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The influence of internal factors on consumer's green consumption behavior

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ABSTRACT

The purpose of this paper is to examine the relationships among environmental knowledge, environmental affect and green consumption behavior (GCB). GCB has become one of the most important issues among today's consumers as it helps consumers to reduce the detrimental impacts of irresponsible consumption on the environment. The data was collected using mall intercept method on 341 consumers. The data was analyzed using SmartPLS and the results demonstrate that environmental knowledge and attitude significantly influence GCB. This study makes contributions to green marketing literature by adding empirical evidence on the relationships among environmental knowledge, environmental affect and GCB among Malaysian consumers.

1. Introduction

Many consumers have begun to realize the impact of unsustainable consumption on the environment. Consumption causes environmental degradation such as pollution and climate change. Every year health problems resulting from climate change causes over 300,000 deaths and affects health of 325 million of people (Annan et al., 2009).

As the environment is worsening and pollution is increasing at a critical level, the Malaysian government has begun to take various actions to address these issues and come up with various policies regarding sustaining the environment. In 1974, an act on the environmental protection called the Environment Quality Act was enacted. More recently, the ministry has enacted the National Green Technology Policy (Sinnappan and Rahman, 2011). The Malaysian government has taken a holistic approach to sustain the environment by integrating environmental considerations into all development activities (MOSTI, 2002).

Although the government has taken various actions to sustain the healthy environment, consumers should support these actions by playing active roles in reducing environmental damage. Furthermore, about 30 to 40% of environmental degradation has been caused by consumers' consumption (Chan and Lau, 2000). Practicing Green Consumption Behaviors (GCB) among consumers can help to reduce the adverse impact of consumption on the environment.

Pro-environmental behavior such as GCB is driven by both internal factors (e.g., knowledge, attitude) and external factors (e.g., government, retailer) (Chan and Lau, 2000; Kalamas et al., 2014; Tsarenko et al., 2013). These factors influence consumers either to practice or not to practice GCB in their daily lives.

This study aims to examine the relationships among environmental knowledge, environmental and GCB. The understanding of how these factors influence GCB is important in enhancing consumers' adoption and maintaining GCB in the future. Furthermore, this study enriches the existing literature in particular on how these factors (i.e., environmental knowledge and environmental affect) may influence GCB.

2. Literature review

This study is based on cognitive-affective-behavior theory (CAB Theory). The theory suggests the relationship among these variables is following a hierarchy effect sequence; cognitive-affective-behavior (CAB).

2.1. Green consumption behavior

Green consumption is deemed necessary, desirable and essential. Green consumption behavior refers to consumer behavior and purchase decisions

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which is related to environment and is motivated, not only by a desire to satisfy individual needs but also by a concern for the welfare of society in general. GCB takes into consideration the impact of consumption on the environment and social. This type of consumption is putting a great concern on the sustainability aspects. In general, green consumers can minimize the adverse effects of consumption on the environment by buying green products, recycle products/materials and reduce consumption.

Green consumption behavior is a part of responsible consumer behavior (Zaharia and Zaharia, 2014). The desire to practice GCB among consumers is linked with sustainability issues. Green consumers have switched from buying conventional products to buying green products which are more energy efficient and have less negative impacts on the environment. Hence, pollution on the environment can be reduced.

This study focused on GCB in particular those purchasing behaviors that are concerned about resource or "resource-conscious" as is suggested by Kim et al. (2012). Examples of resource-conscious GCB are purchase of food in small quantity, purchase products that are necessary and purchase used, recycled or refill products. Fig. 1 shows the theoretical framework of this study.

2.2. Environmental knowledge

We define environmental knowledge as one's knowledge about green issues. Consumers' knowledge of green issues includes pollution, greenhouse effect, climate change and waste management. In general, consumer's knowledge on green issues would influence their consumption behavior. Past studies have found significant relationship between environmental knowledge and green behavior (Chan, 2001; Mostafa, 2009; Suki, 2013). When consumers are aware of the impact of their consumption on the environment, they would be more incline to behave in a more ecologically conscious manner. Consumers with vast knowledge regarding green issues tend to be motivated to buy green products and more inclined toward green consumption behavior (Barber et al., 2009; D'Souza et al., 2006). There is a possibility that a higher level of environmental knowledge would lead to a much better attitude toward the environment. Therefore, we suggest the following hypothesis:

H1: There is a positive relationship between environmental knowledge and environmental affect.

2.3. Environmental affect

Environmental affect refers to a consumer's affective evaluation of environmental issues (Lee, 2008). Attitudes are defined as "an individual's positive or negative feelings about performing a behavior" (Ajzen and Fishbein, 1980). Attitude is also defined as "a combination of affective, behavioral and cognitive reactions toward an object," (Ibrahim, 2002). According to the theory of planned behavior (Ajzen, 2011), attitude towards a behavior influences individuals' decisions to perform or reject the behavior.

A consistent empirical finding has been found to postulate a positive relationship between environmental affect and behavior (Chan, 2001). Positive environmental affect will lead to positive environmental behavior. Positive environmental affect such as placing high value toward protecting the environment and environmental issues evokes positive environmental behavior such as buying green products. Past studies have found significant relationship between environmental concern and intention/behavior (Chan, 2001; Kim and Choi, 2005; Sinnappan and Rahman, 2011; Wahid et al., 2011). In general, marketing literature has suggested that environmental concern was associated with consumption behavior (Kim et al., 2012). Hence, we propose the following hypothesis:

H2: There is a positive relationship between environmental affect and green consumption behavior.

Fig. 1: Theoretical model

3. Methodology

3.1. Population and sample size

The population of this study was consumers in Malaysia. The samples were consumers who shopped at several malls in two cities in Malaysia. The two cities were selected because they are going towards "green cities". This study used mall-intercept methods to gather the data since the total population was unknown. Consumers were intercepted while shopping at several malls in the two cities. A total of 360 questionnaires were distributed and a total of 341 valid questionnaires were received (94.7 % response rate) and used in data analysis. Based on the rule of thumb, the minimum number of respondents to be used is equivalent to the maximum number of arrow

pointing toward a latent variable multiply by ten. Based on the method suggested by Hair et al. (2014), the minimum sample for this study is 2 X 10. Therefore, the minimum number of the sample size should be 20. Hence, our valid returned questionnaires are way above this benchmark level.

3.2. Research Instruments and data analysis method

The questionnaire consisted of three major sections. The first section comprised of three items measuring environmental knowledge (Kumar, 2012) and four items measuring environmental affect (Chan and Lau, 2000). These questions were set on a 5-point scale with 1 = "strongly disagree" to 5 = "strongly agree". The second section comprised of five items measuring GCB (Kim et al., 2012). These questions were coded on 5-point scale with 1 = "least likely" to 5 = "most likely". The final section gathered information on demographic data such as gender, age, race, religion, income level and education level.

SmartPLS 2.0 software (Ringle et al., 2005) was used to evaluate the relationships among the constructs in the research model. This study uses PLS analysis because of several reasons such as (1) It allows to analyze data during the early stage of theory development (Hassan et al., 2015) and (2) It allows evaluation of measurement model and structural model simultaneously (Chin, 1998).

4. Results and discussion

The way of reporting PLS-SEM approach is in accordance to guidelines provided by Hair et al. (2014). Although PLS-SEM is a nonparametric approach, it is important to verify the data to be not far from the normal distribution (Hassan et al., 2015). The analysis found that the skewness and kurtosis values of the items ranged between -1 and +2, which are below the levels for suggested transformation. Hence, normality is not an issue in this study.

4.1. Demographic profiles of respondents

Table 1 illustrates the demographic profile of the respondents. According to Table 1, the majority (57.2%) of the respondents comprised of female respondents. With regard to age, about 74.8 % aged between 20 and 39 years old, while only 17.3 % above 40 years old. Therefore, the results showed that the majority of the respondents were young consumers. In terms of ethnicity background, the majority (56.6 %) comprised of Malay, followed by Indian (22%) and Chinese (21.1%). The majority of the respondents were educated hold a bachelor degree (39.9%), certificate/diploma (38.4%) and master degree (16.4%). 42.2 % of the respondents had a monthly income of between MYR 2001-4000 and about 32% had a monthly income of below MYR2000. While, only 6.8% had a monthly income of over MYR6000. The majority of the respondents were married (54.25%), single (45.5%) and divorced only 0.3%.

4.2. Measurement model

The research model in this study was tested using partial least squares (PLS). The measurement model (Fig. 1) results are comprised of two sections; formative and reflective. For the formative constructs variance inflation factor (VIF) was used to assess multicollinearity issue (Hassan et al., 2015). A VIF value of 5 and higher indicates multicollinearity issue (Hair et al., 2014). Table 2 depicts that the VIF value is lower than 5. Hence, there is no collinearity issue in this study.

Table 1: Demographic profiles of respondents (n = 341)

Variable	Categories	Percentage
Gender	Male	42.8
	Female	57.2
Age	Below 20	7.9
	20-29	44.9
	30-39	29.9
	40-49	16.4
	50 and above	0.9
Race	Malay	56.6
	Chinese	21.1
	Indian	22.0
	Others	0.3
Religion	Islam	56.9
	Buddhism	19.9
	Hinduism	22.0
	Others	1.2
Education level	Certificate/Diploma	38.4
	Bachelor Degree	39.9
	Master Degree	16.4
	PhD	0.9
	Others	4.4
Income level (MYR)	2000 or below	32.0
	2001-4000	42.2
	4001-6000	19.1
	6001-8000	6.2
	Over 8000	0.6
Marital status	Single	45.5
	Married	54.2
	Divorced	0.3

Table 2: Collinearity statistics

Construct	Indicators	VIF
Green consumption behavior	RC1	1.243
	RC2	1.482
	RC3	1.455
	RC4	1.517
	RC5	1.346

Table 3 illustrates the assessment of formative constructs using the items weight's significance. Resource-conscious GCB has 5 formative items. The weights for four items are not significant (i.e., RC1, RC3, RC4, and RC5). However, these items were not removed because elimination of any indicators in the formative measurement model will change the original meaning and concept of the latent variable.

Reflective measurement model assessment in the PLS includes several assessments. The first criterion to be evaluated was the internal consistency reliability. The composite reliability (CR) values varies between 0 to 1 with higher values indicate

higher levels of reliability. The results showed CR values of higher than 0.8 (Table 4).

Table 3: Validity results of formative first-order constructs

Formative Construct	Indicators	Outer Weight	Outer Loadings	T-Value	Significant Level
Green consumption behavior	RC1	0.423	0.692	1.358	ns
	RC2	0.553	0.869	1.801	0.05
	RC3	0.383	0.615	1.412	ns
	RC4	-0.233	0.040	0.756	ns
	RC5	-0.027	-0.026	0.098	ns

CR values that range between 0.7-0.9 are regarded as satisfactory (Nunnaly and Bernstein, 1994). Next, convergent validity was assessed. According to Hair et al. (2014), to establish convergent validity, the outer loadings of indicator and average variance extracted (AVE) need to be assessed. The results showed that AVE values were higher than 0.5, and therefore is satisfactory (Table 4). The AVE value of 0.5 or higher indicates that the constructs explain more than half of the variance of its indicators (Hair et al., 2014).

Table 4: Convergent validity and reliability of constructs

Construct	Items	Loadings	CR	AVE
Environment affect	EA1	0.696	0.805	0.508
	EA2	0.718		
	EA4	0.740		
	EA5	0.697		
Environmental knowledge	EK1	0.811	0.816	
	EK2	0.824		0.599
	EK3	0.679		

Discriminant validity assesses the extent to which a construct is truly distinct from other construct. In PLS analysis, two criteria are used to establish the discriminant validity (i.e., cross loadings and correlation) of the reflective measurement model; (1) items should load more strongly on their correspondent constructs than the other construct, (2) the square root of each construct's AVE should be higher than the level of correlations involving the construct (Chin, 1998). Table 5 shows the cross-loadings for the constructs, the table illustrates that the main loading for each constructs is higher than the cross-loading for the other constructs.

Table 6 illustrates the inter-constructs statistics for the measurement model. As illustrated in Table 6, all constructs share more variance with their items (AVE) than with other constructs. In addition, all correlations are below 0.80 the cutoff value as suggested by Hair et al. (2014).

Table 5: Cross-loading results of constructs

Item	Environmental Affect	Environmental Knowledge
EA1	0.696	0.366
EA2	0.718	0.351
EA4	0.740	0.348
EA5	0.697	0.417
EK1	0.434	0.811
EK2	0.431	0.824
EK3	0.340	0.679

Since, both cross-loadings and inter-construct correlations have been assessed and the criteria are met, the discriminant validity among constructs is therefore confirmed. Assessment on internal reliability, convergent validity and discriminant validity for the measurement model of this study proved that the model has adequate validity and reliability to proceed with the structural model analysis.

4.3. Structural model results

The results of the structural model estimates are illustrated in Table 7. The bootstrap procedure used 5000 resamples as recommended by Hair et al. (2014). The results showed that all path coefficients are highly significant. Hence, both of the hypotheses are supported.

Table 6: Inter-construct correlations

Variables	1	2	3
Environmental affect	0.713		
Environmental knowledge	0.522	0.774	
Green consumption behavior	0.208	0.220	Formative measurement model

Table 7: Structural estimate

Path	Path Coefficient (Beta)	Standard Error	T-Statistics	Decision
EK→EA	0.522	0.046	11.412***	Supported
EA→GCB	0.208	0.059	3.506***	Supported

Note: *p < 0.05, **p < 0.01, ***p < 0.001, one-tailed

5. Conclusion

In this study, we examined the effect of internal factors such as environmental knowledge and environmental effect on green consumption behavior based on the hierarchical sequence as suggested by CAB theory. Empirical results provided in this article is based on the results provided by PLS analysis.

The results support the CAB theory, the results showed that (1) environmental knowledge significantly influence environmental affect and (2) environmental affect significantly influence GCB. The results provide empirical evidence that consumers' with high level of environmental knowledge are more likely to show greater concern over environmental issues. Additionally, consumers with higher attitude and affect towards environmental issues will have behaved in a more environmentally conscious behavior.

The results provide useful insights for both government and industrial players. Various

environmental campaigns at either local or national levels can be conducted by government and companies through their CSR programs. These campaigns would help in enhancing consumers' awareness and concern about environmental issues. In the long run, it is believed that consumers would be more inclined to practice GCB as their knowledge and concern over environmental issues increases as the results from environmental campaigns.

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