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

Marhana Mohamed Anuar, Khatijah Omar *, Azwadi Ali

School of Maritime Business and Management, Universiti Malaysia Terengganu, 21030 Kuala Terengganu, Terengganu, Malaysia

ARTICLE INFO

Article history:
Received 12 December 2016
Received in revised form 10 September 2017
Accepted 16 October 2017

Keywords:
Green consumption behavior
Environmental knowledge
Environmental affect
Consumers
Malaysia

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.

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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

* Corresponding Author.
Email Address: khatijah@umt.edu.my (K. Omar)
https://doi.org/10.21833/ijaas.2017.012.041
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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.

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 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 2: Collinearity statistics

| Construct | Indicator | VIF |
|-----------|-----------|-----|
| Green     | RC1       | 1.243 |
| consumption | RC2    | 1.482 |
| behavior  | 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 vary 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 |
|---------------------|------------|--------------|----------------|---------|-------------------|
| CR1                 | 0.423      | 0.692        | 1.358          | ns      |
| CR2                 | 0.553      | 0.869        | 1.801          | 0.05    |
| CR3                 | 0.383      | 0.615        | 1.412          | ns      |
| CR4                 | -0.233     | 0.040        | 0.756          | ns      |
| CR5                 | -0.027     | -0.026       | 0.998          | 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 5: Cross-loading results of constructs

| Item     | Environmental Affect | Environmental Knowledge |
|----------|-----------------------|-------------------------|
| EA1      | 0.696                 | 0.566                   |
| 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 measuremen t 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.

Acknowledgment

We would like to thank the Malaysian Ministry of Education (MOE) for funding this research project under Fundamental Research Grant Scheme (FRGS) vote no: 59276.

References

Ajzen I (2012). The theory of planned behavior. In Lange PAM, Kruglanski AW and Higgins ET (Eds.), Handbook of theories of social psychology: 438-459. SAGE Publications Ltd., London, UK.

Ajzen I and Fishbein M (1980). Understanding attitudes and predicting social behavior. Prentice-Hall, Upper Saddle River, USA.

Annan K, Desai N, Egeland, J, Huq S, Merki A, Pachauri R, Rockstrom J, Sachs J, Schellnhuber H, Stocking B, and Topper K (2009). Human Impact report: Climate change. The anatomy of a silne crisis. In the Global Humanitarian Forum, Geneva, Switzerland.

Barber N, Taylor C, and Strick S (2009). Wine consumers’ environmental knowledge and attitudes: Influence on willingness to purchase. International Journal of Wine Research, 1(1): 59-72.

Chan R (2001). Determinants of Chinese consumers’ green purchase behavior. Psychology and Marketing, 18(4): 389-413.

Chan RYK and Lau LBY (2000). Antecedents of green purchases: A survey in China. Journal of Consumer Marketing, 17(4): 338-357.

Chin WW (1998). The partial least squares approach to structural equation modeling. Modern Methods for Business Research, 295(2): 295-336.

D’Souza C, Taghiain M, and Lamb P (2000). An empirical study on the influence of environmental labels on consumers. Corporate Communictions, 11(2): 162-173.

Hair JF, Ringle CM, and Sarstedt M (2014). A primer on partial least squares structural equation modelling (PLS-SEM). SAGE Publications, Thousand Oaks, USA.

Hassan, SH, Ramayah T, Mohamed O, and Maghsoudi A (2015). E-lifestyle, customer satisfaction, and loyalty among the generation Y mobile users. Asian Social Science, 11(4): 157-168.

Ibrahim R (2002). Environmental literacy: Toward greener society. Realizing Agenda 21: In the International Conference on Environmental Management, Universiti Kebangsaan Malaysia Bangi, Selangor, Malaysia: 529-537.

Kalmas M, Cleveland M, and Laroche M (2014). Pro-environmental behaviors for thee but not for me: Green giants, green Gods and external environmental locus of control. Journal of Business Research, 67(2): 12-22.

Kim SY, Yeo J, Sohn SH, Rha CS, Choi A, and Shin S (2012). Toward a composite measure of green consumption. An exploratory study using a Korean sample. Journal of Family and Economics Issues, 33(2): 199-214.

Kim Y and Choi SM (2005). Antecedents of green purchase behavior: An examination of collectivism, environmental concern and PCE. In: Menon G and Rao AR (Eds.). Advances in consumer research: 592-599. Association for Consumer Research, Duluth, USA.

Kumar B (2012). Theory of planned behavior approach to understand the purchasing behavior for environmentally sustainable products (Report no: W.P. No. 2012-12-08). Indian Institute of Management, Ahmedabad, Research and Publication Department, India.

Lee K (2008). Opportunities for green marketing: Young consumers. Marketing Intelligence and Planning, 26(6): 573-586.

Mostafa MM (2009). Shades of green: A psychographic segmentation of the green consumer in Kuwait using self-organizing maps. Expert Systems with Applications, 36(9): 11030-11038.

MOSTI (2002). National policy on the environment. Ministry of Science, Technology and Environment (MOSTI), Putrajaya, Malaysia.

Nunnaly JC and Bernstein I (1994). Psychometric theory. SAGE Publications Ltd., London, UK.

Nunally JC and Bernstein I (1994). Psychometric theory. Sage Publications Ltd., London, UK.

Ringle CM, Wende S, and Will A (2005). SmartPLS 2.0 (M3) Beta. University of Hamburg, Hamburg, Germany.

Sinnappan P and Rahman AA (2011). Antecedents of green purchasing among Malaysian consumers. International Business Management, 5(3): 129-139.

Suki NM (2013). Young consumer ecological behaviour: The effects of environmental knowledge, healthy food, and healthy way of life with the moderation of gender and age. Management of Environmental Quality, 24(6): 726-737.

Tsarenko Y, Ferraro C, Sands S, and McLeod C (2013). Environmental conscious consumption: The role of retailers and peers as external influences. Journal of Retailing and Consumer Services, 20(3): 302-310.

Wahid NA, Rahbar E, and Shyan TS (2011). Factors influencing the green purchase behavior of Penang environmental volunteers. International Business Management, 5(1): 38-49.

Zaharia C and Zaharia I (2014). The greening of consumer culture. Economics, Management, and Financial Markets, 9(1): 136-141.