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Integrating General Environmental Knowledge and Eco-Label Knowledge in Understanding Ecologically Conscious Consumer Behavior

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Abstract

Global warming and climate change have become emerging issues for marketing to promote ecologically conscious consumer behavior. Past studies investigated the role of general environmental knowledge in attitude-behavior relationship of pro-environmental consumer behavior. Using the Theory of Reasoned Action (TRA) as a guiding framework, this study takes a fresh look at attitude-behavior relationship that integrates both general environmental knowledge and knowledge of eco-labels in the model to investigate their role in predicting ecologically conscious consumer behavior. The study finds that both general environmental knowledge and eco-label knowledge positively influence consumer attitudes towards environment in driving ecologically conscious consumer behavior. The findings suggest that marketing strategy, specifically communication strategy, needs to focus on educating consumers about issue-specific environmental knowledge (e.g., eco-label knowledge) along with general environmental knowledge. Further research should integrate more issue-specific dimensions to investigate pro-environmental consumer behavior.

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1. Introduction

Ecologically conscious consumer behaviour is getting progressive attention in marketing and consumer behaviour literature (e.g., Lin & Hsu, 2013; Vlaeminck et al., 2014). One of the relevant and emerging topics in this field is the role of eco-labels and their effectiveness in guiding the consumers (Testa et al., 2013). Primarily eco-labels provide consumers with product specific environmental information at the point of purchase to assist consumers in making environmentally informed purchase decision (Thøgersen et al., 2010). Moreover eco-labels reduce consumers' information search costs and effort as well as promote recycling behavior. There is a growing empirical literature dealing with different aspects of eco-labels where most studies focus on the market impact of eco-labelled products (e.g., Hornibrook et al., 2015; Sammer & Wüstenhagen, 2006; Thøgersen et al., 2010) and consumers' comprehension, perception, and misperception of eco-labels (e.g., Brécard, 2015; Steinhart et al., 2013; Thøgersen, 2000). There is a clear gap in exploring the impact of eco-labels on ecologically conscious consumer behavior other than demand and/or purchasing of eco-labelled products. This is important to investigate because the purpose of eco-labels is not just promoting eco-labelled products, but also to promote other aspects of environment friendly consumer behavior (e.g., recycling behavior). This article aims to fill this gap in the green consumer behavior literature by taking a fresh look at the role of general environmental knowledge and knowledge of eco-labels in attitude-behavior relationship of ecologically conscious consumer behavior.

2. Literature Review and Hypotheses

Many studies on environmental behavior are based on the framework of Ajzen and Fishbein's (1980) Theory of Reasoned Action (TRA) or Theory of Planned Behavior (TPB) (Ajzen, 1985). The essence of these models is that attaining factual knowledge about the object is a prerequisite of forming an attitude towards that object (Kaiser et al., 1999). In its purest form, TRA and TPB propose that behavior results from intention which, in turn, is a function of attitude and subjective norms. Yet some researchers (e.g., Davies et al., 2002) argue that the relationship between intentions and behaviors may not be as strong as the models suggest. Supporting this premise, Polonsky et al. (2012) suggest integrating self-reported actual behavior into the models, since the ultimate concern is behavior, not the intention (Rokka & Uusitalo, 2008). This research is based on the framework of TRA model, which was previously proved to be valid in examining the connection between environmental attitude and behaviors (e.g., Gotschi et al., 2010; Kaiser et al., 1999). This study applies an extended model that integrates both general environmental knowledge and specific knowledge of eco-labels as the antecedents of environmental attitude, which in turn, is hypothesized to lead reported ecologically conscious consumer behavior (see Figure 1).

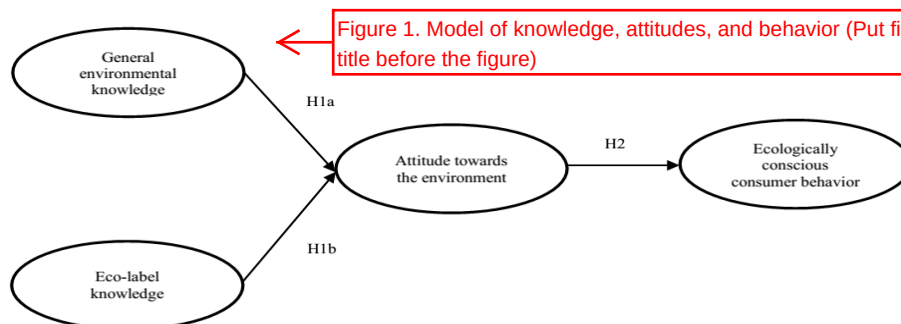


Fig.1. Hypothesized model of knowledge, attitudes, and behavior

Source: Taufique et al. (2016, p.40)

This study is set in Malaysia as the country is one of the pioneers in the region to promote environmentally responsible behavior with a mission to be a carbon emission free nation by 2020. Government also launched a number of eco-labelling schemes such as SIRIM national eco-label, energy-efficiency label, and MyHijau ("Malaysian Green" in English). There are also many environmental labels used by private manufacturers. Consumers' environmental concern and preference for eco-friendly products are also on the rise, especially in the

urban areas of Malaysia (Mohamed et al., 2014; Ramly et al., 2012).

2.1. Attitudes towards environment Start with explaining attitudes environment

Attitude towards environment is the center of our model which is viewed as “cognitive and affective evaluation of the object of environmental protection” (Bamberg, 2003, p.21). Many studies establish attitude as one of the strong antecedents influencing behavior (e.g., Ballantyne & Packer, 2005). In most models of pro-environmental behavior, attitude is placed as the central variable between environmental knowledge and behavior (Davies et al., 2002; Polonsky et al., 2012) where environmental knowledge and pro-environmental attitudes are highly interconnected (Bamberg, 2003). In this study, attitude towards environment is measured in terms of both consumers’ level of environmental concern and their views on environmental protection.

2.2. General environmental knowledge Explain the construct first, then explain relationship between knowledge and environment

Environmental knowledge refers to “knowledge and awareness about environmental problems and possible solutions to those problems” (Zsóka et al., 2013, pp.127). General environmental knowledge is defined as “general knowledge of facts, concepts, and relationships concerning the natural environment and its major ecosystems” (Fryxell & Lo, 2003, p. 48). Different researchers use different measures to empirically assess consumers’ environmental knowledge. For example, some measures look at consumers’ factual knowledge of environment and others attempt to measure the impacts of consumer action-related knowledge (Tanner & Kast, 2003). This study measures consumers’ factual knowledge to determine the degree to which consumers are familiar with contemporary pressing environmental issues such as ‘climate change’, ‘greenhouse gas’ etc. Factual environmental knowledge is considered most appropriate because this knowledge levels assist consumers in making environment friendly consumption decisions (Polonsky et al., 2012). This discussion suggests the following hypothesis:

H1a: General environmental knowledge is positively related to attitudes towards environment.

2.3. Eco-label knowledge

There is evidence that general environmental knowledge is not always a sufficient condition to predict ecologically conscious consumer behavior (e.g., Laroche et al., 2001; Polonsky et al., 2012). This suggests that product specific environmental knowledge such as environmental labels providing appropriate and accurate information is also an important requirement to allow consumers for making environmentally conscious and reasoned decisions (Polonsky et al., 2012; Testa et al., 2013). For this, consumers must know about eco-labels’ existence, understand their meaning, and trust the information presented (Thøgersen, 2000). Bougherara and Combris (2009, p. 321) define eco-labels as information tools that “aim to internalize the external effects on the environment of the production, consumption, and disposal of products”. As it is mentioned in the introduction, there has been a growing research on the market impact of eco-labels, but most past studies focused on consumers’ appraisal and purchase of eco-labeled products (e.g., Sammer & Wüstenhagen, 2006; Steinhart et al., 2013). Hence, attention requires putting on an overlooked issue of whether the knowledge of eco-labels helps consumers to adapt ecologically conscious consumer behavior (Testa et al., 2013). Here, the construct ‘knowledge’ is meant to measure consumers’ familiarity with the functional aspects of eco-labels (Taufique et al., 2014) and the meaning of different terms used in eco-labels. Based on this discussion, the following hypothesis is proposed:

H1b: Eco-label knowledge is positively related to attitudes towards environment.

2.4. Ecologically conscious consumer behavior

The term ECCB was first used by Roberts (1996) who also developed the popular ECCB scale. According to Roberts (1996, p. 222): “Ecologically conscious consumers are defined as those who purchase products and services which they perceive to have a positive (or less negative) impact on the environment”. ECCB should involve both environmentally conscious purchase behavior and pro-environmental post-purchase (recycling) behavior (Tilikidou et al., 2002). Roberts and Bacon (1997) argues that in order to encourage ecologically conscious consumer behavior,

it is essential for public policy makers and marketers to have a clear understanding of the antecedents of such behavior. Early research on ecological consumer behavior dealt ecological concern (attitudes) and ecological behavior by applying more or less the same concept, sometimes in a unidimensional construct (e.g., Antil & Bennett, 1979). Further advancement in research on ECCB suggests that an attitudinal concept might be related to, but methodologically different from behavior (Schlegelmilch et al., 1996). This notion is supported by many further studies that suggest that consumer environmental behavior stem from their pro-environmental attitudes (Kaiser et al., 1999; Polonsky et al., 2012). This study uses ECCB scale (Roberts, 1996) that contains a wide variety of behaviors chosen from the domain of ecologically conscious consumer behavior.

H2: Attitudes towards environment is positively related to ecologically conscious consumer behavior.

3. Materials and Methods

General environmental knowledge is measured using four items generated at qualitative stage. Knowledge of eco-labels is measured using total six items where one item was adapted from Chang (2004) and five items were raised at qualitative stage. Attitude towards environment is measured using a 5-item scale. Four of them were developed by Lee (2011) and one was developed by Stone et al. (1995). Finally an 11-item scale is used to measure ECCB which was developed by Roberts (1996). Adapted items were reworded, where necessary, to maintain the semantic properties of the context of the study. A 6-point Likert-type scale (1=strongly disagree; 6=strongly agree) was used. A convenience sample of 381 respondents was interviewed, administered at three university campuses (145) and twenty supermarkets/hypermarkets (236) located in four states of Malaysia. Professional enumerators, accompanied by the researchers, collected the data. Of the total respondents 54% were female, 60% had a bachelor degree or above and 23% had diploma, and 84% of participants were between 18 and 44 years.

4. Analysis and Results Describe SPSS, and your data collection method.

Both confirmatory factor analysis (CFA) and structural equation modelling (SEM) were applied using AMOS 20 software. Based on the results of initial CFA, five items with poor factor loadings were dropped, leaving total 21 items for the final analysis. In addition, two correlated error terms of ECCB scale were made free due to overlapping of words, though the semantic contents are different. All values of model-fit indices ($\chi^2_{(182)} = 423.03$, $CFI = 0.95$, $NFI = 0.91$, $GFI = 0.91$, $RMSEA = 0.059$, $SRMR = 0.057$) exceed their respective acceptance levels (Jöreskog & Sörbom, 1992). All 21 standardized loadings are high and positively significant ($p < 0.01$). Reliability estimates for each construct using composite reliabilities all exceed the threshold value of 0.70 (Nunnally & Bernstein, 1994). The computed average variance extracted (AVE), also known as convergent validity, shows the degree of shared representation of items with constructs. All AVE values for each construct are acceptable as they exceed the recommended 0.50 value (Bagozzi & Yi, 1988). Discriminant validity was assessed using Fornell and Larcker's (1981) criterion, comparing the square root of the AVE values with the constructs' correlations. The square root of each construct's AVE was greater than the highest correlation with any other construct (Farrell, 2010). Overall, the measurement model statistics provide support for the survey instruments' satisfactory psychometric properties with adequate reliability and validity. Table 1 displays the constructs with composite reliability and AVE values and items with standardized factor loading.

Table 1. Constructs and items with standardized factor loading.

<i>General environmental knowledge</i> (composite reliability = .88, average variance extracted = .65)		Factor loading
1.	I know very well what the term "global warming" means.	0.85
2.	I know very well what the term "organic product" means.	0.79
3.	I know very well what the term "climate change" means.	0.89
4.	I know very well what the term "greenhouse gas" means.	0.69

Eco-label knowledge (composite reliability = .82, average variance extracted = .53)

- | | |
|---|------|
| 1. I know the meaning of the term “recycled.” | 0.77 |
| 2. I know the meaning of the term “eco-friendly.” | 0.59 |
| 3. I know the meaning of the term “organic.” | 0.89 |
| 4. I know the meaning of the term “energy-efficient.” | 0.63 |

Attitude towards the environment (composite reliability = .85, average variance extracted = .59)

- | | |
|--|------|
| 1. My involvement in environmental activities today will help save the environment for future generations. | 0.58 |
| 2. It is essential to promote green living in Malaysia. | 0.88 |
| 3. I strongly support that more environmental protection works are needed in Malaysia. | 0.79 |
| 4. It is very important to raise environmental concern among Malaysian people. | 0.79 |

Ecologically conscious consumer behavior (composite reliability = .91, average variance extracted = .53)

- | | |
|---|------|
| 1. When there is a choice, I always choose the product that contributes to the least amount of pollution. | 0.78 |
| 2. I use a recycling center or in some way recycle some of my household trash. | 0.71 |
| 3. I make every effort to buy paper products made from recycled paper. | 0.78 |
| 4. I use a low-phosphate detergent (or soap) for my laundry. | 0.62 |
| 5. Whenever possible, I buy products packaged in reusable containers. | 0.68 |
| 6. I buy toilet paper made from recycled paper. | 0.79 |
| 7. I try only to buy products that can be recycled. | 0.74 |
| 8. I do not buy household products that harm the environment. | 0.72 |
| 9. I try to buy energy efficient household appliances. | 0.72 |
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The structural model indicates a good model with $\chi^2/df = 2.34$, $CFI = 0.95$, $NFI = 0.91$, $GFI = 0.90$, $RMSEA = 0.059$, and $SRMR = 0.06$. The squared multiple correlations of the endogenous variables indicate that the model explains 31% of the variance in attitudes towards environment and 54% in ecologically conscious consumer behavior. Path coefficients are used to test the hypotheses. The model supports all three hypotheses. Therefore, consumers' general environmental knowledge has a positive effect on attitude towards environment (H1a); eco-label information has a positive effect on attitude towards environment (H1b); and attitude towards environment has a positive effect on ecologically conscious consumer behavior (H2).

5. Discussion and Conclusions

The main objective of the study was to examine whether knowledge of eco-labels supplements general environmental knowledge in shaping consumer attitudes towards environment. The findings suggest that both general environmental knowledge and specific knowledge of eco-labels have positive effects on consumer attitudes towards environment. Many past studies found that general environmental knowledge has positive effect on attitudes towards environment, where no study examined the effect of specific eco-label knowledge on consumer attitudes towards environment. For example, Polonsky et al. (2012) reported that greater environmental knowledge leads to greater environmental attitudes and behavior. Some studies claim that the effect of environmental knowledge on pro-environmental behavior is mediated through environmental attitudes (e.g., Arcury, 1990; Barber et al., 2009; Flamm, 2009). The current study contributes to the existing literature by confirming that in addition to general environmental knowledge, issue specific environmental knowledge (i.e., knowledge of eco-labels) also positively influences environmental attitudes and pro-environmental consumer behavior. This is, indeed, important because eco-label is an environmental communication tool that aims to promote ecologically conscious consumer behavior. As this study finds a significant positive impact of eco-label knowledge along with general environmental knowledge on attitudes towards environment, consumers must be educated with eco-label knowledge that would enhance forming positive attitude towards environment and subsequently result in more favourable ecologically conscious consumer behavior. Therefore, marketing communication needs to aim at teaching the consumers about

eco-label information. This could be done, for example, by advising consumers to read and know the eco-label when purchasing and disposing the product. This kind of advice can be supplemented in company's regular advertising. Such advertising campaigns can also be initiated by government, NGOs, and other environmental groups, which can further enhance the credibility of eco-label information.

One major limitation of the study is that we used correlational data and hence we cannot make claims about the causal relationships among the variables. This opens the avenue for further experimental research to examine the causal relationships among the variables of interest. Another limitation is the use of self-reported measure to assess consumers' knowledge of environment and eco-labels. Further research might also be conducted to check whether consumers' objective knowledge has the same effects.

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