

education and promotional programmes.

For environmental agencies, they can make use of the findings to encourage consumers to be responsible towards the environment, especially in their daily purchases. Various educational or training programmes can be used to encourage and to educate more environmentally friendly consumption patterns. Such training can also teach consumers how to differentiate green and non-green products that will help in protecting the environment.

For industry and marketing practitioners, this study provides information necessary in explaining what promotes and hinders ecological behaviour. For instance, information on individual differences and purchase reasons will help marketers to segment their market and to formulate various strategies to cater to various consumer groups. Their purchase motivations need to be identified to promote acceptance and effective purchases. With good segmentation, different marketing strategies can be implemented for various groups in line with the objectives.

For marketers, appropriate promotions can be planned by using the recorded sales data. With good promotion strategies, industries can minimise their losses due to unsold stocks. Different incentives or bundle promotions can help to boost the sales on the not-so-popular items so that cash can be generated. Since the environmental factors are found to influence purchase decisions, marketers can include some of these factors, such as incentives for recommendation from other consumers, training and education programmes, for example in promoting energy-efficient appliances.

The outcome of this study enables companies to formulate appropriate strategies to tap into the market. Companies will be aware of the facilitating factors from the environment that may help to promote the purchase and usage of energy efficient appliances. For instance, industries can provide more educational and after-sales service programmes to reduce some of the risks that consumers may face when using such appliances.

8. Limitations and Future Research Directions

The present study confirmed the direct and indirect influences of both personal and environmental factors and ecological beliefs towards ecological behaviour of energy-efficient appliance purchases. No matter how good your research design is, there will still be imperfections in a research

paper. Research limitations highlighted here can be used as guidelines for improving future research.

First, the present study uses a cross-sectional survey design and not a longitudinal survey design. A longitudinal survey design would be more appropriate when studying the perceptions of the respondents. Second, ecological beliefs as a concept is still considered a relatively new construct in this field of study. Hence, limited literature is available to generate quality questionnaire items for measuring this construct. Third, there are situational variables that have not been included in the present study. There are many influencing factors on a phenomenon. The present study is only focused on the situational variables being studied and transferred from UTAUT, due to the similarity of the study with technology acceptance.

These suggestions and recommendations are discussed as to serve as guidelines for future research. Future research could compare the results between different groups/segments among respondents. Cross-cultural comparison can also be a future research direction, especially in Malaysia with its different races or comparison across different countries. This can be used to test the generalisation power of the model across different groups. Additionally, the different environmental factors may have a different impact on behaviour. In reality, there are more situational factors that impact on human behaviour. Such factors need to be identified and tested in terms of their relationship with ecological beliefs and ecological behaviour. For instance, infrastructure, economic and geographical factors could be investigated. The four items used to measure ecological beliefs are considered too simple. This is to suggest that future research can focus in developing and expanding more items in measuring this concept. More dimensions can be added to cover this concept more comprehensively. This model can also be applied to different studies so as to validate its results in different settings.

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Appendix 1: Measurement Items

Variable	Item	Measurement item	Source
Ecological Behaviour	EB1	I guess I have never actually bought any energy efficiency appliances because it can save my electricity cost. (R)	Fraj and Martinez (2007)
	EB2	I keep track on how government is handling the energy efficiency issues.	
	EB3	I have communicated with other users to find out about energy efficiency appliances.	
	EB4	I make a special effort to buy energy efficiency appliances.	
	EB5	I have attended an event that specifically concerned with bettering the environment.	
	EB6	I have switched to use energy efficiency appliances for ecological reasons.	
	EB7	I have never joined a clean-up drive (e.g. gotong-royong). (R)	
	EB8	I have never attended a meeting related to ecology. (R)	
	EB9	I read materials pertaining to ecological issues.	
Ecological Beliefs	EF1	It frightens me that the electricity production process bringing negative impacts to the environment.	Singh (2011)
	EF2	It makes me angry that some people do not care about conserving electricity.	
	EF3	It makes me angry that industries are causing the waste of electricity.	
	EF4	I am open to the idea of energy conservation in improving the environmental quality.	
	EF5	I am concerned about the usage of electrical energy in my city.	
	EF6	I rarely worry about the effects of excessive usage of electrical energy on me and my family. (R)	

Variable	Item	Measurement item	Source
Social Influences	SI1	People who are important to me think I should use energy efficiency appliances.	Venkatesh et al. (2003)
	SI2	People who influence my behaviour think that I should use energy efficiency appliances.	
	SI3	People who opinions that I value prefer that I use energy efficiency appliances.	
Facilitating Conditions	FC1	I have the resources (e.g. money) necessary to purchase energy efficiency appliances.	Venkatesh et al. (2003)
	FC2	I have the necessary knowledge to use energy efficiency appliances.	
	FC3	The use of energy efficiency appliances is compatible with other technologies that I use.	
	FC4	I can get help from others when I have difficulties using energy efficiency appliances.	
Ecoaltruistic Values	EAV1	All natural resources have the right to exist.	Kaiser et al. (1999)
	EAV2	All natural resources are precious.	
	EAV3	All natural resources must be conserved.	
	EAV4	In general, extensive extraction of natural resources should be forbidden.	
Openness to Change	OTC1	I would consider myself 'open' to the implementation of energy efficiency/saving feature appliances.	Susskind et al. (1998)
	OTC2	Right now, I am somewhat resistant to use energy efficiency/saving appliances.	
	OTC3	I am quite reluctant to consider changing to use energy efficiency/saving appliances.	
	OTC4	I think the usage of the energy efficiency/saving feature appliances positively affect my life style.	
	OTC5	From my perspective, the use of energy efficiency/saving appliances are for the betterment.	
	OTC6	The changes as a result of using energy efficiency/saving appliances positively affect my life pattern.	

Variable	Item	Measurement item	Source
Voluntariness	VL1	Although it can save electricity costs, using energy efficiency/saving appliances are not compulsory by the local authority.	Venkatesh et al. (2003)
	VL2	My use of energy efficiency/saving appliances in my home and workplace is voluntary.	
	VL3	My friends and family expect me to use the energy efficiency/saving appliances.	
