331**	-0.032**	0.778
Mean	3.81	3.59	3.20	3.93	3.94
SD	0.778	0.747	0.824	0.762	0.630

Significance at: \* $p<0.05$  and \*\* $p<0.01$ , SN: Subjective norm, PBC: Perceived behavioural control

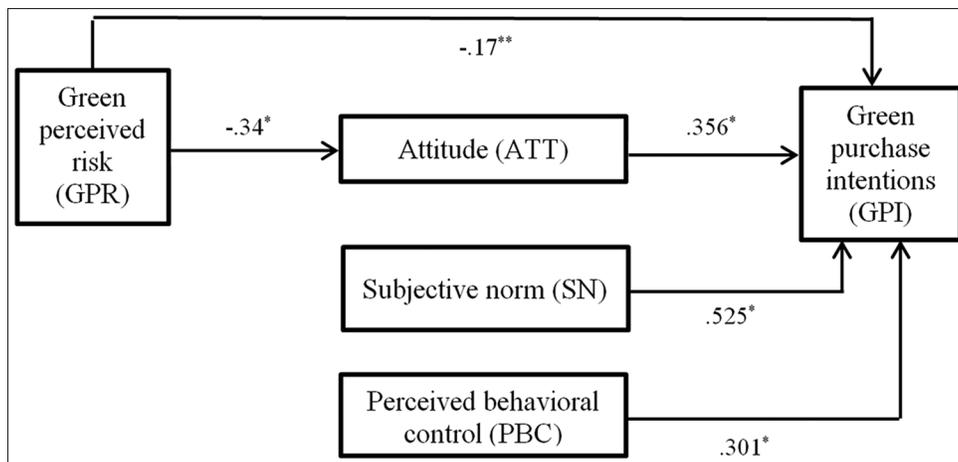
**Table 8: Goodness of fit indices and explanatory power of the model**

Fit indices	TPB model	Proposed theoretical framework	Norm*
$\chi^2$	370.340	289.469	N/A
Scaled $\chi^2/df$	3.779	2.068	>1 and <5
GFI	0.910	0.939	$\geq 0.90$
TLI	0.911	0.957	$\geq 0.90$
CFI	0.928	0.965	$\geq 0.90$
IFI	0.928	0.965	$\geq 0.90$
RMSEA	0.078	0.048	$\leq 0.08$
$R^2$ Adjusted (INT)	0.230	0.314	

\*Source: (Molenaar and Boomsma, 1987), GFI=Goodness of fit index, TLI=Tuckere lewis index, CFI=Comparative fit index, IFI=Incremental fit index, RMSEA=Root mean square error approximation

hypothesis  $H_1$ ,  $H_2$  and  $H_3$ . The covering of green perceived risk in the TPB ( $\beta=-0.17$ ,  $p<0.05$ ) also had a greatly negative influence on GPIs, and this supported the hypothesis  $H_5$ . Besides, a significant negative influence of green perceived risk ( $\beta=-0.34$ ,  $p<0.01$ ), so it supported the hypothesis  $H_4$ .

**Figure 3:** Casual nexus between research constructs and green purchase intentions



### 5. DISSUSSION

Consumer demand for green products has continued to grow in developing countries and it is also an indispensable trend towards a sustainable society. Although green products are acceptable goods (Delmas et al., 2016), many green claims related to environmental health are unclear and unreliable. When green washing goes ignored, consumers are cheated in buying greenwashed products. They unconsciously support the ecological crime of businesses. Greenwash harms the green consumption demand by making consumers unclear about ordering green products (Pomeroy and Johnson, 2009).

They feel information overload and this is hard for them to assess products, they could doubt the green claims and even they may stop buying the green products (Walsh et al., 2007). The extant literature neglects the role of green perceived risk in consumers' purchase decision making process concerning green products. In the current study, we shed light on the crucial degree of green perceived risk in influencing Vietnamese consumers of green vegetable products purchase intentions. The result suggested that Vietnamese consumers' intention to buy green vegetable products can be predicted by ATT, SN, perceived behavioral control as well as green perceived risk.

To sum up, this paper found that the inclusion of green perceived risk in the TPB makes a significant role in improving a stronger predictive power from 23% to 31.4%. Furthermore, the paper suggests some useful implications for policy-makers and marketers to map out wise options not only to minimize customers' green perceived risk if any but increase the positive impact of green vegetable images and purchase intentions in the context of an emerging country: Vietnam.

### 6. IMPLICATIONS

This paper suggests some useful implications for scholars in green perceived risk mitigation strategies and encourages consumer in their GPIs. The green perceived risk is often exist in the green products buying decision making process

in actuality, specially under the circumstance of Vietnam. Hitherto, there is no past research investigating the nexus between green perceived risk and GPIs in an emerging country with green vegetable products. Therefore this paper fills in the gap left behind so far. And then, this study indicates that the relationship between green perceived risk and GPIs is partially mediated by consumers' ATT toward the green products. Finally, decreasing consumer perceptions about green perceived risk would assist the consumers' GPIs into the area green marketing in an emerging country.

This study proposes some important implications for both academicians and specialists in the field of green marketing in terms of implications for business managers and policymakers to reduce the occurrence and severity of greenwashing in practice and it has also the most useful method to minimize customers' green perceived risk. First, business managers should increase transparency of environmental performance (Delmas and Burbano, 2011). Second, It is necessary to create and maintain customers trust by communicating green message effectively to consumers and to make honest promise to environmental (Wang et al., 2017). Third, sustainability ratings can assist customers to avoid their uncertainty or negative results in buying green product and encourage virtuous firms to continue in their corporate social responsibility practices (Parguel et al., 2011). Fourth, policymakers should facilitate and advance knowledge about green perceived risk, thereby, it would make better consumers' belief in the green products business and promotion. Fifth, it is significant that firms train their employees and align employee motivations necessary to discourage greenwashing and increase positive consumer evaluations (Delmas and Burbano, 2011). In summary, we vigorously recommend that firms do not only introduce clear policies regarding their green practices but also evaluate comprehensively the green marketing of those practices, help to lessen the happening of green perceived risk and to enhance green consumption in emerging markets.

The aim of this research was to provide a comprehensive picture of the green consumption and its dark side. This paper would like to help business managers to build a more effective and honest green claims. Dealing with the issue of greenwashing, consumers would

be able to aware of green innovations and eco-friendly products could get inside their customers' heads more rapidly. Customer's green perceived risk is becoming the persistent problem obviously existing in the marketplace for them, hence it is necessary for corporates to rise clearer and less indistinct in business practices. Corporates need to find out useful ways for the sources of green perceived risk, such as greenwash, and to rectify them.

## 7. LIMITATIONS AND FUTURE RESEARCH

Despite its contributions, this study is not without limitations. This research concentrates on the green vegetable products in an emerging country, thus future study can revolve around the purchase participation of other services/products in other countries and compare with this paper. Moreover, the study limits itself to a high proportion of the civil servant and teacher participants as well as 96% of participants who had completed college degree/bachelor degree or higher degrees, so the present sample cannot be generalized. Future studies need to assess the effectiveness in a more representative consumer samples to validate the findings of this research. In this study, the proposed framework explanatory power is also better than the TPB model, thus the future studies have to make better predictor power of the relation between intentions and actual behaviors. Finally, this study believe that contributions will fill in the gap left behind so far.

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