The Moderating Effect of Cynicism among Malaysian Consumers on Purchase Intention of Energy Efficient Vehicle

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Abstract

This paper investigated the Environmental Responsible Behaviour (ERB) model, which comprises of materialism, environmental belief, and environmental concern, in association with the purchase intention of energy efficient vehicle (EEV). A set of self-administered questionnaire was distributed to 314 respondents. The gathered data were analysed using Partial Least Square-Structural Equation Modelling (PLS-SEM) approach. This empirical study posits a causal model of ERB in light of EEV purchase intention among Malaysian consumers. The findings showed that the moderating effects were indeed significant among cynical consumers from the lens of the proposed theoretical framework; a factor that has been overlooked in prior studies. Automakers and local authorities may use the findings reported in this study to educate Malaysians pertaining to EEV purchase.

I. INTRODUCTION

The transportation industry is one of the major sources of carbon emission at global level. In the past decade, the escalating rate of world population had led to the ever-increasing need and demand for transportation (Mahlia et al., 2010; 2012). This notion is supported by the fact that 77 million vehicles were sold globally by the end of year 2019 (Wagner, 2019). While the automotive industry continues to flourish and grow from year to year, a sequence of environmental effect has been stemming from this industry. Armstrong (2019) and Wagner (2019) claimed that global initiative has been taken by local authorities, automakers, and consumer for less environmental harmful consumption. This industry has begun adopting a greener solution (Govindan, Rajendran, Sarkis, & Murugesan, 2015; Kumar & Polonsky, 2017). As such, energy efficient vehicle (EEV) has been introduced, which consumes less petroleum fuel and emits less carbon. The EEV includes fuel-efficient internal combustion engine (ICE)

vehicles, hybrid, electric vehicles (EV), as well as alternative fuelled vehicles powered by Compressed Natural Gas (CNG), Liquefied Petroleum Gas (LPG), Biodiesel, Ethanol, Hydrogen, and Fuel Cell (MITI, 2014; Mohamed, 2015).

This changing trend towards less harmful daily consumption and the growing demand of transportation have created a prospect for automakers to manipulate and capture the market for environmentally sensitive consumers (Jain, 2018; Sharma, & Joshi, 2017). Particularly in the automotive industry, a number of automakers have been caught engaging with a practice called 'greenwashing', whereby a company portrays a deceptive image of being environmentally sensitive in its products, policies, and brand image as a marketing strategy or tactic (Magnier & Schoormans, 2015). In 2015, the Volkswagens Group (VW) had shocked the automotive industry after it was sued for fake emission test (United States Environmental Protection Agency [US EPA], 2016; Shukor et al., 2015). The company was sued for providing fake emission test by US EPA

(BBC, 2016; Farrell, 2016). This issue turned into a global concern and had involved several other frontlines companies, including Renault, Fiat, Mercedes, Peugeot, Citroen, Nissan, Opel, and Ford, for failing to comply with emission regulations (Funakoshi, 2016).

This greenwash practice implemented by these automakers had affected consumer perception and trust towards the automotive industry (Funakoshi, 2016 ; Lyon, & Maxwell, 2011). This issue had tarnished the company reputation and had wiped billions off their market value. The literature depicts that Malaysians are indeed well-equipped with knowledge and awareness regarding their daily harmful consumption. Such attitude is often translated into actual intention or behaviour (Moh, & Manaf, 2017, 2014; Venkatesh, Brown, & Hoehle, 2012). Accordingly, this paper bridged these gaps by extending the Value-Belief-Norm (VBN) theory and by incorporating cynicism as a moderating variable to address the inconsistent literature that links purchase intention with environmental concern. Besides, there has been no such focus on this issue for high involvement consumption. Clearly, the demand for more research effort is justified.

II. HYPOTHESES AND MODEL

This study extends Environmental Responsible Behaviour (ERB) Model initiated by Kilbourne and Pickett (2008) that applied the Value-Belief-Norm (VBN) Theory by Stern (2000). This model was selected to describe human behaviour built from values that transcends to specific belief and concern, and finally ends with behavioural intention. The model descends from materialism as a value to a specific outcome; purchase intention. The next section explains both the model as in Fig. 1 and the variables used in this study.

A. Materialism Value

This study defines materialism as a value structure, where individuals hold more instrumental value from their consumption, as suggested by Richin and Dawson (1992). This study extends the consequences of materialism in the context of environmental consumption behaviour for purchase of EEV. Olsen, Thach, and Hemphill (2012) asserted that car is a valued possession due to the high financial commitment from its ownership. The EEV is an alternative that is sensitive to the environment with less emission and fuel consumption. Hence, materialistic persons are bound to change their priority due to their environmental belief (Kilbourne *et al.*, 2005; Kilbourne, & Pickett, 2008). Having mentioned that, the following hypothesis is proposed:

H1: *There is a negative relationship between materialism and environmental belief.*

B. Environmental Belief

Building upon the VBN theory (Stern et al., 1995), values transcend to belief and proceed to norm (Stern, 2000). This study operationalises individual values that will translate to environmental beliefs (Pagiaslis & Krontalis, 2014; Ünal, Steg, & Granskaya, 2019). Purchasing EEV can be considered as environmental-sensitive purchase that derives from belief of environmental degradation stemming from harmful consumption (Klöckner, 2013).

This has led to the hypothesis given below:

H2: *There is a positive relationship between environmental belief and environmental concern.*

The literature depicts that attitudes or norms formed by belief are built from values that transcend from one's surrounding (Stern, 2000; De Groot, & Steg, 2007, 2008; Fraj, & Martinez, 2006). Global warming has had an impact on consumer value in daily consumption. This study posits that when materialism value decreases, belief in the existence of environmental problems increases, along with their increasing level of concern. Thus:

H3: *Environmental Belief mediates the relationship between materialism and environmental concern.*

C. Environmental Concern

The literature views environmental concern as awareness of the consequences of certain behaviour (Fujii, 2006; Mostafa, 2007). Govindan *et al.,* (2015) revealed that customers with positive attitude towards business are more likely to accept the ethical beliefs of green products, thus favourably influencing green buying behaviour. Newton *et al.,* (2015) found that environmental concerns motivated customers to learn the outcomes of environmental purchases. Thus;

H4: *There is a positive relationship between environmental concern and purchase intention.*
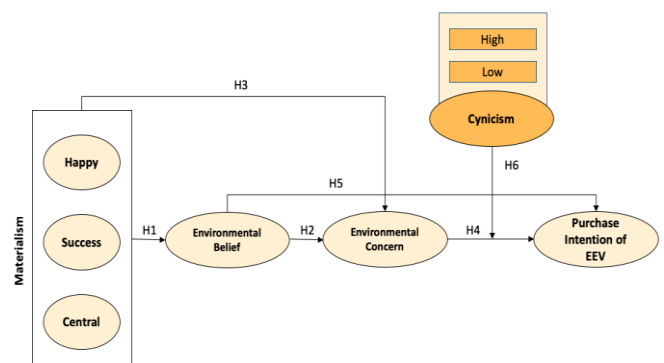

Fig 1: Conceptual Model

Stern (2000) and Dietz et al., (1998) claimed that behaviour derives from intention that transcends from norms and belief. Belief on the need to protect the environment can be translated into concern for

environmental degradation. This eventually proceeds to intention to purchase environmental sensitive products (Kilbourne, & Pickett, 2008). Thus:

H5: *Environmental concern mediates the relationship between environmental belief and purchase intention.*

D. Purchase Intention of EEV

In this study, purchase intention of EEV was applied as the final outcome or the dependent variable. It refers to a complex process of ethical consumer's decision-making behaviour with an emphasis on socially responsible behaviour. One tends to weigh in public consequences upon private purchase consumption and attempts to bring social change via purchasing power (Joshi, & Rahman, 2015).

E. Cynicism

Cynicism is operationalised as a moderating variable for the relationship between environmental concern and purchase intention of EEV. The literature defines cynicism as "a lack of belief in the sincerity or goodness of human motives and actions and is manifested in feelings ranging from 'distrustfulness [and] doubt to contemptuous and mocking disbelief' (Hickman, Piquero, & Piquero, 2004; Regoli, 1976). Cynicism is one of the main factors that trigger consumers' decisions to adopt a new product or service (Helm, Moulard, & Richins, 2015). Therefore, the following hypothesis is proposed:

H6: *Cynicism moderates the relationship between environmental concern and purchase intention of EEV.*

III.   METHOD

A. Participants and Procedures

The quantitative approach was adopted in this study to assess the hypotheses. A total of 314 usable responses were retrieved from 460 questionnaires distributed via online invitation (Facebook and Email). Hence, 68.26 percent of response rate was yielded. Based on the G*Power analysis, the actual sample size of 157 had yielded statistical power of 0.974. As such, the sample size in this study was considered sufficient (Hair *et al.*, 2017; Henseler, & Sarstedt, 2013).

B. Questionnaire development and Instrument

A three-section unguided questionnaire that comprised of 35 measurement items was developed for this study by employing the multi-item Likert scale. The validated measurement items were adapted from related past studies and had been pre-tested by three experts (an academician, a practitioner, and a potential respondent).

C. Statistical Techniques

This study applied the multivariate analysis approach by using Partial Least Squares-Structural Equation Modelling (PLS-SEM). This tool has been widely used to assess relationships between one or more independent variables and one or more dependent variables, regardless of the variables' characteristic; either continuous or discrete (Henseler, Ringle, & Sarstedt, 2015; Sarstedt, & Ringle, 2017).

IV.   RESULTS

This study performed PLS-SEM over covariance-based SEM (CB-SEM) due to the nature of measurement and the aims of the analysis (to predict, rather than confirm), in line with the recommendation given by Hair et al., (2018). The analysis is composed of measurement and structural models.

A. Measurement Model

All composite reliability (CR) values ranging from 0.804 to 0.878 exceeded 0.7 (Henseler, 2013) displayed construct reliability (see Table 2). Therefore, CR for all constructs in this study was sufficiently error-free. Factor loading was used to test indicator reliability. Factor loadings greater than 0.50 were considered as significant (Hair, Hult, Ringle, & Sarstedt, 2016).

In order to test convergent validity (the extent to which a measure correlates positively with alternative measures of the same construct), this study used the average variance extracted (AVE) with threshold value above 0.50 (Hair et al., 2017). The convergent validity for all constructs in this study ranged from 0.572 to 0.707, which reflected adequate convergent validity (see Table 1). The discriminant validity (the degree to which items differentiate among constructs or measure distinct concepts) of the measurement model was determined based on three criteria; cross-loadings, Fornell-Larcker, and Heterotrait-monotrait ratio (HTMT). Cross loading was used to compare the correlation of each item to all other constructs, where an indicator's outer loading on the associated construct should be greater than all loadings of the other constructs (Hair, Hult, Ringle, & Sarstedt, 2014). Table 2 presents the results of discriminant validity based on Fornell-Larcker criterion, whereby the square root of the AVEs on the diagonals (in bold) exceeded the correlations between constructs (corresponding row and column values). This signified that the constructs were more strongly related to their respective indicators than the other constructs embedded in the model (Fornell & Larcker, 1981), thus suggesting exceptional discriminant validity (Hair et al., 2017). In addition, the correlation between exogenous constructs was below 0.85 (Fornell & Larcker, 1981). Hence, the discriminant validity of all constructs is fulfilled.

B. Structural Model

After determining the goodness of measure, structural model assessment was performed. At this stage, PLS-

SEM was used to explain the relationship between latent variables and to examine the significance level of the proposed research model (Hair *et al.*, 2017). Prior to hypotheses testing, the bootstrapping procedure with re-sampling techniques was conducted (Hair *et al.*, 2017). As prescribed by Hair *et al.,* (2017) and Ringle, Sarstedt, and Straub (2012), 5000 re-sampling were used to estimate the standard errors and the significance of parameter estimates in this study.

Kock and Lynn (2012) asserted that although the criteria of discriminant validity (vertical collinearity), as elaborated in the previous subsection, were met, lateral collinearity issue (predictor-criterion collinearity) may mislead the findings as it can mask the strong causal effect in the model. This usually occurs when two variables that are hypothesised to be causally related measure the same construct. Table 2 presents the outcomes of lateral collinearity test. All the Inner VIF values for each relationship were less than 5 (Inner VIF= 1.000 and 1.018), indicating that lateral multicollinearity is not a concern in this study (Hair *et al.*, 2017).

Since all the constructs in the research model were reflective constructs, five criteria must be met to explain the impact of exogenous latent variable on the endogenous latent variable, as outlined in the hypothesised framework. The conditions included are (1) path coefficient, (2) R^2 of endogenous latent variables, (3) effect size, f^2, and (4) predictive relevance, Q^2 (Hair *et al.*, 2017). Table 3 depicts the overall summary for the direct relationships outlined in this study. All three relationships scored t-value above 1.645, thus one tailed significant at 0.05 level of significance (Hair *et al.*, 2017). Path coefficient determines the significance of a relationship. It usually represents the hypothesised relationships among constructs. According to Hair *et al.,* (2017), path coefficients have standardised values between -1 and +1. The positive path coefficient values in this study signify that the three relationships are significantly positive.

Table 1: Measurement Model

Variables	Literature	Type	Construct	Items deleted	Loading (>0.5)	AVE (>0.5)	CR (>0.6)	HOC
Centrality		Reflective	CEN3	2	0.752	0.578	0.804	
			CEN4	(CEN1)	0.729			
			CEN5	(CEN2)	0.798			AVE (0.707)
Success	Richins (2004)	Reflective	SUC1	2	0.884	0.691	0.87	
			SUC2	(SUC3)	0.738			
			SUC4	(SUC5)	0.865			
Happiness		Reflective	HAP1		0.662	0.582	0.847	CR (0.878)
			HAP3	1	0.83			
			HAP4	(HAP2)	0.772			
			HAP5		0.777			
Environmental Belief	W. E. Kilbourne et al. (2009)	Reflective	EB1	0	0.714	0.572	0.869	
			EB2		0.805			
			EB3		0.858			
			EB4		0.755			
			EB5		0.63			
Environmental Concern		Reflective	EC2	1	0.623	0.586	0.848	
			EC3	(EC1)	0.834			
			EC4		0.785			
			EC5		0.801			
Cynicism	Chaouali, et al. (2017)	Reflective	CYN2	1	0.796	0.635	0.874	
			CYN3	(CYN1)	0.771			
			CYN4		0.856			
			CYN5		0.762			
Purchase Intention	Oliver and Lee (2010)	Reflective	PI1	0	0.751	0.617	0.889	
			PI2		0.754			
			PI3		0.853			
			PI4		0.864			
			PI5		0.693			

Hypothesis 1 (H1) is stated in a negative relationship. The relationship between Materialism and Environmental Belief indicated significantly positive path coefficient and t-value ($\beta = 0.194$, t-value = 3.527, $p < 0.05$). Hence, H1 is supported, but rejected due to the significantly positive result. As for the relationship between Environmental Belief and Environmental Concern, its path coefficient and t-value were significantly positive ($\beta = 0.603$, t-value = 13.950, $p < 0.05$). Therefore, H2 is supported. Lastly, the relationship between Environmental Concern and Purchase Intention signified significantly positive coefficient and t-value ($\beta = 0.307$, t-value = 5.690, $p < 0.05$). Hence, H4 is supported.

Second, the R^2 value for each endogenous variable was determined. The R^2 value in this study was explained based on the guideline prescribed by Cohen (2013). The R^2 values for H1, H2, and H4 were 0.037 (weak predictive accuracy), 0.366 (substantial predictive accuracy), and 0.111 (weak predictive accuracy).

Next, the effect size was determined to assess if the relationships were significant due to the large sample size used, as well as to understand the magnitude of the variances (Sullivan, & Feinn, 2012). In assessing *f2*, Cohen's (2013) rule of thumb assessment of effect sizes was adopted in this study. Table 5 shows that the effect size values for H1 and H4 were small, while that for H2 was substantial. The model would have predictive relevance if the value of Q^2 exceeds zero (Hair *et al.*, 2014; Henseler, Ringle, & Sinkovics, 2009). The Q^2 values tabulated in Table 3 (0.020, 0.193, and 0.060) exceeded 0, thus indicating that the exogenous constructs had predictive relevance for the endogenous constructs.

High Order Construct (HOC)

Materialism is operationalised as HOC in this study. Based on Hair *et al.* (2017), the results in Table 1 suggest both convergent validity and reliability, as all the values exceeded the recommended threshold (outer loadings > 0.4, AVE > 0.5, CR> 0.7). This indicated the goodness of measure for the second-order construct utilised in this study.

The Mediation Effect

A conclusion for the mediation effect can be derived based on the results tabulated in Table 4 that presents the results of indirect effects from the bootstrapping procedure, which exhibit that all indirect path coefficient values ($\beta = 0.185$ and 0.117) are significant with t-values of 5.047 and 3.276. The indirect effects of 95 percent Boot Confidence Interval Bias Corrected: [LL=0.045, UL=0.185] and [LL=0.114, UL=0.254] do not straddle a 0 in between, thus indicating a mediation (Hayes, Preacher, & Myers, 2011). This sufficiently concludes that mediation effects are statistically significant for both hypotheses H3 and H5.

The Moderating Effect of Cynicism

The moderating effects were tested on structural model by undertaking the product indicator approach (Hair *et al.*, 2017; Henseler *et al.*, 2014) and the plot interaction approach (Dawson, 2014). For product indicator approach, the f^2 value of 0.0449 reflected that the effect size was small (Cohen, 1988). Although all values fell within the recommended threshold (p-value <0.05, t-value >1.645), Dawson (2014) claimed that it is not easy to define interaction with statistical value. The interaction plot approach was applied to assess the moderating effect.

Table 2: Results of discriminant validity using Fornell Lacker Criterion

	Mean	SD	VIF	Cynicism	Env-Belief	Env-Concern	Happiness	Intention	Success	Centrality
Cynicism	5.148	1.043		**0.797**						
Environmental Belief	6.373	0.584	1.000	0.074	**0.756**					
Environmental Concern	6.213	0.628	1.018	0.100	0.603	**0.765**				
Happiness	4.755	1.245	1.000	0.193	0.167	0.196	**0.763**			
Purchase Intention	5.624	0.813		0.135	0.338	0.317	0.262	**0.785**		
Success	4.171	1.321	1.000	0.070	0.140	0.163	0.517	0.163	**0.831**	
Centrality	4.208	1.017	1.000	0.138	0.180	0.196	0.569	0.222	0.601	**0.760**

Note: VIF = Variance inflation factor
Note: The diagonal figures are the square root of the AVE, whereas the off-diagonals are correlations

Table 3: Direct Relationship

Hypothesised Path		Standardised beta coefficients (β)	Bootstrap t- value	BC 95% bootstrap CI	R^2	Q^2	f^2
H1	Materialism → environmental belief	0.194	3.572**	0.037	0.039	0.020	0.194
H2	Environmental belief →environmental concern	0.603	13.950**	0.363	0.570	0.193	0.603
H4	Environmental concern →purchase intention	0.307	5.690**	0.111	0.105	0.060	0.307

*Notes: *p < 0.05; BC = Bias corrected; CI = Confidence interval*

Table 4: Indirect Relationship

Hypothesised Path		Standardised beta coefficients (β)	Bootstrap t- value	LL	UL
H3	Materialism → environmental belief	0.117	3.276**	0.045	0.185
H5	Environmental belief →environmental concern	0.185	5.047**	0.114	0.254

*Notes: *p < 0.05; BC = Bias corrected; CI = Confidence interval*

Fig. 2 illustrates a positive slope and low cynicism with steeper gradient, when compared to high cynicism. This suggests that the positive relationship will be stronger for consumers with low cynicism than those with high cynicism. Therefore, H6 is supported.
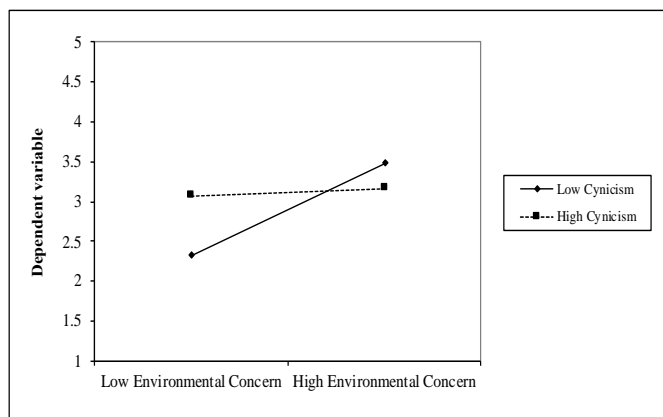

Fig. 2: The Moderating Effect of Cynicism on the Relationship between Environmental Concern and Purchase Intention of EEV

V. DISCUSSION

Positive relationship was found between Materialism and Environmental Belief. The result of this study challenges the literature, which stipulates a significantly negative impact of materialism on environmental belief (Kilbourne, & Pickett, 2008). Upon facing environmental degradation, consumers have become aware about their harmful consumption (Chan, & Bishop, 2013). Malaysian consumers, who treasure their environment, satisfy their desire and need upon attaining better environmental quality (Ahonen, 2017; Rastgar, & Maleki, 2018).

This study discovered that environmental belief had a positive relationship with environmental concern. Goh

et al., (2015) and Abdollahi et al., (2017) reported a leap in the trend towards green consumers due to government initiatives and their education background. As for the case of EEV, special manufacturing license and tax exemption have been offered to EEV manufacturers. This has encouraged manufacturers to produce and promote green transportation amidst Malaysians (Shukor et al., 2018; Mansor, 2018).

Next, environmental concern was correlated with purchase intention. Consumers cannot neglect the fact that harmful consumption can result in global climate change, which should be a concern and engage towards less harmful consumption. Goh *et al.,* (2015, 2016) depicted that Malaysians are willing to pay premium price and change their daily preferences in preserving the environment.

The mediating role of environmental belief between materialism and environmental concern was significant. Preserving environment is about valuing the materialism aspect of having clean air and environment (Schlosberg, & Coles, 2016). Azizan and Suki (2013) asserted that Malaysian consumers highly react towards environmentally-sensitive products due to health concern. In support of this notion, MITI (2018) revealed the continuous growing awareness of EEV among local automotive sphere. It has been projected from concern and belief that rapid nationwide urbanisation has led to pollution.

Meanwhile, the mediating role of environmental concern towards environmental belief and purchase intention of EEV was also significant. Mansor (2018) depicted that Malaysia has targeted to become ASEAN regional hub for EEV production. With governmental intervention and media exposure on the importance of environmental preservation, Malaysian is aware of the environmental problems faced at both local and global

levels (Mohd Suki, 2016; Wen, & Noor, 2015). As a result, Malaysia automakers have begun producing EEV starting with Perodua Axia in 2014 (Lye, 2017). By the end of 2017, about 52 percent of vehicles sold were EEV (MITI, 2018). This shows that Malaysia has embraced EEV as their alternative transportation. Findings from the analysis provide evidence attesting that environmental concern mediates the relationship between environmental belief and purchase intention of EEV.

The literature establishes that consumers generally are suspicious with new and unfamiliar products or services. This is termed as defensive strategy to secure themselves from being fooled by others (Chaouali, Souiden, & Ladhari, 2017; Chylinski, & Chu, 2010; Dean, Brandes, & Dharwadkar, 1998). The EEV is a new technology introduced to reduce carbon emission and fuel consumption. The EEV has been advertised as a reputable transportation alternative that preserves the environment. Moreover, EEV is costlier than conventional vehicles (Shukor et al., 2017; Mansor, 2018). This has been supported by Hong, Khan, and Abdullah (2013), who claimed that EEV had been priced 30 percent higher in Malaysia. Pricing and adoption of new technologies have turned into trigger factors for cynic consumers. The EEV is viewed as a doubtful action for automakers to penetrate the environmental-concern market. The factors mentioned above have been deemed as cynicism trigger factors that demotivate purchase intention of EEV.

VI.   CONCLUSION

A. Research Implications

From the theoretical point of view, this paper provides evidence that the causal model of VBN theory and the ERB model can be adopted into the context of Malaysian consumers and developing countries. The empirical analysis has proven that the causal chain of ERB model (from value to behaviour) offers detailed explanation pertaining to the environmental antecedents the same way it substantially describes general environmental purchase intention. The model is composed of an independent variable (materialism as value), two mediators (environmental belief as belief and environmental concern as norm), and a dependent variable (purchase intention). Besides, this study sheds light on the inconsistency found in the literature in defining the relationship between environmental concern and purchase intention. This valuable insight can enhance future studies involving cynicism as the moderating variable to strengthen the relationship. In fact, this study is one of the first to investigate cynicism as a moderator from the lens of ERB model in light of green purchase behaviour.

B. Practical Implications

In terms of practical implications for practitioners, automakers should highlight the benefits of a clean environment as part of the advantages reaped through EEV ownership. Conventionally, automotive advertising portrays materialistic value by displaying luxury brand image, high technology usage in car or styling of car. Having a clean environment is indeed a privilege for human being and this concept has triggered materialistic value. This study highlights the importance of educating and promoting awareness on adopting EEV among Malaysians by the local authorities. Malaysian should be educated about the importance of preserving a clean environment and its scarcity. This is bound to evoke the materialistic value amidst Malaysians, which will eventually trigger environmental belief.

C. Future Research

There is a pressing need for an extensive effort to adopt this present study not only within the Malaysian context, but also to other contexts, and concurrently, to include a research population that is more diverse. As consumers are aware of the consequences of adverse environmental consumption, future research should consider assessing the moderating effects of gender or other consumer characteristics. In addition, given the great concern about environmental sustainability, future research work may evaluate longitudinal data to validate and complement this present study as more new forms of green purchasing and other consumption-related behaviour need to be explored. The expansion of the coverage provided in this study heightens its explanatory power.

VII.   ACKNOWLEDGMENT

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