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A Comparison of Thai Consumers Purchasing Behaviour with the Environmental Characteristics: Electric Appliances Market

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ABSTRACT

The purpose of this study was to study three factors of environmental characteristics: Environmental attitude, environmental knowledge and environmental lifestyle that affected the purchasing behaviour of Thai consumers who purchased electric appliances. This study suggested a three-dimension construct of purchasing behaviour: Convenience, efficiency and environmental factor. A random sample survey of 300 individuals was used to verify the conceptual model. Multiple regression and correlation coefficient analysis were applied to examine data. Findings of this study showed that environmental attitude, environmental knowledge and environmental lifestyle had significant effects on environmentally-based purchasing behaviour, environmental attitude and environmental knowledge had significant effects on efficiency-based purchasing behaviour and partial of environmental attitude only one had significant effects on convenience-based purchasing behaviour. This study improves our understanding of how Thai consumers' lifestyle, knowledge and attitudes define their way of behaving to creating green society for sustainable development.

Key words: Green marketing, green purchasing behaviour, green perceived value, environmental attitude, environmental knowledge, environmental lifestyle

INTRODUCTION

As natural resources and the environment have slowly deteriorated and dwindled. Three major environmental problems could be divided: (1) Reduction of quantitative and qualitative due to natural resource problem, (2) Pollution problems and (3) Destruction of natural ecology system. The environmental crisis has triggered a shift toward an "era of green," the co-effort between producers and consumers have responded with progressive strategies and ideologies to improve quality of life while reducing environmental problems (UNEP, 2011a, b) such as free-CFCs products, eco car and so on. In addition, the reinforcement of energy costs, climate change and health problems have pushed consumers to seriously consider the benefits and effects that they could be the part in improving environment.

According to data produced by the Customs Department of Thailand, imported electric appliances and parts category that were classified according to economic sector become yearly higher values, respectively. Types of electric appliances greatly played key roles toward daily livings because it could be responses toward needs. Different brands have designed environmentally-friendly electric appliances for environmental purpose together with consumer targets. However, consumption campaigns of environmental products in the market would be

available but the market for green products has been relatively unsuccessful in Thailand. The consumers of environmentally friendly products were few or less proportion when compared with the consumers who purchased the products without regarding the effect toward health and environment. Furthermore, research of green consumer behaviour in Thailand is insufficient.

This study has focused on a comparison purchasing behaviour of Thai consumers with the environmental characteristics in the market of electric appliances. The research usefulness have made us understand characteristics of consumers in order to plan the policy and campaign to protect the environment and implementation of green marketing strategy, as well as continuous improvement for sustainable development.

LITERATURE REVIEW AND HYPOTHESES

Green marketing: The natural world has been destroyed by humans over the past three decades, on the other hand, the object created by human that has come for more substitution and play role. These are critical factors in the direct and indirect destruction of natural resources. People, organizations and institutions across the globe have started to realize on the problems to prevent the environmental problem into crisis state.

In A.D. 1960, new marketing philosophy called as “green marketing” was initiated from the consumer needs of environmentally friendly products (Awad, 2011). Later in 1990s, the environmental issue become more important as found from social researches and the instruments that become crucial roles toward the study on environmental consideration in purchase decisions (Awad, 2011; Menon *et al.*, 1999; Prothero, 1996). The green marketing concept paralleled with Corporate Social Responsibility (CSR) concept with main objectives to emphasize on waste disposal, environmental responsibility, fair product price and profit-making (Pride and Ferrell, 2008).

The green marketing would be the opportunities for the entrepreneurs to create new innovations and was a competitive advantage for business (Kaufman, 1999; Laroche *et al.*, 2001; Vaccaro, 2009). Moreover, it could build positive image to brand (Gurau and Ranchhod, 2005; Pugh and Fletcher, 2002). Green marketing is the challenges for marketing in the new millennium (Jain and Kaur, 2003; Murphy, 2005).

Green purchasing behaviour: In the “green era,” it is crucial for organizations and companies to put greater emphasis on environmental and social responsibility (Roberts, 1996), because consumer purchasing behaviour had changed (Chan, 2001; Kim, 2002; Kim and Choi, 2003, 2005). The idea of a dynamic, interactive relationship between people and their environment was widely spread in social psychology, notably in the study of environmental behaviours (Demarque *et al.*, 2013).

Purchasing behaviour is the way that individuals, groups or organizations try to meet their needs when selecting products or services. Green purchasing behaviour refers to the purchasing of products that have a minimal effect on the environment (Mainieri *et al.*, 1997). Products reduce pollution that were called as green products, environmentally-friendly products and ecological products, meaning they focus on saving energy, preserve environment and reduce waste during utilization etc. In addition, green products were designed in order that their materials and components could be recycled and reused (Godfrey, 2002).

According to the study on green purchasing behaviour of the youth groups in Hong Kong, the consumer behaviour were influenced from peers and acquaintances, local environmental involvement and concrete environmental knowledge (Lee, 2010). Moreover, environmentally

conscious attitudes linked with the tendency to purchase green products or make changes to purchase green or recycled products (Mainieri *et al.*, 1997). In a similar, environmental lifestyle can be predicted by the environmental concern level of individual such as recycling behaviour (Simmons and Widmar, 1990) and purchasing green products (Chan, 1996).

Green perceived value: Perceived value was defined as overall evaluation of product and service utility gained with total costs that were satisfaction, convenience and social profits (Lapierre, 2000). Patterson and Spreng (1997) indicated that green perceived value refers to a consumer's overall evaluation of what would be gained in both general and environmental utility of product or service. In addition, (Chen and Chang, 2012; Patterson and Spreng, 1997) notified that green perceived value could be divided into five aspects (product function, product efficiency, environmentally friendly, environmental concern and environmental usefulness) and values and beliefs influenced on purchasing decisions (Hoyer and MacInnis, 2004).

Environmental values played the crucial roles toward pro-environmental behaviour since the values affected human beliefs, leading to consumers' pro-environmental behaviour (Reser and Bentrupperbaumer, 2005). Roberts (1996) found that convenience and value were the main factors in a consumer's purchases, who expressed a willingness to purchase environmentally-friendly products and would not be interested in their functional efficiency or convenience (Berger, 1993). Even though pro-environmental values might not clearly indicate the pro-environmental behaviour but pro-environmental values would tend to bring in pro-environmental behavior (Baker and Ozaki, 2008).

Synthesizing on the literature review this researcher utilized purchase behaviour with convenience factor (product function), efficiency factor (product efficiency) and environmental factor (environmentally friendly or environmental usefulness).

Environmental attitude: An attitude can be defined as a positive or negative evaluation of people, objects, events, activities, ideas or just about anything in one's environment (Eagly and Chaiken, 1998). Lutz (1991) noticed that attitude was derived from learning via individual experiences or passed from gaining data with others and the attitude could be indicated by the thought and feeling person toward people, objects, specific situations and the environment with long term effect. The consumer behaviour studies were complicated and the psychological criterion was a crucial variable, since most green consumers might not only buy products as trends but also according to their desire to be involved in reducing damage to the environment.

According to the literature reviews, the findings of most environmental marketing researchers found that psychographic variables predicted environmental consciousness and green consumer behaviour more than social-demography did (Roberts, 1996; Schlegelmilch *et al.*, 1996). The researchers used psychographic variables to define the term "green consumer" in the study of green consumer behaviour patterns (Chan, 1999; Fraj *et al.*, 2006; Fraj and Martinez, 2006; Kaiser *et al.*, 1999a, b; Ramanaiah *et al.*, 2000). Environmental attitudes were examined in this study in order to understand green purchasing behaviour in Thailand. This study were suggested three-dimension construct of environmental attitude: Perception on environmental concern, perception on environmental problems and perception on environmental responsibility.

The perception on environmental concern was an individual's attitude toward environmental problems and the method to solve those problems (Chan and Lau, 2000). The level of a consumer's environmental concerns was determined by level of intention and willingness to pay more.

(Bang *et al.*, 2000; Kim and Choi, 2005; Lee, 2009; Mainieri *et al.*, 1997). A high degree of environmental concern reflected distinct green consumption behaviour (Shetzer *et al.*, 1991) and would be delighted to purchase green products (Mainieri *et al.*, 1997; Schwepker and Cornwell, 1991).

The perception on environmental problems was a consumer's knowledge and understanding of environmental problems as well as subsequent effects. The severity levels of environmental problems varied depending on environmental factors and area conditions (Dunlap, 1994). One such factor was natural (i.e., air pollution that was generated from a volcanic eruption) and the other was generated from human actions. Perceptions about environmental change, in general and concern about climate change, in particular, were found to relate positively to changes in environmental behaviour (Tobler *et al.* 2012). Two studies (Axelrod and Lehman, 1993; Milfont, 2007) confirmed that perceived environmental threats had a significantly positive effect on environmental behaviour and environmental attitudes (Pahl *et al.*, 2005). Consumer awareness of environmental problems was indicated the effectiveness of behavioral as well (Ellen *et al.*, 1991).

The perception on environmental responsibility was the social responsibility, environmental standards and the direction of social activity policies combined with conservative concept and long-term business strategy development. McGougall (1993) concluded that consumers with strong attitudes toward socially responsible behaviour tended to purchase environmental friendly products. Perception of awareness hazardous depended on responsibility and willingness to pay to protect environment for long term benefits in the world and humanity (Lee, 2009).

- H₁**: Environmental attitude had a significant effect on the convenience-based purchasing behaviour of consumers.
- H_{1a}**: Perception on environmental concern had a significant effect on the convenience-based purchasing behaviour of consumers.
- H_{1b}**: Perception on environmental problems had a significant effect on the convenience-based purchasing behaviour of consumers.
- H_{1c}**: Perception on environmental responsibility had a significant effect on the convenience-based purchasing behaviour of consumers.
- H₂**: Environmental attitude had a significant effect on the efficiency-based purchasing behaviour of consumers.
- H_{2a}**: Perception on environmental concern had a significant effect on the efficiency-based purchasing behaviour of consumers.
- H_{2b}**: Perception on environmental problems had a significant effect on the efficiency-based purchasing behaviour of consumers.
- H_{2c}**: Perception on environmental responsibility had a significant effect on the efficiency-based purchasing behaviour of consumers.
- H₃**: Environmental attitude had a significant effect on the environmentally-based purchasing behaviour of consumers.
- H_{3a}**: Perception on environmental concern had a significant effect on the environmentally-based purchasing behaviour of consumers.
- H_{3b}**: Perception on environmental problems had a significant effect on the environmentally-based purchasing behaviour of consumers.
- H_{3c}**: Perception on environmental responsibility had a significant effect on the environmentally-based purchasing behaviour of consumers.

Environmental knowledge: Environmental knowledge at the individual level varies according to degree of exposure to the natural world. Degree of exposure to the environment can be affected by a variety of variables that consisted of cultural, traditions, geographic residence, occupation etc. (Guest, 2002; Johnson and Griffith, 1996; Maffi, 2001). An increase in knowledge may have raised concerns and awareness of environmental problems but it did not necessarily result in behavioral changes (Bamberg and Moser, 2007; Zsoka *et al.*, 2013). Environmental knowledge was divided into two types: Objective knowledge which referred to factual knowledge and kept in the memory, whereas subjective knowledge meant perceptions or evaluations of each individual from the knowledge kept in the memory. Researchers have examined both types of knowledge in relation analyses (Ellen, 1994) and found that objective knowledge was significantly and positively related to environmental behaviour (Bamberg, 2003; McFarlane and Boxall, 2003), recycling behaviour (Ellen, 1994) and green purchasing behaviour (Tilikidou, 2007); on the other hand, subjective knowledge was significantly related to environmental concern (Ellen *et al.*, 1991).

Many studies relied on knowledge to the study of personal behaviour, the transfer of knowledge (Frick *et al.*, 2004) and consumers' environmental knowledge were key factors in the development of environmental behaviour (Vining and Ebreo, 1990). Moreover, the findings of the results from many researchers concluded that environmental knowledge influenced green purchasing behaviour and pro-environmental behaviour. For instance, Chan and Lau (2000) studied the consumers in Beijing and Guangzhou in China, they discovered that elements of green purchasing were orientation man-nature relationship, ecological feeling and ecological knowledge. Amyx *et al.* (1994) confirmed that individuals with a high level of environmental knowledge would be willing to pay more for green products. In contrary, Hwang *et al.* (2000) argued that a high level of environmental knowledge could not confirm that the consumers would have environmental behaviour:

- H₄:** Environmental knowledge had a significant effect on the convenience-based purchasing behaviour of consumers.
- H₅:** Environmental knowledge had a significant effect on the efficiency-based purchasing behaviour of consumers.
- H₆:** Environmental knowledge had a significant effect on the environmentally-based purchasing behaviour of consumers.

Environmental lifestyle: The environmental lifestyle was called in different terms such as pro-environmental, recycling behaviour, green lifestyle and so on. However, all of these names refers to behavioural expressions that reduce impact on nature and the environment (i.e., recycling, energy conservation, relying less on natural resources and using non-hazardous substances) (Kollmuss and Agyeman, 2002; Trivedi *et al.*, 2011). Most studies of environmental lifestyle was applied to psychographic factors. Ebreo *et al.* (1999) examined the relationship between respondents' beliefs about environmentally responsible consumerism and environmental attitudes, motives and self-reported recycling behaviour. Tilikidou and Delistavrou (2004) investigated pro-environmental and post-purchase behaviour, such as recycling, petrol conservation, product reuse and second-hand sales, donations and maintenance. In addition (Barr, 2007; Barr *et al.*, 2001, 2005) reported on a representative survey of self-reported recycling, reuse and reduction behaviour and attitudes and Wan *et al.* (2012) explored recycling attitudes and green behaviour in university students.

Moreover, the studies on attitude and environmental lifestyle chiefly relied on two key concepts-importance and inconvenience (Laroche *et al.*, 2001) in the same way as studies of

recycling behaviour considered recycling importance and recycling inconvenience. In a similar research of McCarty and Shrum (1994) found that the relationship between inconvenience and recycle, the consumers believed that recycles were complicated things. As a complex mechanism, recycling and a consumer's belief in its importance to the environment, had significant effects on recycling behaviour:

- H₇:** Environmental lifestyle had a significant effect on the convenience-based purchasing behaviour of consumers.
- H₈:** Environmental lifestyle had a significant effect on the efficiency-based purchasing behaviour of consumers.
- H₉:** Environmental lifestyle had a significant effect on the environmentally-based purchasing behaviour of consumers.

METHODOLOGY

The researchers studied 300 working aged male and female consumers who purchased electric appliances. According to the Institute for Population and Social Research in 2013, working age referred to people between 15 and 60 years old. The random sampling (SRS) were handed out between April and June, 2013. The instruments utilized in this study were questionnaires with close-ended questions and the five-point Likert scale. They consisted of four parts. The first part measured environmental attitudes, namely, environmental concern and developed from Lee (2008), Thogersen *et al.* (2010) perception on environmental problems and perception on environmental responsibility adapted from Lee (2008). The second part determined environmental knowledge and adjusted from Laroche *et al.* (2001) and Polonsky *et al.* (2011). The third part gauged environmental lifestyle and modified from Baker and Ozaki (2008). The final part was designed to measure the purchasing behaviour of consumers.

According to Charles (1995) items are answered or individual's scores remain relatively the same can be determined through the test-retest method at two different times. The theoretical value of alpha varies from 0 to 1. A high degree of stability indicates a high degree of reliability which means the results are repeatable. Therefore some professionals require a reliability of 0.70 or higher (obtained on a substantial sample) before they will use an instrument (Nunnally, 1978). Calculated via Cronbach's Alpha, the reliability of this study was measured at 0.736. The next step, researchers examined using multiple regression statistical analysis.

RESULTS AND DISCUSSION

Multiple regression statistical analysis was measures of consumer purchasing behaviour. However, before analyzing the next step, the researchers employed Pearson's correlation coefficients to measures the relationship between three dimensions of variables. It was found that these measures were all positively correlated with one another. None of the calculations were over 0.80 and this indicated the non-existence of multicollinearity problems, as shown in Table 1. Analysis of Variance (ANOVA) of the respondents is shown in Table 2. It was found that consumer purchasing behaviours based on convenience, efficiency and environmental-friendliness were significant ($p < 0.01$).

Multiple regression statistical analysis was employed to examine consumer purchasing behaviour. The results of multiple regression analysis and the estimation of the equation were as follows in multiple regression equation:

Table 1: Pearson's correlation coefficients of environmental attitude, knowledge and lifestyle

Environmental characteristics	Mean	Standard deviation	1	2	3	4	5
Environmental concerns	3.90	0.51	1.000				
Environmental problems	3.63	0.49	0.293**	1.000			
Environmental responsibility	3.55	0.45	0.355**	0.447**	1.000		
Environmental knowledge	2.83	0.77	0.245**	0.165**	0.197**	1.000	
Environmental lifestyle	3.94	0.45	0.288**	0.163**	0.070	0.080	1.00

**Correlation is significant at 0.01 level (2-tailed)

Table 2: Analysis of variance in purchasing behaviour

Purchasing behaviour	Sum of squares	df	Mean square	F	Significance
Convenience					
Regression	14.438	5	2.888	11.571	0.000**
Residual	73.369	294	0.250		
Efficiency					
Regression	16.799	5	3.360	17.302	0.000**
Residual	57.089	294	0.194		
Environmental					
Regression	18.045	5	3.609	26.304	0.000**
Residual	40.338	294	0.137		

**p<0.001, *<0.01

$$Y_i = \beta_0 + \beta_1 X_{i1} + \beta_2 X_{i2} + \dots + \beta_k X_{ik} + \varepsilon_i$$

Model of purchasing behaviour: $Y_i = \beta_0 + \beta_1$ perception on environmental concern + β_2 perception on environmental problems + β_3 perception on environmental responsibility + β_4 environmental knowledge + β_5 environmental lifestyle + ε .

where, X is the independent variable, (Environmental concerns, environmental problems, environmental responsibility, environmental knowledge, environmental lifestyle) and Y is the dependent variable:

- Consumer convenience-based purchasing behaviour
- Consumer efficiency-based purchasing behaviour
- Consumer environmental-based purchasing behaviour
- ε is the residual

Hypothesis testing: Convenience-based purchasing behaviour: The empirical survey findings proved that the perception on environmental problems was significantly related to convenience-based purchasing behaviour (partially supported H_1), the coefficient of determination (R^2) value could be calculated at 0.164. Nevertheless, the results obtained in relation to another variable have not (not supported H_4, H_7), as shown in Table 3. From these results it could be concluded that consumers who make purchases based on convenience will think of their own convenience before the effect that their purchases have on the environment. Even though they would realize and perceive the occurring environmental problems. In a sense, convenience was a barrier to the development of environmental characteristics. The finding was consistent with the

Table 3: Regression analysis of convenience-based purchasing behaviour

Environmental characteristics	B	Standard error	β	t-value	p-value
Constant	2.676	0.395	-	6.776	0.000
H _{1a} : Perception on environmental concern	-	-	-	-	0.113
H _{1b} : Perception on environmental problems	0.476	0.066	0.439	7.221	0.000**
H _{1c} : Perception on environmental responsibility	-	-	-	-	0.479
H ₄ : Environmental knowledge	-	-	-	-	0.984
H ₇ : Environmental lifestyle	-	-	-	-	0.192

**p<0.001, *p<0.01

Table 4: Regression analysis of efficiency-based purchasing behaviour

Environmental characteristics	B	Standard error	β	t-value	p-value
Constant	0.766	0.348	-	2.198	0.029
H _{2a} : Perception on environmental concern	0.145	0.057	0.149	2.553	0.011
H _{2b} : Perception on environmental problems	0.194	0.058	0.195	3.337	0.001*
H _{2c} : Perception on environmental responsibility	0.275	0.065	0.253	4.237	0.000**
H ₅ : Environmental knowledge	0.140	0.034	0.219	4.112	0.000**
H ₈ : Environmental lifestyle	-	-	-	-	0.139

**p<0.001, * p<0.01

earlier research of Laroche *et al.* (2001), who had reported that the consumers with low score of environmental problems and environmentally-friendly purchasing would not consider the environment when making purchases.

Hypothesis testing: Efficiency-based purchasing behaviour: According to the testing, Table 4 illustrates environmental characteristic sregarding efficiency-based purchasing of the respondents. There was a significant relationship between perception on environmental concerns, perception on environmental problems, perception on environmental responsibility and environmental knowledge (supported H₂, H₅) but environmental lifestyle was not significantly related to efficiency-based purchasing behaviour, R² value could be calculated at 0.227. The results of this study were consistent with previous studies performed by Ali *et al.* (2011), Kaplan (2000) and Baker and Ozaki (2008), these studies found that, even though people maintained environmentally conscious attitudes, their actions did not always represent green purchasing behaviour.

Hypothesis testing: Environmental-based purchasing behaviour: The findings demonstrated that environmental attitudes (environmental concern, perception on environmental problems and perception on environmental responsibility), environmental knowledge and environmental lifestyle had a significant effect on environmentally-based purchasing behaviour (supported H_{3a}, H_{3b}, H_{3c}, H₆, H₉), R² = 0.309, as shown in Table 5. The results of this study were in line with previous studies showing that environmental attitude was positively related to environmental behaviour (Kim, 2002; Kim and Choi, 2003) and that environmental attitude was related to green product purchasing behaviour (Kim and Choi, 2005; Tilikidou, 2007; Schlegelmilch *et al.*, 1996). The research results included the following:

- Environmental concerns significantly related to environmentally-based purchasing behaviour. The results of this study were in line with the findings of Chan (1996), Roberts (1991) and

Shetzer *et al.* (1991) these had discovered that the level of environmental concern was related to green product purchasing behaviour. A high level of environmental concern could be reflected green consumption behaviour (Shetzer *et al.*, 1991) and a willingness to pay more for environment-friendly products (Mainieri *et al.*, 1997)

- There was a significant relationship between the perception on environmental problems and environmentally-based purchasing behaviour. The results were corresponding with the research by Milfont (2007) and Pahl *et al.* (2005). Likewise, Baldassare and Katz (1992) and Tan (2011) had found that the belief that environmental problems would cause serious harm toward health and good living influenced environmentally-based purchasing behaviour
- The results demonstrated a significant relationship between perceived environmental responsibility and environmentally-based purchasing behaviour. As highlighted by McGougall (1993), consumers with strong attitudes toward socially responsible behaviour would be had intention to purchase in order to respond the environmental
- Environmental knowledge had a significant effect on environmentally-based purchasing behaviour. The results of this study were consistent with the prior studies by Chan and Lau (2000), Lee (2010), Schlegelmilch *et al.* (1996) and Tilikidou (2007), they all confirmed that environmental knowledge influenced environmentally-based purchasing behaviour. Ellen (1994) found that a greater degree of environmental knowledge affected the motivation to purchase environmentally-friendly products. Kaufmann *et al.* (2012) found that environmental knowledge was the most important factor to environmental system, co-responsibility for sustainable development. Another study showed that a high level of environmental knowledge affect a person's environmental behavior (Rokicka, 2002). Nevertheless, prior studies argued that environmental knowledge did not directly cause environmental behaviour (Hwang *et al.*, 2000)
- A statistically significant relationship was demonstrated between environmental lifestyle and environmentally-based purchasing behaviour. The results were in line with the findings of Diamantopoulos *et al.* (2003), Fraj and Martinez (2006), Kim and Damhorst (1998), Zimmer *et al.* (1994), ecologically-minded purchasing behaviour could be described from lifestyle, environmentally-friendly product selection, recycling and other actions that expressed favour toward protecting the environment

CONCLUSION AND IMPLICATION

Over thirty years, different fields of sciences: Engineering, architecture and science to psychology, sociology and management have focused entirely on the research of environment. This study was examined the green purchasing behaviour of Thai consumers. According to the literature review, many previous studies confirmed that environmental attitudes, environmental knowledge (Awad, 2011; Banerjee and McKeage, 1994; Chan, 1999; Mainieri *et al.*, 1997; Mostafa, 2007; Roberts, 1991; Shetzer *et al.*, 1991) and environmental lifestyle (Carrete *et al.*, 2012) affected consumer behaviour and were necessary factors for marketers to understand in order to implement successful green marketing.

The data were obtained from questionnaires until April to June, 2012 and analyzed via multiple regression statistical analysis. The findings of the study result summaries of environmental characteristics in consumer purchasing behaviour were that (1) The convenience-based purchasing behaviour was not significantly related to environmental knowledge, environmental lifestyle, Even though, they were perceive the environmental problems, (2) Consumer of efficiency-based purchasing behaviour was significantly related to environmental attitude

Table 5: Regression analysis of environmentally-based purchasing behaviour

Environmental characteristics	B	Standard error	β	t-value	p-value
Constant	0.404	0.293		1.381	0.168
H _{3a} : Perception on environmental concern	0.141	0.048	0.164	2.963	0.003*
H _{3b} : Perception on environmental problems	0.214	0.049	0.241	4.364	0.000**
H _{3c} : Perception on environmental responsibility	0.168	0.055	0.174	3.071	0.002*
H ₆ : Environmental knowledge	0.190	0.029	0.335	6.640	0.000**
H ₉ : Environmental lifestyle	0.207	0.049	0.215	4.215	0.000**

**p<0.001, *p<0.01

Table 6: Consumers' purchasing behaviour in electric appliances products

Purchasing behaviour	Environmental characteristics				
	Environmental problems	Environmental concerns	Environmental responsibility	Environmental knowledge	Environmental lifestyle
Convenience-base	✓	-	-	-	-
Efficiency-base	✓	✓	✓	✓	-
Environmental-base	✓	✓	✓	✓	✓

and environmental knowledge but they did not have environmental lifestyle in a daily life and (3) Environmentally-based purchasing behaviour was significantly related to environmental attitudes in all aspects, environmental knowledge and environmental lifestyle, as shown in Table 6.

The researchers advise on research proposals that policy makers used to conscious and put more effort on this issue as follow for long term usefulness in environmental development. They must reinforce environmental knowledge to all individuals, because a higher level of environmental knowledge may cause more environmental understanding, motivation and attitude as well as environmental problem perception (Dansirichaisawat and Suwunnamek, 2013). In creating a green society, building environmental attitudes, cultivating a sense of personal responsibility in preventing the deterioration of the environment and motivating consumers to get involved in conservation activities are the utmost importance to success. But someone thought that it was just the governmental duty or environment-related organization would be the responsible party. The hesitant feeling to sacrifice for personal convenience might therefore cause failures in green society. Furthermore, fostering environmental lifestyles and promoting policies that seek to improve environmental conditions requires cooperation between governing bodies, consumers and producers. This is the foundation of a green society. Building faith and trust in a green society will be a major challenge for Thai businesses.

The usefulness of this study were as follows: First, the results boost knowledge in the field that will help in the development of the effective and systematic management of natural resources and the environment. Second, the knowledge gained can be applied to sustainability programs aimed at preserving natural resources and environmental well-being in Thailand. Third, the knowledge gained will help in the development of environmentally-friendly technology as well as better production and consumption practices, leading to an overall improvement in consumer safety, quality of life and health.

FUTURE RESEARCH

Several interesting aspects of research required for future research. It should be noted that the convenience and availability of green products is essential to making consumers get involved in

pro-social/pro-environmental behaviour (Ismail and Panni, 2008; Ismail *et al.*, 2006). Future studies could examine this condition and its effect on pro-environmental behaviour. In addition, future studies could focus on Perceived Consumer Effectiveness (PCE) and the other factors that affect green behaviour (environmental activism, the new ecology paradigm scale and so forth). Furthermore, barriers factors to green purchase behaviour are worthy of examination.

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