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Attitude towards Sustainable Product among Malaysian Consumers

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Abstract

This research investigates consumers' attitude towards the acceptance of a sustainable product (SP). The current research on consumers' behaviour mainly focuses on "determinants" or "factors" affecting attitudes, while; this research offers a parallel shift, focusing on consumers' attitude influencing the acceptance of a sustainable product. Three main variables undergo in-depth examination: consumers' attitudes (CA), consumers' persuasion (CP) and consumers' ethics (CE). This study develops a model of sustainability, considering the strengths and limitations of existing models. The theoretical framework for this study is based on the theory of reasoned action (TRA), the theory of planned behaviour (TPB), the attribution theory (AT) and the Thompson & Barton environmental attitudes model (EAM)

Keywords: *Sustainable Product; Product Acceptance; Malaysian Consumers; Individual Attitudes, Persuasion and Ethical Belief*

1.0 Introduction

Acceptance of new and unfamiliar product innovations tends to create self-cautiousness among consumers, resulting in different level of attitudinal expressions (Luo, Olechowski & Magee, 2012; Luo, Warkentin & Li, 2013). Understanding these differences will elucidate on the relevant factors in the acceptance of product innovation, and help differentiate those factors, for successful acceptance processes. Apart from the reported importance of sustainable product innovation, various studies also display that it can cause uncontrolled consumers' behaviour. These factors impact a heavy burden on the environment, resulting in environmental and societal problems (Cui, Jiao, Jiao, 2016; Guerra, Ribeiro, Fernandez, Bailey, Barbosa, & Neiva, 2016; Huijts, Molin & Steg, 2012; Irandoust, 2016; Martin-Pena, Diaz-Garrido& Sanchez-Lopez, 2014). Developing sustainable product innovation is more than a goal for the future. It is a survival approach that will inform and ensure the long-term survival of humanity, as well as make qualitative improvements in consumers' daily lifestyles. Research proves that the acquisition of sustainable product will eventually reduce the possibility of environmental degradation, pollution and climate change (Guerra, Ribeiro, Fernandez, Bailey, Barbosa, & Neiva, 2016; Irandoust, 2016; Moon, Bergey, Bove & Robinson, 2016; Parrish, 2007). Brundtland (1987), as cited by Berardi (2013, p. 73), established that *"sustainability is a form of development which meets the needs of the present without compromising the ability of future generations to meet their own needs".* As such, consumers often find it difficult, with their lifestyle and their perspective, to accept new product innovation that contributes to sustainability (Gmelin & Seuring, 2014). In today's world, the development and

implementation of a sustainable product is not only an unavoidable social and environmental issue; it is also a significant challenge for many industries and individuals (Goepp, Zwolinski&Caillaud, 2014). As mentioned by Chang, Moraes and Leek (2011), the question that needs answering is: can consumers contribute to sustainability? Their core ability and role in fostering societal change towards a more sustainable and environment-friendly mode of living is still being explored.

2.0 Research Approach
This research focuses on consumers' attitudes, persuasions and ethical belief, and their effects on their acceptance process of a sustainable product. The key issues surrounding sustainable product innovations have expanded, where moral values and consumers' concerns shift between greater or lesser inclination towards the environmental concern. To test CA, CP and CE, four main theories were executed and expand. The 'theory of reasoned action' (TRA) and the 'theory of planned behaviour' (TPB) are the theory that best explain attitudes. Attribution theory (AT) will further explain the persuasions, while Thompson and Barton's Environmental Attitudes Model (EAM) will explain consumers' ethical belief. All four theories are used and expanded to explain the current phenomenon of consumers' attitudes towards a sustainable product. Thus, it will allow the expansion of the theoretical model in product acceptance, filling in the gap in the existing theoretical framework. Therefore, this research can elucidate an consumers' perceptions from the possible outcomes of accepting sustainable product (Agamuthu & Victor, 2011; Bachok, Ponrahono, Osman, Jaafar, Ibrahim, & Mohamed, 2015; Bohnsack, Pinkse & Kolk, 2014; Bourlakis, Maglaras, Aktas, Gallear, & Fotopoulos, 2014; Carrigan, Moraes & Leek, 2011; Chen & Tung, 2014; Collins, 2011; Iveroth & Bengtsson, 2014; Nagalingam, Kuik & Amer, 2013; Quazi &Talukder, 2010).

3.0 Theoretical Framework
This research will develop a model for sustainable product acceptance, with consideration of the existing models' strengths and limitations. The theoretical research framework for this research is based on TRA, developed by Fishbein and Ajzen (1980); TPB, developed by Ajzen (1991); AT, by Heider (1958); and Thompson and Barton's (1994) EAM. The model will include several modifications that these older models lack, as explained in the reviewed literature. The CA and CP elements are based on TRA, TPB and AT. The third category, CE is explained by Thompson and Barton's (1994) EAM.

The CA is derived from TRA, TPB and AT; they reflect that consumers' intention to accept a new product is influenced by their personality (CA) and surroundings (CP). AT describes the surrounding that affects consumers' decision as situational (CP), whereby the consumers' situation will act as the trigger for their intention to accept a sustainable product. Both CA and CP are essential in explaining the function of attitudes towards a sustainable products. It integrated into the research to acknowledge the consumers' opinions on the environmental issues that can influence its acceptance of a sustainable product.

The third category is CE, derived from Thompson and Barton's (1994) EAM. Other researchers who have utilized this model also identified CE as an element, as it explains how a consumer makes ethical decisions about the environment. It helps explain the consumers' perception of environmental values, which is why it is considered an essential inclusion for the research model. It will explain why consumers base their acceptance of a sustainable product on their ethical beliefs concerning the environment.
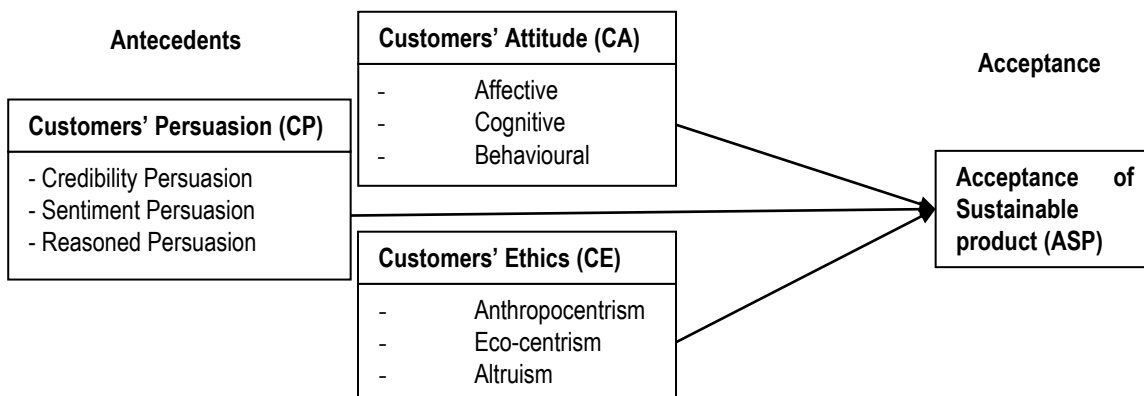

Figure 1: Theoretical Research Framework

4.0 Research Methodology
This research is of an explanatory type: it collected information without changing the environment or manipulating the results. Many researchers have used multivariate analysis (e.g. Analysis of Variance, Regression or Factor Analysis) to find the relationship between selected variables (Sarstedt, Ringle, Smith, Reams & Hair, 2014). This type of research can provide more information about naturally occurring human behaviours, attitudes and other characteristics. Explanatory research is usually the best methodology for information collection; demonstrates relationships and describes the world as it exists. According to Duguleana and Nicolae (2013), Explanatory is used when specific information on the relation between humans' attitudes and behaviours are needed. The instrument used is almost always a questionnaire.

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This research tested multiple hypotheses to evaluate the potential explanations for the observed relationships. It allowed for an explanation of the relationships between the variables. The hypotheses were based on the reviewed literature and developed with supporting examples. Based on the hypotheses, a quantitative survey for Malaysian consumers was constructed.

(H1) Affective CA has a significant relationship to the ASP.
(H2) Cognitive CA has a significant relationship to the ASP.
(H3) Behavioural CA has a significant relationship to the ASP.
(H4) Credibility CP has a significant relationship to the ASP.
(H5) Sentiment CP has a significant relationship to the ASP.
(H6) Reasoned CP has a significant relationship to the ASP.
(H7) Anthropocentric CE has a significant relationship to the ASP.
(H8) Eco-centrism CE has a significant relationship to the ASP.
(H9) Altruism CE has a significant relationship to the ASP.

5.0 Research Methods

The study was conducted among consumers in Malaysia. The researcher has distributed the survey questionnaire randomly to 625 consumers in Malaysia, and the expected feedbacks are between 200 to 250 respondent. One of the main statistical tools that the research used during the analysis was the Partial Least Square Structural Equation Model (PLS-SEM). According to Hair, Sarstedt, Pieper &Ringle (2012) and Hair, Hult, Ringle and Sarstedt (2013), the minimum sample size required for the analysis is ten times the maximum number of variables in the research model. The appropriate sample size was suggested to be a minimum of 15 subjects for each predictor (variables) for a thorough multivariate analysis suggested by Hair (1998).

This research analyzed the data using Partial Least Square - Structural Equation Model (PLS-SEM) developed by Herman Wold (1974, 1982). By using the PLS-SEM, it will also be able to analyze small sample sizes for this research. Furthermore, PLS-SEM can measure multiple construct variables at the same time, allowing the research to evaluate multiple theories within one model. This research use four theories that been expand and modified according to SP literature. Thus, using PLS-SEM is essential to gain an accurate measurement of the data collected (Hair, Hult, Ringle, &Sarstedt, 2013; Hair, Sarstedt, Pieper &Ringle, 2012; Sarstedt, Ringle, Smith & Hair, 2014; Sarstedt, Ringle, Smith, Reams & Hair, 2014). By using the PLS-SEM algorithm to run a path coefficient model analysis, this research can determine CA towards a sustainable product. The researcher evaluated the theoretical research framework and further determined the coefficient of determination. Furthermore, 'blindfolding' and 'predictive' relevance will be calculated to summarize the results.

6.0 Data Analysis and Findings

The data collected for this study derived from 242 respondents. A total of 234 sets of questionnaires were used, while three respondents opt-out in the middle of the participation, and the rest five survey questionnaires were disqualified as the respondents did not answer the questions appropriately.

Table 1: Summary of Quality Assessment

Variables	Composite Reliability	Convergent Validity (AVE)	Discriminant Validity
Affective CA	.859	.723	Yes*(0.907 > 0.425)*
Cognitive CA	.827	.618	Yes*(0.847 > 0.663)*
Behavioural CA	.842	.665	Yes*(0.875 > 0.743)*
Credibility CP	.851	.695	Yes*(0.892 > 0.663)*
Sentiment CP	.841	.660	Yes*(0.872 > 0.707)*
Reasoned CP	.839	.656	Yes*(0.870 > 0.646)*
Anthropocentrism CE	.844	.673	Yes*(0.879 > 0.595)*
Eco-centrism CE	.844	.670	Yes*(0.878 > 0.733)*
Altruism CE	.844	.671	Yes*(0.878 > 0.514)*
Acceptance (ASP) **(DV)**	.828	.622	Yes*(0.850 > 0.501)*

6.1 Composite Reliability
According to Nunally & Bernstein (1994), composite reliability values from 0.60 to 0.70 are acceptable in exploratory research, while in more advanced research, values between 0.70 and 0.90 can be stated as satisfactory. As shown in 'table 1', it indicates that the composite reliability values of all the variables are considered as satisfactory.

6.2 Convergent Validity
To measure and establish convergent validity on the variables, the researcher gets it by their average variance extracted value (AVE). The AVE is equivalent to the communality of a construct. An AVE value of 0.50 or higher indicates that, on average, the construct explains more than half of the variance of the variables. Convergent validity assessment builds on the AVE values as the evaluation criterion. The AVE values of all the variable are well above the required minimum level of 0.50. Thus, the independent and dependent variables of the theoretical research model have high levels of convergent validity.

6.3 Discriminant Validity
Discriminant validity is the extent to which a variable is truly distinct from other variables by empirical standards. This shows that a variable is unique, and it captures phenomena that are not presented by other variables in the theoretical research model. The Fornell-Larcker criterion is a conservative approach to assess discriminant validity. These methods will compare the square root of every AVE values with the latent variable correlations. Thus, the square root of each variable's AVE should be greater than its highest correlation with any other variables. As shown in 'Table 1', the square root of all variables is greater than the highest values of other correlation, which indicates that all variables are discriminant valid.

6.4 Summary of Findings
By running the PLS-SEM analysis, estimates are obtained for the structural model relationships, which represent the hypothesized relationships among the variables. The path coefficients have standardized values between -1 and +1. As indicated in 'Table 2', the path coefficient that shows a significant and positive value is 'Affective' CA (0365) and 'Altruism' CE (0.295). The path coefficient value that is closer to 0, that can be explained as non-significant are 'Cognitive' CA (-0.016), 'Behavioural' CA (0.089), 'Credibility' CP (0.060), 'Sentiment' CP (0.034), 'Reasoned' CP (-0.105), 'Anthropocentrism' CE (0.020), and 'Eco-centrism' CE (-0.058).

Although the path coefficient can estimate the significant values of a variable, ultimately it depends on its standard error that is obtained by employing bootstrapping. In bootstrapping, subsamples are randomly drawn from the original set of data. Each subsample is then used to estimate the model. This process is repeated until a large number of random subsamples have been created. In this research, the total of subsamples is 20,000 to represent Consumers in Malaysia. The bootstrapping will be applied to compute the t value. The empirical t value needs to be larger than the critical value, to determine whether the coefficient is significant at a certain error probability. After computing the t values, any value that is more than 1.65 (significant level = 10%) will be considered as significant. As indicated in 'Table 2', the t value of each path coefficients is presented. The results show both significant and non-significant. The PLS path shows that the relationship between affective attitude towards acceptance is very significant at t value of 7.445 (>1.65). Both 'Cognitive' CA and 'Behavioural' CA variables showed a non-significant relationship towards acceptance of SP, where the t value is 0.223 (<1.65), and 1.223 (<1.65). Even the CP variables show a non-significant relationship towards the ASP as the t value for 'Credibility' SP is 0.708 (<1.65), while 'Sentiment' CP has a t value of 0.369 (<1.65), and 'Reasoned' CP is 1.171 (<1.65). In terms of CE, only 'Altruism' CE has a strong significant value towards the ASP at t value of 3.450 (>1.65), while 'Anthropocentrism' CE and 'Eco-centrism' CE have a non-significant relationship at t values of 0.233 (<1.65), and 0.692 (<1.65).

Other than computing the t value, this research will also report the p values that correspond to the probability of erroneously rejecting the null hypothesis. To determine the p values as a significance value, the value needs to be described as significant when $p<0.001$, $p<0.05$, and $p<0.10$. Anything that is higher than 0.10 is considered as non-significant. The variables that show significance values ($p<0.001$) is 'Affective' CA and 'Altruism' CE.

Table 2: Significance Testing Results of PLS-SEM Algorithm

	Path Coefficients	t Values	Sig. Levels	p Values	90% Confidence Intervals
Affective → Acceptance	.365	7.445	***	.000	[0.236, 0.422]
Cognitive → Acceptance	-.014	.223	NS	.824	[-0.142, 0.140]
Behavioural → Acceptance	.089	1.223	NS	.221	[-0.039, 0.217]
Credibility → Acceptance	.060	.708	NS	.479	[-0.095, 0.220]
Sentiment → Acceptance	.034	.369	NS	.712	[-0.146, 0.203]
Reasoned → Acceptance	-.106	1.171	NS	.241	[-0.274, 0.076]
Anthropocentrism → Acceptance	.020	.233	NS	.816	[-0.133, 0.165]
Eco-centrism → Acceptance	-.062	.692	NS	.489	[-0.232, 0.100]
Altruism → Acceptance	.295	3.450	***	.001	[0.124, 0.462]

The most commonly used measure to evaluate the structural model is the coefficient of determination. The coefficient of determination (R^2 value) ranged from 0 to 1, with higher levels indicating higher levels of predictive accuracy. In the research of consumers' attitudes, R^2 value of 0.20 and above are considered as high predictive accuracy. In this research, R^2 value of 0.26, 0.13, or 0.02 for a dependent variable can be described as substantial, moderate, or weak (Cohen, 1988; Hair, Ringle & Sarstedt, 2011;

Henseler, Ringle & Sinkovics 2009; Wong, Soh, & Chong, 2016). The coefficient of determination (R^2 value) for acceptance shows a substantial value of 0.262. The change in the R^2 value when a specified independent variable is omitted from the model can be used to evaluate whether the variables have substantive impact on the dependent variables. This measure is referred to as the f^2 effect size. Assessing the f^2 are that values of 0.02, 0.15, and 0.35, respectively, represent small, medium, and large effects of the independent variables (Cohen 1988). Indicated in 'Table 3', the f^2 effect size for all the relationship between independent and dependent variables are listed. The relationships that have weak effect size are 'Cognitive' CA → ASP (0.000), 'Behavioural' CA → ASP (0.003), 'Credibility' CP → ASP (0.002), 'Sentiment' CP → ASP (0.001), 'Reasoned' CP → ASP (0.004), 'Anthropocentrism' CE → ASP (0.000), and 'Eco-centrism' CE → ASP (0.002). The relationship that has a small f^2 effect size is 'Altruism' CE → ASP (0.054), and there is only one relationship that considered having medium f^2 effect size, which is 'Affective' CA → ASP (0.130).

In addition to evaluating the magnitude of the R^2 values as a criterion of predictive accuracy, this study will also determine the Q^2 value. This measure is an indicator of the theoretical research model's predictive relevance. It will accurately predict the data points of the construct measurements of each independent and dependent variables. The Q^2 value for acceptance variable carries the value of 0.169, which indicates that the dependable variable has predictive relevance (Hair, Hult, Ringle, &Sarstedt, 2013; Wong, Soh, Chong, 2016). Similar to the f^2 effect size approach for assessing R^2 values, the relative impact of predictive relevance can be compared by means of the measure to the q^2 effect size. As indicated in 'Table 3', the q^2 effect size that is considered as weak are 'Cognitive' CA → ASP (-0.001), 'Behavioural' CA → ASP (0.001), 'Credibility' CP → ASP (-0.001), 'Sentiment' CP → ASP (-0.001), 'Reasoned' CP → ASP (0.001), 'Anthropocentrism' CE → ASP (0.000), and 'Eco-centrism' CE → ASP (0.001). The small q^2 effect sizes that are shown in the table are 'Affective' CA → ASP (0.089), 'Altruism' CE → ASP (0.031).

Table 3: Summary of Results

	Path Coefficients	f^2 Effect Size		q^2 Effect Size
Affective → Acceptance	.365	.130		.089
Cognitive → Acceptance	-.014	.000		-.001
Behavioural → Acceptance	.089	.003		.001
Credibility → Acceptance	.060	.002		-.001
Sentiment → Acceptance	.034	.001		-.001
Reasoned → Acceptance	-.106	.004		.001
Anthropocentrism → Acceptance	.020	.000		.000
Eco-centrism → Acceptance	-.062	.002		.001
Altruism → Acceptance	.295	.054		.031

7.0 Discussion and Implication

The results from the PLS-SEM path analysis, in general, show that affective attitudes and altruistic belief to be positive and significant towards the acceptance of a sustainable product (Figure 2). This showed that if consumers have stronger positive feelings towards sustainable products, there will be more possibilities for them to accept a sustainable product. Furthermore, the research showed that Malaysian consumers have high 'Altruistic' values, which put others well-being before their own. The more their actions affect the people around them, the more they will eventually lead them to change their daily intake towards a sustainable product. As shown in 'Table 3', the variable that has contributed the most to explain the acceptance is the 'Affective' CA with predictive accuracy (*f² effect size*) value of 0.130 and predictive relevance (*q² effect size*) of 0.089. This show that 'Affective' CA is the main antecedents for consumers to accept a sustainable product, which support our first hypothesis (H1). As Buijs & Lawrence (2013) stated, these emotional state can drove individuals' towards making a decision to approach a sustainable product with a feeling of attachment, respect, responsibility, and joy towards sustainability. 'Affective' CA involve directly within individuals' action towards a particular phenomenon. Their emotional state will create reactions when encountering a problem or an opportunity, thus lead to action of a particular phenomenon. Thus, shows that with high 'Affective' CA, individuals that deciding for themselves and their family, can lead towards accepting sustainable product. According to Jepson, Brannstrom & Persons (2012), consumers tend to take a new opportunity as long as it can create and help them to gain more benefits in improving their daily lifestyle. In term of SP, the opposite effects occur where the well-being of the people around them have been put as the priority. The results of this research agree with Verdugo, Bonnes, Fonllem, Sing, Armenta & Carrus (2009) and Hirsh (2014), where 'Altruistic' CE of selflessness can always open to change, which have an impact among consumers that care for others. This data has shown supportive results on the hypothesis (H9). The usages of dangerous material and resources that will affect other individuals' health and safety have lead consumers to change their daily intake towards a sustainable product.
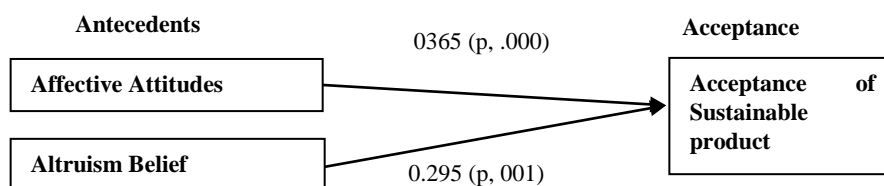
Figure 2: PLS-SEM Path Theoretical Research Model

8.0 Conclusion

By identifying a comprehensive list of CA, CP and CE antecedents, and perception towards the ASP, this study departs from the traditional sustainable study that only applies a few factors. By employing quantitative data, this study offers an understanding of the different factors that play a role in affecting consumers' ASP. The PLS-SEM path analysis indicated that nine independent variables accounted for 72.2% of the variance in the consumers' ASP.

The data from the PLS-SEM path analysis indicated that 'Affective' CA and 'Altruism' CE have high coefficient and predictive ability towards the ASP. Thus, it suggested that the agency, government or NGOs which aim to implement sustainability among consumers need to focus on creating a surrounding environment based on these two approaches. This is important, where a different approach may prove to be futile for the consumers. To implement and manage sustainability that can enhance consumers' capabilities, the government and NGOs must recognize the CA, CP and CE that influence consumers' ASP. The findings of this study will help the government to identify factors and provide favourable environment conditions prior to implementation of SP. It also contributes to a better understanding of the antecedents that promote ASP.

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