Understanding Vietnamese Consumers' Purchase Intentions toward Green Electronic Products in Hochiminh City

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Abstract

Green purchasing is currently becoming an emerging trend in many countries in the world. Albeit the infancy of this advent in Vietnam, Vietnamese consumers have recently demonstrated their environmental concerns through the growing purchase of green products that can both save their energy and water spending and at the same time save the environment from harm. Vietnamese Government is also vigorously endorsing the protection of natural environment through various legal and propagative activities. The market for green products in Vietnam, therefore, is very potential. However, there are several factors that may prevent green marketing in Vietnam from becoming prosperous. This quantitative research is to examine the factors that encourage or discourage Vietnamese consumers' purchase intention toward green electronic products. By applying Theory of Planned Behaviour, the research is to develop hypothetically suitable theoretical model that is then empirically tested throughout a survey of 263 respondents in Ho Chi Minh City. The respondents are chosen from diverse backgrounds and must have purchase intention of electronic products within the next six months. Structural Equation Modeling technique is deployed in this study. The results show that Vietnamese consumers' environmental knowledge is proved to be undoubtedly related to their attitude toward purchasing green electronic products. Four main factors that positively and significantly affect Vietnamese consumers' purchase intention are attitude, subjective norm, perceived consumer effectiveness and control on availability. The most substantial factor amongst investigated ones is attitude. The research's implication and recommendation provide specific discussion about the findings and future research. This paper may contribute to the insights of Vietnamese consumers' attitude and behavior toward green products and green marketing.

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Key words: *Green marketing, green electronic products, purchase intention.*

1. Introduction and Background

In recent decades, on no account are environmental protection and green marketing new concepts to many consumers and practitioners in the world. Follows and Jobber (2000) claim that numerous researches in developed countries have found that their citizens are increasingly paying attention to green purchases and are continuingly conscious of the effect of their consumptions on the environment. Both early studies and current ones revealed that, together with the prevalent tendency, environmental awareness intrigued people to reduce their energy spending considerably (Kasulis, Huettner & Dikeman 1981, cited in Hartmann & Apaolaza –Ibánez 2011). Meanwhile, eco-products are widely exposed and popularly purchased in developed countries such as UK, Canada, Scandinavia, Germany and Japan yet developing country such as Vietnam (Hoang & Nguyen 2013).

According to Vo (PetroTimes 2013), unlike other worldwide counterparts, Vietnamese consumers have limited and superficial perceptions of environmental protection as well as low demands for environmentally friendly products whereas natural environment in Vietnam is presently at an alarming level. Many recent environmental reports indicate various issues this country is facing. Communist Magazine (Tap Chi Cong San) (2013) synthesized appraisals from different organizations on Vietnam's current environmental state. In this article, the author reported that the World Bank evaluates Vietnam to be ranked at 85th out of 163 countries with 59 score for The Environment Effectiveness Index. Besides, a research of World Economic Forum displayed that Vietnam is within the ten countries having the lowest quality of air that critically impacts the human's health. Therefore, it is at no surprise that Vietnam is in the bottom position amongst eight South East Asian countries in one study of Yale University regarding to Stable Environment Index *(Communist Magazine 2013)*. As accentuated by Vietnam Journalists Association (2008), in 2008, the most gigantic pollution scandal in Vietnam was the case of a company named Vedan Vietnam that dangerously polluted the local river for more than 14 years without being noticed and caught. Similarly, in the same year, another company called Miwon was also caught of adversely contaminating another local river. Nonetheless, not until these rigorous environmental scandals revealed has Vietnamese Government proceeded more serious actions to protect the natural environment (VnEconomy 2008; Vietnam Journalists Association 2008). In the process of protecting the environment, Vietnamese Government has made continuous efforts to increase consumers' environmental awareness and to encourage citizens to engage in green consumption, which are considered as a practical long-term environmental solution. The endeavours include such propagative programs as Green Space and 24-Hour Live Green that are currently aired on Vietnam's National Television channels (Baomoi 2012; VTV3 2014). Besides, the contemporary worldwide environmental campaign named Earth Hour has also been

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immensely supported by Vietnamese Government as well as Vietnamese consumers and businesses in recent years (Thu 2014; Bao 2011).

Green electronic product is chosen as a researched dimension in the context that electricity price in Vietnam is fairly high and the impact of consuming electricity on natural environment is very apparent. In terms of Vietnamese' low income per capita, the non-stop rising electricity price creates unpleasantness for both Vietnamese consumers and manufacturers (Songha 2013). As the consequences, this situation convincingly encourages Vietnamese consumers to actively look for energy-saving products in recent years (Vietnam Electricity 2012; Quynh 2014).

Explicitly, the demand for green electronic products is definitely potential as the needs of Vietnamese consumers for green electronic products are no longer doubtful. Given the fact that Vietnamese consumers has relatively low levels of environmental awareness in their everyday consumption and that their knowledge toward eco-products is still insufficient (Hoang & Nguyen 2013), it is essential to investigate the rationales behind their purchase intentions toward green electronic products. The raising question is that which factors really drive Vietnamese consumers to have intention to choose electronic products with green features over other non-green ones. To clarify the stated issues, the remainder structure of the research is designed to comprise 4 main parts. The literature review section covers related theories and previous studies regarding to green marketing and purchase intention. The successional section explains about research design and methodologies. Results and discussions of findings are presented next, followed by conclusion and recommendation.

2. Literature Review

According to American Marketing Association (AMA), green marketing is defined on three perspectives. First, in retailing definition, it is 'the marketing of products that are presumed to be environmentally safe'. Second, for social marketing definition, 'the development and marketing of products designed to minimize negative effects on the physical environment or to improve its quality' is viewed as green marketing. And finally, in the third perspective – environments definition – describe the term of green marketing as 'the efforts by organizations to produce, promote, package, and reclaim products in a manner that is sensitive or responsive to ecological concerns' (AMA 2014, sec.67).

Numerous organizations have deployed green marketing by offering their products with green features. D&B Reports has stated that green product is 'the product that will not pollute the earth or deteriorate natural resources, and it can be recycled or conserved' (cited in Shamdasani, Chon-Lin & Richmond 1993, p.488). Likewise, Wasik (1996) also claims that using green product is efficient in reducing the environmental impact. According to Green Electronics (n.d), the concept of green electronics, specifically, is understood as the product

with advanced designs, technology and manufacturing processes that lessen negative impact on the environment while offering consumers better features in term of energy efficiency, cleaner materials and longer product life.

Uncontroversially, those who are willing to engage in consumption of green product are green consumers. As stated by Peattie (1995), green consumer behaviour can be generally defined as the buying and non-buying decisions accounting on environmental or social standards. As there are more and more consumers go green, many companies nowadays therefore see green marketing as a 'must have' and practice this phenomenon in various ways with different effectiveness.

A study by Ramayah, Lee and Mohamad in 2010 about green product purchase intention in developing countries asserts that environmental consequences are not a significant predictor of green purchase intention while individual consequences and self-enhancement value negatively affect the environmentally responsible purchase intention of consumers in developing countries. Comparatively, Hoang and Nguyen (2013) also conducted a research on Vietnamese consumers' awareness and attitude toward green purchasing. Their results claim that consumers with high level of education are prone to have more sufficient knowledge about green products and are more likely to be apprehensive of environmental issues (Hoang & Nguyen 2013).

On the positive side, findings in Pagialis and Krontalis' recent study of green consumption toward bio-fuels in Greece remark that concern for environment has positive impacts on environmental knowledge, beliefs and behavioural intentions (Pagialis and Krontalis 2014). Adding into that conclusion with a slight divergence, the research by Hartmann and Apaolaza–Ibánez (2011) in Spain suggests that advertising campaigns directed at increasing consumer demand toward green energy brands should emphasized not only environmental concern and utilitarian benefits but also psychological brand benefits, including warm glow giving, self-expressive benefits and nature experiences.

Despite diverse findings from current researches on consumers' purchase intention toward green products, the study on Vietnamese consumers' purchases intention toward green electronic products is necessary to understand more specifically about consumers' motivations and attitude toward green purchasing in a developing country.

3. Methodology

3.1 Research Questions

As mentioned above, the aim of this research is to gain the understanding of the manner that consumers come up with the purchase intention for green electronic products, and also the perceptive determinants forming that intention. On that purpose, this study addresses following research questions:

1. What is Vietnamese consumers' current personal experience toward green electronic products?

2. What are their attitudes toward green electronic products?

3. Which factors determine consumers' purchase intention toward green electronic products and what should companies and government do to encourage more green purchase and green consumption?

3.2 Modeling Volatility

The authors mainly apply Theory of Planned Behavior (TPB) of Ajzen (1991), which is the extension of his Theory of Reasoned Action (TRA) propounded by Fishbein and Ajzen (1975). According to TRA which is one of the most important theories used to explain human behavior (Puschel & Mazzon 2010), a person's intention to perform the behavior directly leads to his/her behavior and this intention is, in turn, the result of his/her attitude toward the behavior and his/her subjective norm. In the case of TPB, besides Attitude and Subjective norm, the theory also includes the third variable that affects behavioral intention, known as Perceived behavioral control. 'According to the theory of planned behavior, perceived behavioral control, together with behavioral intention, can be used directly to predict behavioral achievement' (Ajzen 1991, p.184).

Kumar (2012) has compiled in his literature reviewing that TPB has been extensively used in many researches which investigate environmental aspect of behavior such as recycling (Chan 1998; Begum, Siwar, Bereira & Jaafar 2009; Ramayah, Lee & Lim 2012; Shaw 2008), water saving technology (Lynne, Casey, Hodges, & Rahmani 1995) and environmental attitude (Kaiser, Wolfing & Fuhrer 1999).

Although being taken into considerations by TPB, the relationship between purchase intention and purchase behavior will not be mentioned in this paper because Vietnamese consumers still have limited green purchases, as explained above. Thus, it does not have overwhelming supports to do a research on people who have purchased green electronic products in Vietnam. On purpose, there are some modifications based on previous theoretical review in adapting the conceptual framework from the prior study named "Theory of Planned Behavior Approach to Understand the Purchasing Behavior for Environmentally Sustainable Products" of Kumar (2012), so that the current research is more in line with Vietnam's context and Vietnamese respondents.

3.2.1 Environmental Knowledge and Attitude

Environmental knowledge is the terminology that indicates the level of environmental awareness among individuals, the relationship of different aspects of environment and the sense of awareness to conserve the environment for the future generation (Kumar 2012). Considering the first factor "Attitude toward the behavior", "Environmental knowledge" is made used as a factor affecting the attitude of consumers toward green electronic products. Similar approach has indeed been used in the study of Kumar (2012) and Ramayal, Lee and Lim (2012). This relationship is positively remarked in numerous previous studies (Fryxell & Lo 2003; Kalafatis et al., 1999; Kaiser, Wolfing & Fuher 1999; Petty & Cacioppo 1983 & 1986). From the discussion above, it is hypothesized that:

H1: There is a positive relationship between environmental knowledge and attitude toward green electronic products.

3.2.2 Attitude and Purchase Intention

Allport has defined attitude as 'a mental and neural state of readiness, organized through experience, exerting a directive and dynamic influence upon the individual's response to all objects and situations with which it is related' (Allport 1935, p.810). There are several studies that figured out that a positive attitude towards a green product adds to sustainable consumption behavior (Chan 2001; Verbeke & Viaene 1999; Tanner & Kast 2003; Vermeire & Verbeke 2004). Ajzen (1991) also emphasized that favorable attitude towards a particular behavior enhances intention to undertake that behavior. Conceivably, it is hypothesized that:

H2: There is a positive relationship between attitude toward green electronic products and purchase intention for those products.

3.2.3 Subjective Norm and Purchase Intention

According to Ajzen (1991), subjective norm can be understood as a perceived social force to perform a particular behavior. Fishbein and Ajzen (1975) mentioned about subjective norm as form of belief that people approves or disapproves certain behavior when performing the same. Robinson & Smith (2002) stated that subjective norm is perceived to affect purchase intention independently. Several previous studies such as the study on green food of Vermeir & Verbeke (2006), the study on organic food of Chen (2007) and Gotschi, Vogel and Lindenthal (2007) have pointed out a significant and positive relationship between subjective norm and intention to undertake that behavior. For these reasons, it is hypothesized that:

H3: There is a positive relationship between subjective norm and purchase intention for green electronic products.

**3.2.4 Perceived Behavioral Control and Purchase Intention**

It is said that there are plenty of contextual factors that drive the individuals to perform environmental behavior (Stern 1999; Thogersen 2005). The significance of suspecting factors

related to perceived behavioral control such as control on availability and perceived consumer effectiveness besides intra-personal variables such as attitude and subjective norm (Steg & Vlek 2009). Hence, in this paper, perceived behavioral control is explained by two variables, control on availability and perceived consumer effectiveness. Availability of a product is the degree to which how difficultly or easily a product is located or obtained for consumption (Kumar 2012). There are analogous conclusions from many researchers that an individual's confidence in his or her ability to control and perform the behavior has positive relationship with purchase intention and purchase behavior (Taylor & Todd 1995). Additionally, according to Straughan & Robert (1999), perceived consumer effectiveness is comprehended as the persuasion that a consumer has the ability to ensure the positive result from his or her action. Straughan & Robert (1999) and Vermeir & Verbeke (2008) are those who have found significant validity for the positive relationship between environmentally concerned behavior and perceived consumer effectiveness. Accordingly, it is hypothesized that:

H4a: There is a positive relationship between the control on availability of green electronic products and purchase intention for those products.

H4b: There is a positive relationship between perceived consumer effectiveness and purchase intention for green electronic products.

Figure 1: Proposed research model
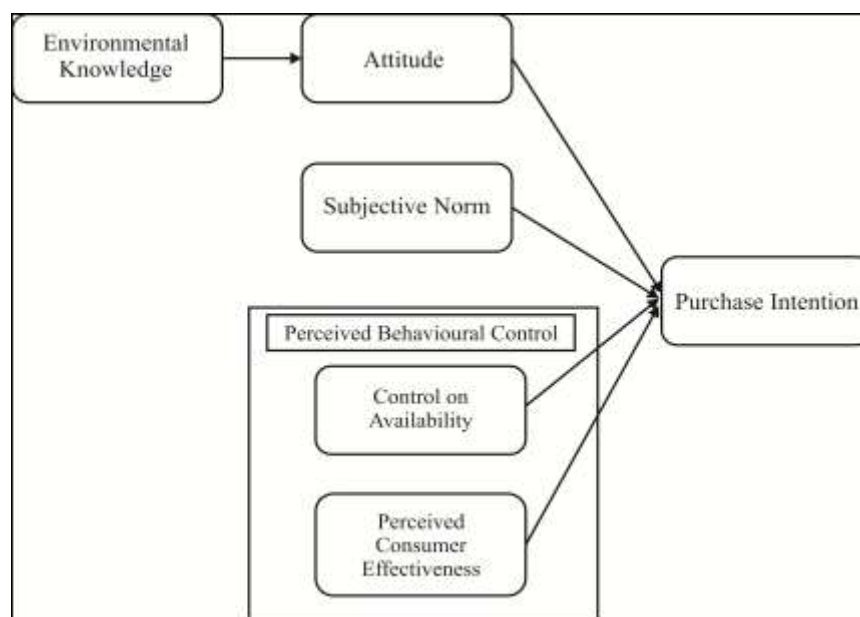
(Source: Adapted from "Theory of Planned Behavior Approach to Understand the Purchasing Behavior for Environmentally Sustainable Products", Kumar (2012))

3.3 Sample and Data

3.3.1 Sample

The research is conducted in Ho Chi Minh City, Vietnam with the intended sample size of at least 250 to study factors affecting purchasing intention of citizens for environmentally

friendly electronic products. The sampling criteria restrictively require respondents to currently live in Ho Chi Minh City, to age 20 years old and above and especially to have purchase intention for electronic products within next 06 months. The method to gather primary data is via structured questionnaires through non-probability sampling fieldwork since there is no available frame list to use probability sampling technique. There are 300 questionnaires being distributed via direct personal fieldwork with self-administered hands out. The fieldwork is conducted at different places, including households, universities, offices and electronics shopping centers and retailers. The measurement items in the questionnaires are adapted from a study of Kumar (2012). The collected data are then analyzed, using SPSS and AMOS software as well as Microsoft Office Excel.

3.3.2 Data

There were 282 out of 300 questionnaires being returned and 19 invalid returned questionnaires are rejected after being cautiously checked. The final results obtained 263 questionnaires that qualify the criteria of the study and were continued to be analyzed for further findings. Among 263 respondents, there are 111 males and 152 females, accounted for 58% and 42% of total respondents, respectively. Moreover, the group of respondents whose age range from 20 to 29 years old occupied nearly half of total with 129 respondents. Besides, the group of respondents who have monthly income of over 30 million VND occupied the smallest percentage of only 7% among all respondents. The respondents' profiles are described more specifically in table 1.

Table 1: Demographic profiles of respondents

|		Frequency	Percentage
Gender			
-	**Male**	111	42%
-	**Female**	152	58%
Age			
-	**20 – 29**	129	49%
-	**30 – 39**	61	23%
-	**40 – 50**	55	21%
-	**Over 50**	18	7%
Occupation			
-	**Student**	50	19%
-	**Officer**	59	23%
-	**Running business**	111	42%
-	**Others**	43	16%
Income			
-	**Under 10,000,000VND**	124	47%
-	**10,000,000 – 20,000,000VND**	70	27%
-	**20,000,000 – 30,000,000VND**	51	19%
-	**Over 30,000,000VND**	18	7%

4. Results and Discussion

4.1 Overall personal experience of Vietnamese consumers toward green electronic products in Ho Chi Minh City

The results show that, the percentage of consumers who have known versus who have not known about green electronic products are quite equivalent, with 54% and 46% respectively. Similarly, the proportion of consumers who have seen (48%) and have not seen green electronic (53%) is not significantly different. This means that green electronic product is not a peculiar concept to many consumers in Ho Chi Minh City market, yet it is still not very popular in consumer perception. Nevertheless, among 263 respondents, there is a considerable gap between the numbers of respondents who have bought and who have never bought a green electronic product before. There are up to 198 people who have never bought any of this kind of products, which accounted for about 75% of total. This, again, emphasizes the unpopularity of green electronic product purchase in Ho Chi Minh City market, wherein the potential for various kinds of new products and services is massive. There are 48% of respondents saying that they care about environmental friendliness of electronic products and only 13% of total respondents admitting not caring about the green characteristics of electronic products. The remaining proportion belongs to those who either concern or neglect of green benefits, account for 39 % of all respondents.

In case of respondents who have bought this kind of product, it is revealed that the most popular category of green electronic product that consumers in Ho Chi Minh City have bought are home electronic appliances, such as air-conditioner, refrigerator, washing machine and so forth.

Figure 2: Summary of brand names of green electronic product have been bought
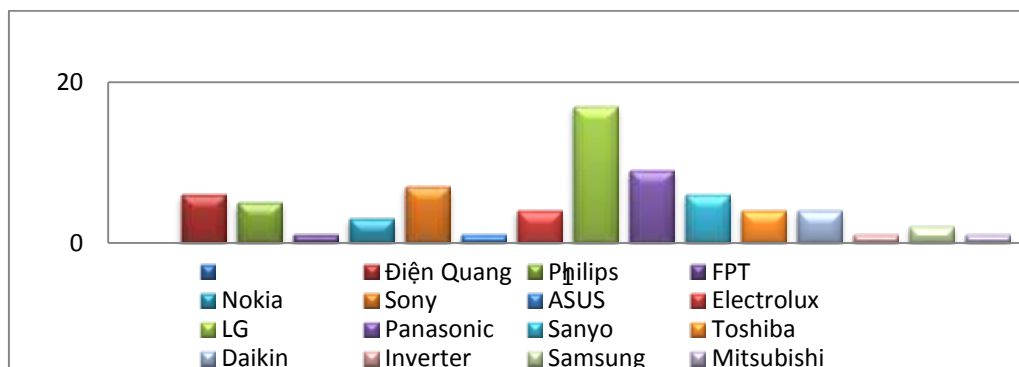
Based on the information provided by 65 respondents who have bought green electronic products, it is explored that LG – a Korean electronics manufacturer - is the most popular brand name of electronics product that have environmentally friendly features. The second position belongs to Panasonic from Japan. Among 16 brands, Điện Quang is the only one Vietnamese brand name listed with energy-saving bulb. Điện Quang's energy-saving bulb is one of two first Vietnamese products that are qualified for "Green Label" certificate by Vietnamese Ministry of Resource Planning and Environment. In addition to Điện Quang,

Philips is also quite popular for its energy-saving bulb. Moreover, besides home appliances, high-tech products like mobile phones and laptops with green features from Nokia, FPT and ASUS is also used.

The second part of the questionnaires is designed with particular questions regarding to respondents' agreement levels toward statements of green electronics products and environmental-related aspects. Five-point Likert scale ranging from "1= Strongly disagree" to "5= Strongly agree" is applied in the survey.

4.2 Reliability of measurement scales

For the scales of environmental knowledge, attitude, subjective norms, control on availability, perceived consumer effectiveness and purchase intention, the collected Cronbach's alpha value ranged from 0.805 to 0.912, which are all higher the acceptable level of 0.6. Although in the construct of environmental knowledge, the elimination of item "Using GEP is primary mean to reduce pollution" can increase the Cronbach's alpha from 0.894 to 0.906. However, because the improvement is small, item is not deleted. This indicates the reliability of the constructs and all items are kept remaining.

Table 2: Testing measurement scale by Cronbach's alpha

Factors	Number of items	Cronbach's alpha
Environmental knowledge (EK)	3	0.894
Attitude (ATT)	6	0.912
Subjective norms (SN)	4	0.853
Control on availability (COA)	4	0.824
Perceived consumer effectiveness (PCE)	4	0.805
Purchase intention (PI)	4	0.825

4.3 Exploratory factor analysis (EFA)

Factor analysis is then made for the group of four constructs: attitude, subjective norms, control on availability and perceived consumer effectiveness, with extraction method of Principal Axis Factoring and rotation method of Promax. Two items named PCE.2 "If I buy GEP, I will try to understand their affect" and ATT.5 "Feel economical when using GEP" were deleted due to unqualified values. After running 3 times of exploratory factor analysis for this group and deleting 2 unsatisfactory items, the final results is presented below.

Table 3: Exploratory Factor Analysis – Rotated Component Matrix

Items	Description	Components

		1	2	3	4
ATT.1	I believe that the use green electronic products by me will help in reducing pollution and also help in improving the environment.	.661			
ATT.2	I believe that the use green electronic products by me will help in reducing wasteful use of natural resources	.986			
ATT.3	I believe that the use green electronic products by me will help in conserving natural resources	.923			
ATT.4	I feel good about myself when I use green electronic products.	.707			
ATT.6	I like using green electronic products.	.563			
SN.1	My friends expect me to engage in green electronic products usage behavior.			.572	
SN.2	My family expects me to engage in green electronic products usage behavior.			.560	
SN.3	My society expects me to engage in green electronic products usage behavior.			.848	
SN.4	People can rely on me to make a positive contribution to the society due to my green electronic products usage behavior.			.900	
COA.1	I am familiar with the availability of green electronic products in my locality.		.722		
COA.2	I can easily get green electronic products whenever I need them.		.992		
COA.3	I have control on affordability toward green electronic products.		.522		
COA.4	I have control on the time spending for searching and using green electronic products.		.598		
PCE.1	It is valuable for any individual consumer to do something about pollution.				.499
PCE.3	One person cannot have any effect upon pollution and natural resources problems, but many people together can make difference.				.673
PCE.4	Each consumer's behavior can have a positive effect on society by purchasing green electronic products.				.626

4.4 Confirmatory factor analysis (CFA)

For a good fit model, there are certain criteria being remarked in the following table.

Table 4: Criteria for measurement model fit

Criteria	Requirements
CMIN/df (Chi-square/df)	$2 \leq CMIND/df \leq 5**; \leq 3*$
GFI (Good fit index)	$\geq 0.9**; \geq 0.8*$

TLI (Tucker & Lewis index)	≥ 0.9
CFI (Comparative fit index)	≥ 0.9
RMSEA (Root mean square error approximation)	≤ 0.8
Standardized regression weight	> 0.5
Unstandardized regression weight	< 0.05
ρ_c **(Composite reliability)**	> 0.7 and $>$ AVE
ρ_{vc} **(Variance extracted)**	> 0.5

(Source: Wheaton et al (1997); Tabachnick & Fidell (2007); MacCallum, Browne & Sugawara (1996); Bentler & Bonett (1980); Hair et al (1998); Joreskog (1969); Carmines & McIver (1981); Chin & Todd (1995), Byrne (2001))

After running CFA and checking modification indices so as to improve Chi-square value by correlating within-factor errors (e11 and e12, e13 and e14), the model now is considered as fit the data collected. In details, Chi-square/df = 2.694 (< 3), GFI = 0.833 (> 0.8), TLI = 0.902 (> 0.9), CFI = 0.917 (>0.9) and RMSEA = 0.8. Besides, all the standardized regression weights are greater than 0.5, and all P-value are equal 0.000 (< 0.05). They are all acceptable, which indicates the convergent validity of the measurement model.

Figure 3: Modified unstandardized measurement modeling
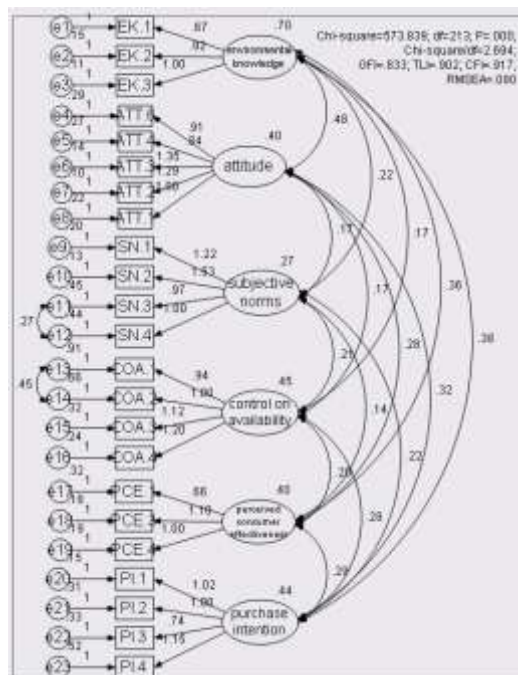
Next, reliability of the model is tested by looking at the value of Composite Reliability (ρ_c) and Variance Extracted (ρ_{vc}) which is calculated according to the equation of Joreskog (1969) and Fornell & Larcker (1981), cited by Nguyen (2009).

Table 5: Composite Reliability and Variance Extracted

Factors	Number of items	Composite reliability (ρ_c)	Variance extracted (ρ_{vc})
Environmental knowledge	3	0.896	0.743
Attitude	5	0.914	0.684
Subjective norms	4	0.831	0.559
Control on availability	4	0.807	0.518
Perceived consumer effectiveness	3	0.806	0.586
Purchase intention	4	0.824	0.518

All the items' composite reliability are greater than 0.7 and even greater than all of their variance extracted whose values are higher than 0.5. Hence, it can be concluded that the measurement for the model are acceptable for the reliability. The average variance extracted (AVE) is supposed to be greater than 0.5 to conclude that convergent validity has been established.

4.5 Structural equation modeling (SEM)

After running Structural Equation Modeling, the significance of the individual paths is shown in Figure 5. However, in the first model of SEM, some requirements are not satisfied. Hence, the model fit will be improved by repeating adding modification covariance between error terms to improve Chi-square value. In details, covariance is added between the error terms of the item EK.1 (e1) and ATT.1 (e8). Though the addition is not between within-factor errors, EK.1 "Using green electronic products is a primary means to reduce pollution" and ATT.1 "I believe that the use green electronic products by me will help in reducing pollution and also help in improving the environment" are logically relevant, because the awareness stated in EK.1 highly possibly could lead to the belief in ATT.1. And after modifying, we have the final result of Structural Equation Modeling displayed in figure 5.

Figure 5: Final structural equation modeling
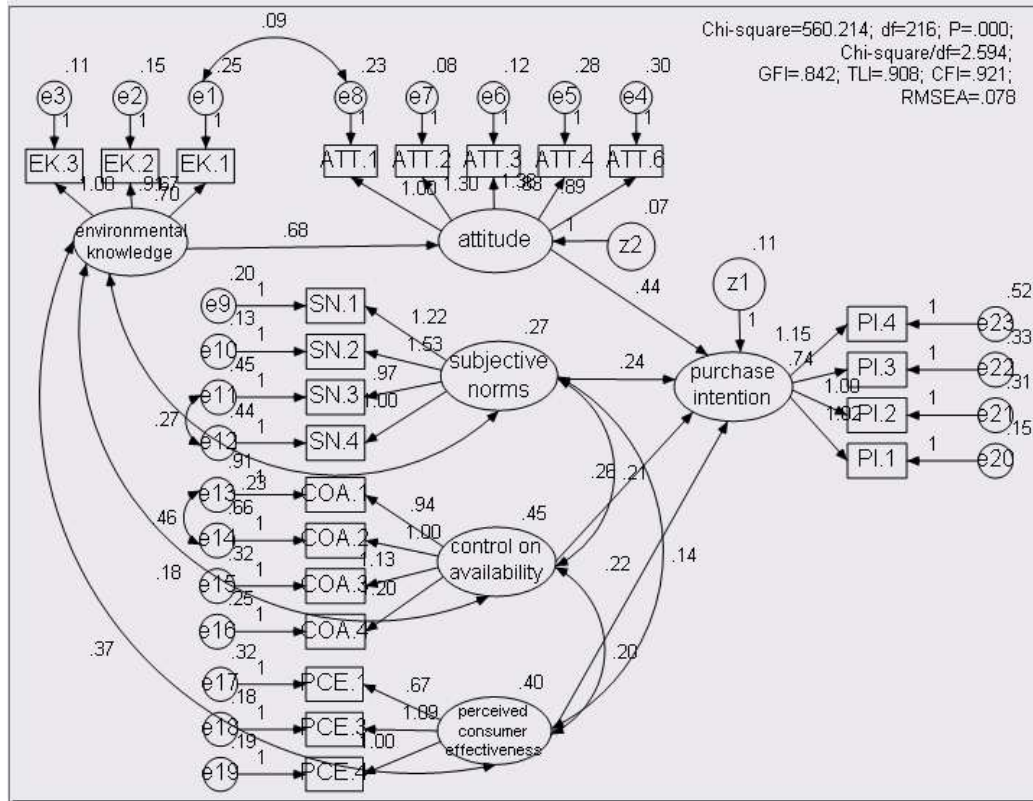
The research model now fits the data collected well when all of the criteria are satisfactory. In detail, Chi-square/df = 2.594 (< 3), GFI = 0.842 (> 0.8), TLI = 0.908 (> 0.9), CFI = 0.921 (> 0.9) and RMSEA = 0.078 (< 0.8).

The final result from SEM reveals that Vietnamese's environmental knowledge has evidently positive impact on their attitude toward green electronic products. Moreover, their purchase intentions are positively influenced by their attitude, subjective norms, control on availability and perceived consumer effectiveness toward green electronic products. These insights are reasonably consistent with previous findings of similar researches on green purchase intentions, including Alwitt and Pitts (1996), Hoang and Nguyen (2013) and Pagialis and Krontalis (2014).

Table 5: The confirmation of hypotheses

Path description	Hypothesis	Unstandardized Path Estimates	P-value	Result
Environmental knowledge → Attitude	H_1	0.685	***	Supported
Attitude → Purchase intention	H_2	0.436	***	Supported
Subjective norms → Purchase intention	H_3	0.237	0.007	Supported
Control on availability → Purchase intention	H_{4a}	0.265	***	Supported

Perceived consumer effectiveness → Purchase intention	H_{4b}	0.216	0.003	Supported

5. Conclusion & Recommendation

5.1 Conclusion

The aim of this study is to understand the determinant factors that encourage or discourage Vietnamese consumers' purchase intentions toward green electronic products in Hochiminh City. The data reflect the actual state of green purchasing in Vietnam, in which there are more than 75% of respondents who never bought a green electronic product before and more than 50% of respondents who are neglectful or admit not caring whether the electronic products are green or not. The SEM results confirmed the relationship between factors of the research model where Environmental knowledge (EK) has positive and significant relationship with Attitude (ATT). In the same fashion, Attitude (ATT), Subjective norm (SN), Control on availability (COA) and Perceived consumer effectiveness (PCE) all are proved to have significant and favorable impacts on Purchase intention (PI). Indeed, according to figures obtained from analyzing data, the dimension of environmental knowledge is truly strongly related to attitude of consumers toward the products, and that attitude has the greatest linkage with their purchase intention. The perception of other people's idea about using GEP, the ability to control the availability and the effectiveness consumers perceive about the products have quite similar impact levels on purchase intention, provided that perceived consumer effectiveness is the weakest predictor among them. Ultimately, all the research hypotheses are accepted.

5.2 Recommendation

Firstly, as discussed above, Vietnamese consumers' attitude which is led by their environmental knowledge has important impact on their purchase intention. Therefore, manufacturers and suppliers of GEP should take this into consideration when launching their products into the researched market. Concretely, together with the government, manufacturers can educate target consumers about serious environmental problems that we are facing through various marketing campaigns and communicate the positive effects of using such GEP products on the environment. These educational activities can help enhance Vietnamese's environmental knowledge. Importantly, detailed information about the efficiency of GEP'S advanced features in solving environmental problems should also be adequately provided.

Secondly, Vietnam is known as a collectivism society, so it is not really surprising to find that subjective norm has significantly positive impact on consumer purchase intention. Vietnam's Government is deliberately making an effort in encouraging people to engage in

green consumption. Henceforth, the manufacturers and supplier of GEP can take this advantage by supporting or sponsoring such government's public green campaigns, so that consumers may perceive that the society really appreciates environmental protection and that practical resolution like using GEP is expected from them. Besides, subjective norm also relates to ideas from consumers' important people like their families and friends. According to Gurhan-Canli & Maheswaran (2000), people living in collectivism societies consider word-of-mouth as an informal communication channel due to high contact rate among those people. Under this circumstance, manufactures and suppliers need to make sure that their current consumers have great experiences with their products. The positive word-of-mouth effect from those current consumers can intrigue purchase intention from other perspective ones.

Besides, most often consumers only have intention to buy some products when they can at least see or perceive the availability of that product around them. The manufacturers and suppliers are recommended to make green products available to consumers whenever and wherever they recognize their needs to buy an electronic product. Raising consumer's perception toward GEP by emphasizing the green features or certified labels of electronic products so that consumers are able to recognize and differentiate them from other ordinary ones is also crucial. In reality, if consumers do not have affordability to buy GEP or lack of time for the information search stage, the manufacturers and suppliers have to take into consideration by providing different green product lines suitable for corresponding segments. Also, to help consumers not to spend too much time in searching for and buying GEP, detailed information about the availability, product features, price, and so forth, should be stated clearly in websites or advertising documents.

Finally, although perceived consumer effectiveness has the weakest impact on purchase intention, it may still have effect on encouraging consumers to intend to buy GEP. When consumers perceive that their usage of GEP can profoundly generate practical benefits for the environment as well as for themselves through the reduction of energy expenditure and better living environment, they will has more tendency toward green purchase.

6. Limitations and future research

This empirical study is chiefly of descriptive nature and focuses on one product category which is green electronic products. Furthermore, the research also does not measure actual purchase behaviour but purchase intention instead. Due to limited resources, another limitation is that the study focuses only on people who are living in Hochiminh city, Vietnam. Although Hochiminh City is a dynamic city that comprises people originating from different cities and regions throughout Vietnam, it may not represent for people who permanently live in other areas. Thus, it may not be complete to generalize the results for the whole country. Future researches should also take into consideration other product categories and services to

deeply examine the nature of the issues. In the next few years, when green products and services become more popular in Vietnam, subsequent studies should address to measure the actual behaviour in different cities and areas in Vietnam to see underlying rationales of Vietnamese consumers' awareness and behaviours towards green purchase and green consumption.

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