GREEN PRODUCTS PURCHASES: STRUCTURAL RELATIONSHIPS OF CONSUMERS' PERCEPTION OF ECO-LABEL, ECO-BRAND AND ENVIRONMENTAL ADVERTISEMENT

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Abstract: This study aims to investigate the effects of environmental advertisement, consumers' perception of eco-label and impact of eco-brand on their actual purchase behaviour of green product. The sample in this study consisted of 200 individual customers who had experience in purchasing the green products for the past one year in the Federal Territory of Labuan, Malaysia. Primary data was collected through the self-administered questionnaires distributed using convenience sampling method. The structural equation modeling (SEM, a multivariate technique, via Analysis of Moment Structure (AMOS) computer software version 20.0 was utilised to empirically test and estimate the hypothesised relationships between constructs. Results revealed that consumers' perception of eco-label was the strongest determinant of their actual purchase behavior of green product. Moreover, consumers' perception of eco-brand has a significant influence on their actual purchase behavior of green product. This study provides a number of practical implications for marketers in boosting consumers' actual purchase behaviour of green product towards its sustainability.

KEYWORDS: Eco-label, eco-brand, environmental advertisement, purchase behavior, green products, structural equation modeling

Introduction

Green marketing is related to all activities designed to generate and facilitate any exchange intended to satisfy human needs with minimal detrimental impact on the natural environment, i.e. environmental safe (Polonsky, 1994). Green marketing is an effort by business and organization to produce, promote, package and take the product in a manner that is sensitive and responsive to ecological concerns i.e. eco-friendly. Green marketing is a holistic and responsible management process that identifies, anticipates, satisfies and fulfils stakeholder requirements, for a reasonable reward, that does not adversely affect human or natural environmental wellbeing (Simula, Lehtimaki & Salo, 2009). Consumers' purchasing behavior that is persuaded by environmental concerns is known as green consumer (Shrum, McCarty & Lowrey, 1995). Descriptively, there were more than 80% of Thai, Malaysian and Korean consumers from the emerging markets in the region, who is willing to pay premium price to purchase environmental products (Dunlap & Scarce, 1991; Lung, 2010). Hence, growing concerns for the usage on environmentally friendly products in building green consumer behaviour is becoming worldwide issues on green product sustainability that requires everyone participation towards green lifestyle, including industry players.

Nestle is promoting its nutritious and healthier products, for example, has shown positive commitment in using natural ingredients and recycled materials in its food products. Next, Malaysian consumers' can comfortably use products based on the products safety guarantee through the seal-of-approval product certification label of SIRIM Quality Assurance Services (SIRIM QAS). Moreover, Hawlett Packard (HP) through its eco-labelling, has warranty consumes' a products certification in

most of their products by having a 'ENERGY STAR' label on its notebooks, desktop personal computers, monitors, workstations, printing and imaging products, and servers to confirm their active support towards green concerns. Besides, they also recycle and reuse of recovered products. This initiative helps protect the environment that could minimise the risks of climate change.

Lee (2008) stated that there are minimal studies on the green marketing issues in Asian countries, including Malaysia, as compared to the Western countries. Preceding research studies were conducted on the consumer's perception or attitude towards green products (e.g. Cox, 2008; Haytko & Matulich, 2008; D'Souza & Taghian, 2005; D'Souza, Taghian, Lamb & Peretiatko, 2007). This study aims to investigate the effects of environmental advertisement, consumers' perception of eco-label and impact of eco-brand on their actual purchase behaviour of green product. This study provides a number of practical implications for marketers in boosting consumers' actual purchase behaviour of green product.

Literature Review

Consumers are willing to purchase green products that are not harmful to the environment (Chen & Chang 2012). Green marketing tools (i.e. environmental advertisement, perception of eco-label and impact of eco-brand) effects on consumers' actual purchase behaviour of green product is described below.

Perception of Eco-Labelling

Eco-label is related to a product's collective overall environmental performance and they are indicators of environmental performance of a product, developed to try to prevent consumers from being confused over claims of environmental friendliness (Nik Abdul Rashid, 2009). Eco-label can create a positive impact between knowledge of green product and consumer intention to purchase when consumers are aware about eco label. Marketers can use environmental labels to promote the identification of green products. Furthermore, using labels can

benefit the two main functions for consumers such as information function and value function. Information function is where consumer will be informed about intangible characteristics such as quality and colour of the product. Value function provides value for customers such as the prestige of using green products. In the context of environmental management, this study hypothesizes that consumer's perception of eco-label affects their actual purchase behavior and proposes the following hypothesis:

H1. Consumers' perceptions of eco-label significantly influence their actual purchase behavior.

Perception of Eco-Brand

Eco-brand is related to a name, symbol or design of products that are harmless to the environment and by utilizing eco-brand features can help consumers to differentiate them in some way from other non-green products (Rahbar & Abdul Wahid, 2011). Consumers' show their environmental consciousness by choosing green brand in their product selection (Hartmann & Ibanez, 2006). Consumers' develop positive attitudes towards green brands when they are equipped with information on environmental issues, by referring to the product labels in identifying the green product attributes (D'Souza, Taghian & Lamb, 2006). Through the knowledge of green products can help the consumer to differentiate the brands from other brands that have the same function. Green brands can evoke positive emotion certain target groups by simply offering information environmentally sound product attributes (Hartmann & Ibanez, 2006). Consumer will feel better while using the brand that they know fully about the brands. Consumers are motivated to buy eco-friendly product that have high level of environmental impact (Chatterjee, 2009). In the ascend of the environmentalism, eco-brand is very vital to consumers' actual purchase behavior, thus this study suggests the following hypothesis:

H2. Consumers' perceptions of eco-brand significantly influence their actual purchase behavior.

Environmental Advertisement

Environmental advertisement is related to all appeals that include ecological, environmental sustainability or nature-friendly message that target the needs and desires of environmentally concerned stakeholders (Leonidou, Leonidou, Palihawadana & Hultman, 2011). Marketers are using environmental advertisements through media or newspaper to attract customers' attention in introducing and promoting green products. The objective of green advertisements is to influence consumer's purchase behavior by encouraging them to buy products that do not harm the environment and direct their attention to the positive consequences of their purchase behavior, for themselves as well as the environment (Rahbar & Abdul Wahid, 2011). Marketers need to enhance their understanding on how customers respond towards the green products to capture the opportunities in the green market by disseminating effective communication messages of green products. This could build customer's loyalty and encourage consumer's co-operation in environmental conservation efforts. Hence, this study hypothesizes that environmental advertisement affects consumers' actual purchase behavior and proposes the followwing hypothesis:

H3. Environmental advertisements significantly influence consumers' actual purchase behavior.

Figure 1 exemplifies the conceptual framework of this study.

Methodology

Primary data were collected through the self-administered questionnaires, designed in the form of structured close-ended questions, distributed using convenience sampling method to the targeted respondents (i.e. individual customer who had experience in purchasing the green products for the past one year in the Federal Territory of Labuan, Malaysia) with voluntary participation. Data collection was conducted in a period of one month (from 1 January 2012 till 31 January 2012) ended up with 200 usable and completed responses used in the analysis with valid response rate of 80%. The questionnaire comprises of three sections. The first section (Section A) of the questionnaire identified the respondents' demographics profile. The second section (Section B) focused on the personal experience of the respondents on green products i.e. how often they purchase environment/green products and how do they learn about environment/green products. The last section (Section C) measured on the environmental advertising, perception of eco-label, eco-brand and actual purchase behavior based on a 5-point Likert scale with anchors ranging from strongly disagree (1) to strongly agree (5).

Perceptions on impact of environmental advertisement was measured by four items adapted from Chan (2004). Five indicators measuring the consumers' perception of eco-label of green marketing tools and four items measuring the consumers' perception of eco-brand are obtained from Juwaheer, Pudaruth and Noyaux (2012). The questionnaire items for actual purchase behaviour contained four questions which are adapted from Lee (2008). The data collected were analyzed using the Statistical Package for the Social Sciences (SPSS) computer software version 17.0 as well as to generate descriptive statistics of the variables. Next, the structural equation modeling (SEM), a multivariate technique, via Analysis of Moment Structure (AMOS) computer software version 20.0 was utilised to empirically test and estimate the hypothesised relationships between constructs. The software also allows complex relationships between constructs.

Data Analysis

Table 1 shows the demographic profile of the respondents. The analysis of the respondents' information reveals that more than half of the respondents were female (54%) with the remainder made up of the male respondents (46%). Approximately 38% of the respondents were in the age range of 18-27 years old and 29.5% in the age range of 28-37 years old. As for educational achievement, about 24% of the respondents possessing a diploma and 44.5% holding a bachelor degree.
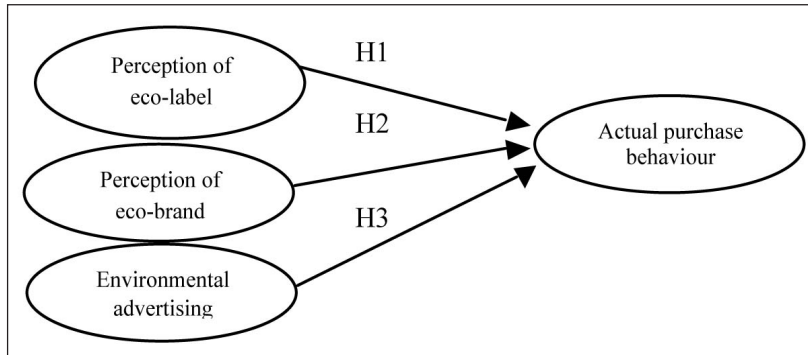
Figure 1: Theoretical Framework.

Green Experiences

Table 2 depicts the experience of the respondents on using green or environmental products. The results revealed that close to 50% of the respondents have bought environmental products for 1-3 times per month and 33.5% of them bought for 4-5 times per month. Approximately 60% of the respondents were using TV commercials as their medium on how they learn about environmental products. This is followed by 14.5% by magazines, 13.5% of newspapers, and the remaining 12.5% by internet.

Structural Equation Modeling

SEM technique coalesce aspects of multiple regression and factor analysis. A two-step SEM approach (i.e. measurement model and structural model) was employed to confirm the reliability and validity of the measures before examining the structural relationship between constructs. This study used maximum likelihood for the estimation method as it provides a consistent approach to parameter estimation problems that can be developed for a large variety of estimation situations.

Measurement Model

Confirmatory factor analysis was performed to test the validity of each construct in the model, including item loading, construct reliability, and average variance extracted (AVE). The results were summarized in Table 3.

Each of the standardised loadings items is greater than 0.50 on their expected factor.

Table 1: Profile of respondents.

	Category	Frequency	Percentage
Gender	Male	92	46.0
	Female	108	54.0
Age	18-27	76	38.0
	28-37	59	29.5
	38-47	35	17.5
	Above 48 years old	30	15.0
Education	Secondary	33	16.5
	Diploma	47	23.5
	Degree	89	44.5
	Postgraduate	31	15.5

However, one indicator each from environmental advertising and perceptions on eco-label construct, and two indicators from perceptions on eco-brand construct were eliminated for not meeting the requirement (i.e. measurement items had factor loadings lower than the cut off point of 0.50) and for improving the model fit. The results in Table 3 infer that the composite reliability scores for all constructs, range from 0.70 to 0.86, exceeded the acceptable level of 0.70 (Hair, Black, Babin, Anderson, & Tatham, 2010), indicating a relatively high level of constructs reliability. The average variances extracted (AVE) of latent constructs, range from 0.736 to 0.812, have exceeded to the recommended threshold value of 0.50 (Hair *et al.,* 2010). Hence, the current data have a good convergent validity. The goodness-of-fit indices of the measurement model, as demonstrated in Table 4, provide an indication of a satisfactory

Table 2: Experiences on Environmental Products.

	Category	Frequency	Percentage
How often do you buy environmental products in a month	Once	31	15.5
	2-3 times	68	34.0
	4-5 times	67	33.5
	6 times and above	34	17.0
How do you learn about environmental products	TV Commercials	119	59.5
	Newspapers	27	13.5
	Magazines	29	14.5

Table 3: Reliability and Validity Analysis.

Constructs	Items	Loadings	Composite Reliability	Average Variance Extracted
Environmental Advertising	EA2	0.743	0.746	0.775
	EA3	0.676		
	EA4	0.711		
Perception of Eco-Label	EL1	0.692	0.781	0.762
	EL2	0.649		
	EL3	0.774		
	EL4	0.834		
Perception of Eco-Brand	EB1	0.711	0.837	0.812
	EB3	0.736		
Actual Purchase Behavior	AP1	0.847	0.759	0.736
	AP2	0.726		
	AP3	0.760		
	AP4	0.741		

fit when compared to the recommended indices such as Comparative Fit Index (CFI), Goodness of Fit Index (GFI), Normed Fit Index (NFI), and Incremental Fit Index (IFI) were above 0.90 and Root Mean Square Error of Approximation (RMSEA) below 0.08 (Bentler, 1990; Byrne, 2001): χ^2/df (2.129), CFI (0.973), GFI (0.96), NFI (0.952), IFI (0.974) and RMSEA (0.075). Thus, the construct validity is acceptable.

The results in Table 5 portray that all the variables of green marketing tools has a positive correlation with actual purchase behavior at $p<0.01$. The perception of eco-brand ($r = 0.735$, $p<0.01$) has a moderate positive correlation value and adherence to the highest value compared to the other construct with actual purchase behavior. This is followed by the perception of eco-label ($r = 0.680$, $p<0.01$) and environmental advertising ($r = 0.671$, $p<0.01$). Both the skewness and kurtosis are low for the most part, indicating that the scores approximate a "normal distribution" or "bell-shaped curve". The shared variances between factors were compared with the squared root of AVE for each construct to examine discriminant validity. The results show the shared variances of the construct with other constructs were lower than the square root of AVE of the individual factors, confirming discriminant validity. Hence, each construct was statistically different from the others.

Structural Model

The structural model in the SEM was evaluated by examining fit indices and variance-explained

Table 4: Goodness-of-fit Indices for Measurement Model.

Fit Indices	Accepted Value	Model Value
Absolute Fit Measures		
χ^2 (Chi-square)		38.316
df (Degrees of Freedom)		18
Chi-square/df (χ^2/df)	< 3	2.129
GFI (Goodness of Fit Index)	> 0.9	0.960
RMSEA (Root Mean Square Error of Approximation)	< 0.10	0.075
Incremental Fit Measures		
AGFI (Adjusted Goodness of Fit Index)	> 0.80	0.901
NFI (Normed Fit Index)	> 0.90	0.952
CFI (Comparative Fit Index)	> 0.90	0.973
IFI (Incremental Fit Index)	> 0.90	0.974
RFI (Relative Fit Index)	> 0.90	0.903
Parsimony Fit Measures		
PCFI (Parsimony Comparative of Fit Index)	> 0.50	0.611
PNFI (Parsimony Normed Fit Index)	> 0.50	0.618

Table 5: Correlation Coefficients and Descriptive Statistics of Latent Variables.

	Advertising	Eco-Label	Eco-Brand	Purchase Behavior
Advertising	.880			
Eco-Label	.604**	.873		
Eco-Brand	.729**	0.684**	.901	
Purchase Behavior	.676**	0.680**	0.735**	.858
Mean	3.855	3.792	3.781	3.5900
Std Deviation	0.636	0.615	0.588	0.834
Skewness	-0.627	-0.277	-0.887	-1.011
Kurtosis	0.074	-0.448	0.486	0.648

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

estimates. The measure of the fit of the structural model was done through examining several goodness-of-fit indices (Table 6). The results indicated that the χ^2 of the model was 99.059 with 46 degrees of freedom (χ^2/df = 2.153) and RMSEA of 0.076. The fit indices value for CFI, GFI, NFI, and IFI were above 0.90 and RMSEA below 0.08, indicating a satisfactory fit. Thus, the overall fit measures of the structural model indicate that the fit of the model is acceptable.

Table 7 and Figure 2 display the estimated standardized path coefficients of the structural model under investigation. All estimated path coefficients were significant at $p < 0.05$. The results exhibit that all independent variables accounted for 79% of the total variance in customer satisfaction ($R^2 = 0.79$). As a consequence, the results are a sign of adequate model fit between the proposed research model and the empirical data.

The strongest determinant of the consumer's actual purchase behavior was the perception of eco-label ($\beta_2 = 0.413$, $p < 0.05$). Thus, H2 was supported. The effect of consumer's perception of eco-brand on their actual purchase behaviour was also significant ($\beta_3 = 0.36$, $p < 0.05$), suggesting support for H3. Similar significant findings appears for H1, i.e. environmental advertising ($\beta_1 = 0.187$; $p = 0.026$). These findings conclude that all the research hypotheses put forward earlier were supported in this study.

Table 6: Goodness-of-fit Indices for Structural Model.

| Fit Indices	Accepted Value	Model Value
Absolute Fit Measures		
χ^2 (Chi-square)		99.059
df (Degrees of Freedom)		46
Chi-square/df (χ^2/df)	< 3	2.153
GFI (Goodness of Fit Index)	> 0.9	0.937
RMSEA (Root Mean Square Error of Approximation)	< 0.10	0.076
Incremental Fit Measures		
AGFI (Adjusted Goodness of Fit Index)	> 0.80	0.875
NFI (Normed Fit Index)	> 0.90	0.932
CFI (Comparative Fit Index)	> 0.90	0.961
IFI (Incremental Fit Index)	> 0.90	0.962
RFI (Relative Fit Index)	> 0.90	0.903
Parsimony Fit Measures		
PCFI (Parsimony Comparative of Fit Index)	> 0.50	0.667
PNFI (Parsimony Normed Fit Index)	> 0.50	0.658
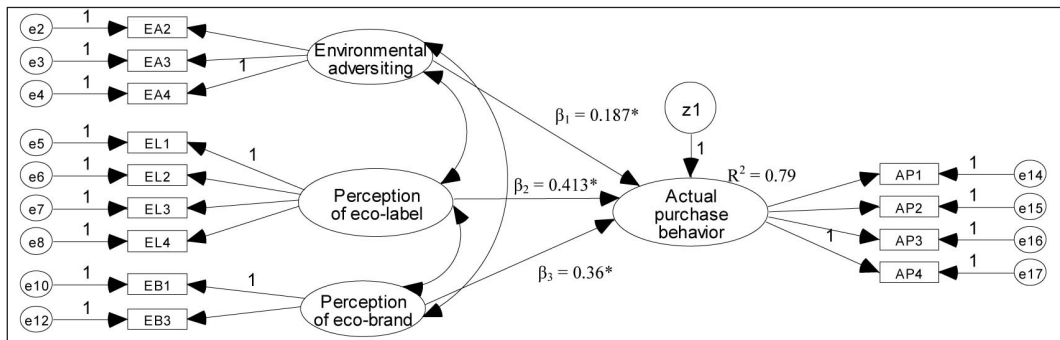
Figure 2: The Results of Structural Model.

Discussion

This study examined the effects of environmental advertisement, consumers' perception of eco-label and impact of eco-brand on their actual purchase behaviour of green product. The result on the coefficients of the environmental advertisement, consumers' perception of eco-label and impact of eco-brand was positively significant with their actual purchase behaviour of green product, implying all hypotheses proposed were supported. The perception of eco-label has the strongest influence towards consumers' actual purchase behaviour of green product whereby they positively acknowledge the information about green products from the product label. The consumer confidence with product evaluations is affected with issue of ability to touch and feel the products (Norazah, 2006), in particular the product label.

Besides, it seems that eco-branded products have been commercially successful due to its positive public image, which leads consumers to purchase green product and causes the growth to brand loyalty (Ginsberg & Bloom, 2004; Rahbar & Abdul Wahid, 2011). This result is comparable to D'Souza, Taghian & Lamb (2006) and Hartmann and Ibanez (2006)'s study. The results also inferred that the environmental advertising is successful in influencing consumers' to purchase green products as they believe that

Table 7: Relationship with Actual Purchase Behavior.

			Estimate	S.E.	C.R.	P
H1	Environmental advertising	---> Actual purchase behavior	0.187	0.298	0.697	0.026*
H2	Perception of eco-label	---> Actual purchase behavior	0.413	0.293	0.756	0.039*
H3	Perception of eco-brand	---> Actual purchase behavior	0.360	0.428	0.815	0.015*

* $p < 0.05$

environmental advertisement enhances their knowledge on green products and guides them into making an informed purchasing decision. Similar results were found by Rahbar and Abdul Wahid (2011)'s study.

Conclusion

This study provides a number of practical implications for marketers in boosting consumers' actual purchase behaviour of green product. Marketers who is selling green products should give priority to eco-label of the products such as there should be sufficient product information that is easy to read and available on the labels of the green products in order to better augment consumers' actual purchase behaviour of green product. The eco-label should be eye-catching in order to take hold of consumers' attention. Green products should be marketed to the consumers' in a way which they really use it and relevant to their lifestyle. Moreover, marketers should engender consumers' actual purchase behaviour of green product using an effective eco-brand name on the green product whereby consumers' should feel good about buying brands which are less damaging to the environment and trust well-known green branded products. Indeed, marketers should also produce the product advertisements that can evoke consumers' emotion in instilling the message contents of the environmental concerns. These improvements directly increase consumers' actual purchase behaviour of green product. Thereafter, develops consumers' exposure about environmentally friendly products.

From the government side, they should strengthen the implementation of green policies outlined in tandem with the Malaysian Green Technology Policy such as providing tax reduction and promotional incentives to those green products manufacturers who practices green concerns in their manufacturing processes, produces product with eco-label and eco-brand, and promotes product messages content by using environmental advertisements. The government should also pump up the importance of environmentally friendly values among consumers' by formulating and promulgating educational and user-friendly strategies towards enhancing green product market sustainability and acceptance. This could expand public environmental consciousness values.

This study had some potential limitations that provide room of investigation for future studies. The sample is biased towards individual customer who had experience in purchasing the green products for the past one year in the Federal Territory of Labuan, Malaysia. This has limits the generalization of the findings from this study to represent the whole population in Malaysia. Hence, further research is deemed necessary to expand the sample size and perform investigation to a wider group of sample in order to enhance the understanding of green marketing behavior. Next, it is highly recommended for future researcher to conduct a longitudinal study on this topic. Future studies could focus on a comparative analysis of the green marketing awareness impacting on consumer actual purchase behaviour of green product by adding the moderating effects of education, income, and perform a comparison between eco-brand and non eco-brand product.

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