

## DECISION MAKING OF BUYERS ON GREEN LABELED ELECTRIC SHOWER UNIT WATER HEATER: PRETEST CASE IN DISCOUNT STORE, THAILAND

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### ABSTRACT

*To increase the environmental awareness, the green label concept is added into the services or products. Comparing to the same type of services or products, the customers has more choices for selection the environmental friendly things. The research chooses the electric shower unit water heater to be the case study. The questionnaire will be used to survey the idea of customers or one who make decision for the house on the willingness to pay. The expected result is to know if the demographic, knowledge, value, attitude, belief, or environmental concern would be the main reason in choosing a green label product returning the energy saving and environmental friendly material of the electric shower unit water heater. The main reason might tie with the scheme of spending the surplus money by the manufacturer in corporate social responsibility activities. This expected finding would push the market faster.*

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Keywords: Green Label, Electric Shower Unit Water Heater, Decision Making

### INTRODUCTION

Environmental problem is not any more far problem from each day living of human being. The anthropogenic risk or manmade risk is the term clearly used for explaining the happening of environmental problem from more and more complex activities of people in 21<sup>st</sup> century. The main reason is the current consumption levels which are too high and are unsustainable (Cherian and Jacob, 2012). Many activities are claimed as the main source of the greenhouse gas emission particularly in term of carbon dioxide emission related to the global warming (Florides and Christodoulides, 2008). The worse environment leads to the lower quality of life (Espinoza et al., 2012). Even the Kyoto Protocol aimed to reduce the emission of carbon dioxide equivalent 20% by 2020, the more increasing number of people believe in global warming and the higher willingness to pay to reduce global warming (Joireman, et al., 2010). The government in many countries is always the starting organization showing various programs and subsidies.

#### 1. Green Label

Green label, a kind of voluntary eco-label, is one of the programs awarded label to the products which pass the environmental friendly criteria. The label purpose is to inform consumers on the problem to the environment during production, consumption, and waste disposal of a service or product (In Thailand except food, drug, and beverage) (Gallastegui, 2002). Generally the product with green label helps customer in decision making on choosing an environmental friendly product. It is found that the consumers previously refuse to the part of the willingness to pay whereas nowadays the willingness to pay is more common (Neff et al., 2007) or saying that the consumers are willing to pay for a higher price for environmentally friendly products (Bhate and Lawler, 1997). The changing is however happened very slow compared to the increasing of the environmental problem. The global warming problem was investigated as a factor increasing the consumer's willingness to pay (Svedsater, 2000).

#### 2. Willingness to Pay for Electric Shower Unit Water Heater

The willingness to pay is the concept of quantifying the consumer's surplus published firstly in 1885 by Jules Dupuis. The willingness to pay, additional percentage to the base price of product, had been studied for many products e.g. 10.4% premium more on a hybrid version of a car (Drozdenko et al., 2011), 4-6% eco-labeled seafood, 15% for organic and animal welfare-labeled salmon (Olesen et al., 2010), 10-25% for certified wood (Aguilar and Vlosky, 2006), 5% for eco-labeled apples (Loureiro et al., 2002), 6-7.5% for wood furniture (Veisten, 2007), 12.2% for certified wood product (Cai and Aguilar, 2012), and 5.6-13% for eco-labeled wood product (Jensen et al., 2004). The green information of product to customers is used to distinguish between green and traditional products (Perlis, 2009). On the other hand the concern of environment by customer will influence the manufacturer (Lin and Huang, 2011). The concern of environment issue more than life convenience is in sense of good for environment (Shen, 2011). The willingness to pay for electric shower unit water heater is however had never been investigated or researched. The objective of this paper is to investigate the factor influence to the willingness to pay for the electric shower unit water heater.

### 3. Existing Situation of Green Label

Germany is the initiator of the green label in 1967. Nowadays up to 30 countries apply the concept of green label. The green label in Thailand had been initiated by Thailand business Council for Sustainable Development, TBCSD in October 1983 under the working as secretariat of Thai Industrial Standards Institute, Ministry of Industry and Thai Environment Institute. Until February 2013, green labels are awarded to 523 models of products, 23 product categories, or 64 companies (Thailand Environment Institute TEI). In each country, green label would be called in different name depending on the level of strictness. The awarded label has 3 year lifetime. The general criteria used for consideration is the renewable sources of product, the qualification of product, the reuse or recycle of product, and the disposal of product. The green label could be a part of the corporate social responsibility which continues committing to develop economic ethically - improving the quality of life of the workforce and local community. The World Bank had defined the area of CSR that it should cover environment, labor, human right, public participation, standard of business, market, organization and economic development, sanitation, education and leadership, and disaster mitigation (Corporate Social Responsibility Institute CSRI). It is expected by the World Business Council for Sustainable Development that in 2050, there will be only environmental product in the market.

### 4. Scope of Research

Actually the green label had never been initiated for the electric shower unit water heater but this study will do it to let all relevant manufacturers aware of it. The study will review the factors related to the decision making of people in buying environment friendly product or green label together with the possible scheme of using surplus money. The target group is 400 customers who mainly make decision in buying things for a house (representative of approximately 500,000 units per year of electric shower unit water heater. The questionnaires will be distributed at the booth of the electric shower unit water heater in the discount store. The pre-survey of 40 questionnaire is planned to be distributed during 1<sup>st</sup> December to 31<sup>st</sup> January because of the peak sales from history data of every company.

### 5. Methodology

The factors related to the decision making in buying environment friendly product will be reviewed. Roughly, there are 6 factors i.e. demographic factor, knowledge, behavior, attitude, value, environmental concern, and believe (Laroche et al., 2001). The Contingent Valuation Method (CVM) is planned to be used in assuming the situation that the electric shower unit water heater is going to get the green label. The CVM is used to value the intangible value to know the customer behavior. The open ended question is used in the 40 pretested customers to find out the most frequent bid of willingness to pay to the additional from normal price to be the starting bid for all 400 questionnaires.

The questionnaire will be designed to get the information of demographic, knowledge, value, attitude, belief, and environmental concern with the following questions.

- Demographic: age, gender, household income, and education level
- Knowledge: If the customers know that the green labeled electric shower unit water heater has better quality in environmental aspects?
- Value: If the green value influences your selection?
- Attitude: If the customers agree that the change of environment is mainly caused from the unsustainable and unbalance consumption?
- Belief: If the customers believe that the energy conservation and environmental management will solve the energy and environment problem.
- Environmental Concern: Prioritize the environmental concern from the short list of green living: water pollution, wildlife conservation, air pollution, biological pollutants, carbon footprint, climate change, energy conservation, food safety, land use, deforestation, natural disasters, nuclear issues, ozone depletion, resource depletion, and waste (Ketcham)

The questionnaire will include the scheme of spending surplus from willingness to pay. There are various activities for showing the corporate social responsibility e.g. forest plantation, conservation training for students, dissemination of environment issue to people, mitigation of negative impact from disaster, clean technology, research and development of product in environmental function, and others. These activities will be taken in to a part of the questionnaire used in the research in order to know the most appreciation scheme.

#### 5.1 Demographic Factor

The demographic factors consist of gender, age, income, education, and family size. There are reviews mentioning that women tend to engage in more environmental behaviors than men (Hunter et al., 2004; McCright, 2010; Zelezny et al., 2000) or good in green buying and environmental attitude scales (Mainieria et al., 1997). The income and education level has direct effect to the willingness to pay as well as the age and household income (Carlsson and Stenman, 2000; Boccaletti and Moro, 2000; Zhang and Wu, 2011; Shen, 2011; Song et al., 2012; Ward et al., 2010). The middle-aged people have willingness to pay for environmental product more than others (Kostakis and Sardianou, 2011). The post graduate qualification and married people has positive attitude towards the environment issue especially the green products (Gan et al., 2008).

## 5.2 Knowledge

The environmental/ecological knowledge is one factor effecting the decision making on green product and has influence more than the demographic factor (Kaiser et al., 1999; Chan and Lue, 2000; Laroche et al., 2002; Andrésa and Salinasa, 2007). The higher level of knowledge increases the level of willingness to pay for green product (Farhar, 1999). The knowledge also contributes to the higher level of attitude (Barber and Strick, 2009). The environmental knowledge plays a multi-faceted role in influencing behavior, attitude, and belief system (Laroche et al., 1996).

## 5.3 Value

There are five theories of consumption value i.e. functional value (buying because of the value in function), social value (buying because of the trend in society), emotional value (buying because of the feeling in mentality), conditional value (buying because of the promotion), and epistemic value (buying because of the sense of trying new thing). (Lin & Huang, 2011)

## 5.4 Attitudes

The theory of planned behavior said that the intentions to perform behaviors of different kinds can be predicted with high accuracy from attitudes toward the behavior (Ajzen, 1991; Schlegelmilch et al., 1996). The attitude related to awareness of consequences of environmental problems can be used to increase the market share from the niche of environmental concern customers (Hansla et al., 2007). The attitudinal variables correlate to the ecologically conscious consumer 45% whereas the demographic variables show 6% or correlation.

## 5.5 Belief

The belief in environmental issue causes the behavior of paying attention to the common interest or benefit (Ewing, 2001). The specific consumer beliefs predicted several green-buying whereas the attitudes predicted only one (Mainieria et al., 1997).

## 5.6 Environmental Concern

The environmental concern significantly influences the choosing of green products because of the effect of the positive tending emotion to the product or green label product (Paladino and Angela, 2005).

## 6. Result and Discussion

All 6 factors i.e. demographic factor, knowledge, behavior, attitude, value, environmental concern, and believe are confirmed by the reviewed that there are relevant to decision making in buying the environmental friendly product. There might be factors more than reviewing but difficult to identify without references. After the pretesting of the questionnaires to 40 customers, the most frequent bid of the willingness to pay ranges in 100 - 500 Baht additional to the normal price (1 USD is approximately 30 Baht in 2014). The target group will be magnified in the second phase of the research to 400 questionnaires. There are a lot of products needed to be investigated like this research before pushing to the market. Having starting bid would help to decrease the variance of the willingness to pay from 400 questionnaires.

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## REFERENCES

- Aguilar, F. X., & Vlosky, R. P. 2006. Consumer willingness to pay price premiums for environmentally certified wood products in the U.S. *Forest Policy and Economics*, 9, 1100–1112.
- Ajzen, I. (1991). The Theory of Planned Behavior. *Organizational behavior and human decision processes*, 50, 179-211.
- Andrésa, E. F. & Salinasa, E. M. (2007). Impact of Environmental Knowledge on Ecological Consumer Behaviour An Empirical Analysis. *Journal of International Consumer Marketing*, 19(3),73-102.
- Barber, N., Taylor, C. & Strick, S. (2009). Wine consumers' environmental knowledge and attitudes: Influence on willingness to purchase. *International Journal of Wine Research*, 1, 59–72.
- Bhate, S. & Lawler, K. (1997). Environmentally friendly products: factors that influence their adoption. *Technovation*, 17(8), 457-465.
- Boccaletti, S. & Moro1, D. (2000). CONSUMER WILLINGNESS-TO-PAY FOR GM FOOD PRODUCTS IN ITALY. *Ag Bio Forum*, 3, 259-267.
- Cai, Z., & Aguilar, F. X. (2012). Meta-analysis of consumer's willingness-to-pay premiums for certified wood products. *Journal of Forest Economics*, xxx– xxx.
- Carlsson, F. & Stenman, O.J. (2000). Willingness to Pay for Improved Air Quality in Sweden. *Applied Economics*, 32(6), 66-669.

- Chan, R. Y. K. & Lue, L. B. Y. (2000). Antecedents of green purchases: a survey. *Journal of consumer marketing*, 17(4), 388-357.
- Cherian, J. & Jacob, J. (2012). Green Marketing: A Study of Consumers' Attitude towards Environment Friendly Products. *Asian Social Science*, 8(12), 117.
- Corporate Social Responsibility Institute (CSRI). Knowledge Base. Retrieved March 22, 2013. [http://www.csri.or.th/new2012/index.php?option=com\\_content&view=featured&Itemid=435](http://www.csri.or.th/new2012/index.php?option=com_content&view=featured&Itemid=435)
- Drozdenko, R., Jensen, M. & Coelho, D. (2011). Pricing of green products: premiums paid, consumer characteristics and incentive. *International Journal of Business Marketing and Decision Sciences*, 4, 106-116.
- Espinoza, O., Buehlmann, U. & Smith, B. (2011). Forest certification and green building standards: overview and use in the U.S. hardwood industry. *Journal of Cleaner Production*, 33, 30-41.
- Ewing, G. (2001). Altruistic, egoistic, and normative effects on curbside recycling. *Environment and Behavior*, 33 (6), 733-64.
- Farhar, B. C. (1999). Willingness to Pay for Electricity from Renewable Resources: A Review of Utility Market Research. *National Renewable Energy Laboratory A national laboratory of the U.S. Department of Energy*.
- Florides, G. A. & Christodoulides, P. (2008). Global warming and carbon dioxide through sciences. *Environment International*, 35, 390-401.
- Gallastegui, I. G. (2002). THE USE OF ECO-LABELS: A REVIEW OF THE LITERATURE. *European Environment*, 12, 316-331.
- Gan, C., Wee, H. Y., Ozanne, L. & Kao, T. H. (2008). Consumers' purchasing behavior towards green products in New Zealand. *Innovative Marketing*, 4(1), 93-102.
- Hansla, A., Gamble, A., Juliusson, A. & Garling, T. (2007). Psychological determinants of attitude towards and willingness to pay for green electricity. *Energy Policy*, 36, 768-774.
- Hunter, L. M., Hatch, A. & Johnson, A. (2004). Cross-National Gender Variation in Environmental Behaviors. *Social Science Quarterly*, 85(3), 677-694.
- Jensen, K. L., Jakus, P. M., English, B.C. & Menard, J. (2004). Consumers' Willingness to Pay for Eco-Certified Wood Products. *Journal of Agricultural and Applied Economics*, 36(3), 617-626.
- Joireman, J., Truelove, H. B. & Duell, B. (2010). Effect of outdoor temperature, heat primes and anchoring on belief in global warming. *Journal of Environmental Psychology*, 30, 358-367.
- Kaiser, F. G., Ranney, M., Hartig, T. & Bowler, P. A. (1999). Ecological Behavior, Environmental Attitude, and Feelings of Responsibility for the Environment. *European Psychologist*, 4(2), 59-74.
- Ketcham, S. List of 30 Top Environmental Concerns. Retrieved January 22, 2013. from [http://greenliving.lovetoknow.com/Top\\_30\\_Environmental\\_Concerns](http://greenliving.lovetoknow.com/Top_30_Environmental_Concerns)
- Kostakis, I. & Sardanou, E. (2011). Which factors affect the willingness of tourists to pay for renewable energy. *Renewable Energy*, 38, 169-172.
- Laroche, M., Toffoli, R., Kim, C. & Muller, T. E. (1996). The Influence of Culture on Pro-Environmental Knowledge, Attitudes, and Behavior: a Canadian Perspective. *Advances in Consumer Research*, 23, 196-202.
- Laroche, M., Bergeron, J. & G. Forleo, G. B. (2001). Targeting Consumers who are willing to Pay More for Environmentally Friendly Products. *Journal of Consumer Marketing*, 18(6), 503-20.
- Laroche, M., Bergeron, J., Tomiuk, M. A. & Forleo, G.B. (2002). Cultural Differences in Environmental Knowledge, Attitudes, and Behaviours of Canadian Consumers. *Canadian Journal of Administrative Sciences Revue canadienne des sciences de administration*, 19(3), 267-283
- Lin, P. C. & Huang, Y. H. (2011). The influence factors on choice behavior regarding green products based on the theory of consumption values. *Journal of Cleaner Production*, 22, 11-18.
- Loureiro, M. L., McCluskey, J. J. & Mittelhemmer, R. C. (2002). Will consumers Pay a Premium for Eco-Labeled Apples. *Journal of Consumer Affairs*, 36.
- Mainieria, T., Barnetta, E.G., Valderoa, T.R., Unipana, J.B., & Oskamp, S. (1997). Green Buying: The Influence of Environmental Concern on Consumer Behavior. *The Journal of Social Psychology*, 137( 2), 189-204.
- McCright, A. M. (2010). The effects of gender on climate change knowledge and concern in the American public. *Popul Environ*, 32, 66-87.
- Neff, Jack, Stephanie & Thompson. (2007). Eco-marketing has staying power this time around: experts. *Advertising Age*, 78 (18), 55.
- Olesen, I., Alfnes, F., Rørå, M. B. & Kolstad, K. (2010). Eliciting consumers' willingness to pay for organic and welfare-labelled salmon in a non-hypothetical choice experiment. *Livestock Science*, 127, 218-226.
- Paladino & Angela (2005). Understanding the Green Consumer: An Empirical Analysis. *Journal of Customer Behavior*, 4(1), 69-102.
- Perlis, A. (2009). Awareness of Eco-label in Malaysia's Green Marketing Initiative. *International Journal of Business and Management*, 4(8), 132-141.
- Roberts, J.A. (1990). Green Consumers in the 1990s: Profile and Implications for Advertising. *Journal of Business Research*, 36, 217-231.
- Schlegelmilch, B. B., Bohlen, G. M. & Diamantopoulos, A. (1996). The link between green purchasing decisions and measures of environmental consciousness. *European Journal of Marketing*, 30 (5), 35-55.
- Shen, J. (2011). Understanding the Determinants of Consumers' Willingness to Pay for Eco-Labeled Products: An Empirical Analysis of the China Environmental Label. *Journal of Service Science and Management*, 5, 87-94.
- Song, Q., Wang, Z. & Li, J. (2011). Residents' behaviors, attitudes, and willingness to pay for recycling e-waste in Macau. *Journal of Environmental Management*, 106, 8-16.
- Svedsater, H. (2000). Contingent valuation of global environmental resources: Test of perfect and regular embedding. *Journal of Economic Psychology*, 21, 605-623.

- Thailand Environment Institute (TEI). Green Label For sustainable society and better quality of life. Retrieved March 22, 2013. <http://www.tei.or.th/>
- Veisten, K. (2007). Willingness to pay for eco-labelled wood furniture: Choice-based conjoint analysis versus open-ended contingent valuation. *Journal of Forest Economics*, 13, 29–48.
- Ward, D. O., Clark, C.D., Jensen, K. L., Yen, S. T. & Russell, C. S. (2010). Factors influencing willingness to pay for the ENERGY STAR label. *Energy Policy*, 39, 1450–1458.
- Xu, P., Zeng, Y., Fong, Q., Lone, T. & Liu, Y. (2012). Chinese consumers' willingness to pay for green- and eco-labeled seafood. *Food Control*, 28, 74-82.
- Zelezny, L. C., Chua, P. P. & Aldrich, C. (2000). Elaborating on Gender Differences in Environmentalism. *Journal of Social Issues*, 56(3), 443-457.
- Zhang, L. & Wu, Y. (2011). Market segmentation and willingness to pay for green electricity among urban residents in China: The case of Jiangsu Province. *Energy Policy*, 39, 1450–1458.