

A study of Green IT Behavior among Individual Consumers: Responsible Acquisition of Computers

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Abstract

This paper investigated Green IT behaviour of individual consumers (responsible acquisition of computers behaviour (RACB)). An extended Theory of Planned Behaviour was used as research framework for this study. A questionnaire survey was conducted on 100 respondents in an industrially developing country. Descriptive and inferential statistics were used to analyze the survey data. The hierarchical regression analysis indicates that the respondents' responsible acquisition of computer behavioural intention (RACBI) is influenced by Perceived Behavioural Control (PBC), Positive Individual Consequences (PIC), and Attitude toward Responsible Acquisition Behaviour. The explained variance of RACBI increased from 31.8% to 37.1% by adding PIC and Collectivism into TPB model. RACB is largely influenced by the RACBI, followed by PBC and Self-Identity (SI). The explained variance of RACB also increased from 35.3% to 37.5% after incorporating SI and Habits. Recommendations are provided to improve RACBI and RACB. The present findings would be useful to countries interested in promoting RACB.

Keywords: extended Theory of Planned Behavior, responsible consumption, green IT, responsible acquisition, environmental problem

INTRODUCTION

“Green IT” practices have garnered worldwide interest with the hope to mitigate the negative environmental problems arising from consuming IT equipments such as computers over its life cycle i.e. production to usage and disposal (Murugesan, 2008). Specifically, Green IT refers to manufacturing, using, and disposing of computer and its subsystems in an efficient manner, with minimal or no impacts on the environment. Individuals can achieve part of the Green IT goals through responsible consumption behaviour (RCB) i.e. acquire, use and dispose of computers without harming the environment. However, evidence suggests that the interest in practicing RCB is low. This is reflected in The Economist’s report, with computers generating an estimated 35 million tonnes of CO₂, which accounted for 2% of the world total CO₂ emission, equivalent to the aviation industry.

Research indicates that individual consumers' irresponsible computer purchase behaviour becomes a main source of environmental problems as demand drives the production of computers, thereby causing CO₂ emission during the production phase (prior to the consumption cycle) (Murugesan, 2008). On the other hand, Thorgesan (1999) argued that the right "purchasing" decision has the potential to reduce or eliminate the environmental harms in the later stage of consumption cycle (e.g., use and disposal) (cited in Fansson and Nordlund, 2010, p. 359). Congruent with this, individuals who practice RACB, which comprises purchasing green or Electronic Product Environmental Assessment Tools (EPEAT) computers, and making purchase only when the need arises, will help to reduce CO₂ emission not only during production, but also during the use and disposal phases.

Consequently, this has heightened the role of individual consumers in practising RCB, particularly at purchase stage. Several findings indicate that buying greener computers can encourage reduced hazardous waste generation (disposal phase) and energy consumption (use phase) significantly (Murugesan, 2008). It is reported that approximately 109 million EPEAT-registered computers and monitors were sold worldwide in 2007 helping to prevent the disposal of 124,000 metric tonnes of hazardous waste, eliminate enough mercury to fill 482,381 household fever thermometers, and reduce the use of toxic materials, including mercury, by 3,220 metric tonnes. Furthermore, EPEAT computers consume less energy throughout their lives, thus saving 42.2 billion kWh of electricity, which is enough to power 3.7 million US homes per year, and reduce greenhouse gas (GHG) (i.e. gases that trap heat in the atmosphere) emissions by 3.31 million metric tonnes. This is equivalent to removing over 2.6 million US cars from the road for a year, and eliminating 174 million metric tonnes of air-pollutant emissions and almost 365,000 metric tonnes of water-pollutant emissions (EPEAT, 2013).

To date, very few studies examined RCB in developing country, particularly in the context of acquiring computers responsibly by individual consumers despite computers consistently generating significant amount of CO₂, if consumers fail to practice RACB. In this study, Malaysia is chosen as the host country. It will provide insights pertaining to responsible computer consumption behaviours in a developing country and could serve as a model for developed countries. According to Munasinghe (Nobel Laureates), RCB is more likely to be practised in developing countries accustomed to scarcity and able to use resources efficiently relative to developed countries, which are used to abundance of resources, and experiencing high GHG emissions (Munasinghe, 2012). Therefore, this study aims to (1) examine the extent of responsible acquisition practice, (2) investigate antecedents of responsible acquisition of computers, (3) test the applicability of the extended Theory of Planned Behaviour (TPB) in examining responsible acquisition of computers, and (4) provide concrete insights to researchers, academics, governmental and non-governmental organizations including and policy-makers, who could then tailor appropriate policies to promote responsible consumption behaviour.

The justification as to why the TPB is chosen and extended will be discussed in the next section, followed by the (1) research methodology, (2) results regard to the mean ratings and standard deviation of the TPB variables, Collectivism (CO), PIC, SI and Habits (HA), (3) discussion, (4) recommendation, conclusion and (5) the theoretical and practical contribution of the study.

RESEARCH FRAMEWORK

The TPB has received empirical supports in predicting behaviour across various contexts; including pro-environmental behaviour such as recycling, travel mode choice, energy consumption, water conservation and food choice (Tonglet et al., 2004). Attitude (ATT), SN and PBC are the predictors of Behavioural Intention (BI), in turn BI and PBC will affect actual behaviour. Although TPB accounted for 27% and 39% of variance in BI, respectively (Armitage and Conner, 2001), several researchers argued that the predictive power of the TPB can be improved with the inclusion of additional variables (as cited in Tonglet et al., 2004, p.198) consistent with Azjen (1991)'s suggestion i.e. that the TPB can serve as theoretical foundation for further elaboration if important proximal determinants are identified. For instance, Bamberg and Schmidt (2003) unveiled that the explained variance of behaviour increased 6% after "habits" was included in the TPB model.

Therefore, this study aims to incorporate CO, PIC, SI and HA into the TPB to examine if the added variables will increase the explained variance of RACBI and RACB as shown in Figure 1 (See hypotheses H1 to H4). These factors have been proposed to influence environmentally friendly behaviour in prior literature. This study mainly tests the relationship of the added variables and dependent variables because the relationships between TPB variables have been validated across many studies. The dependent variable is measured by RACBI and RACB. In this paper, we focus on responsible acquisition as it accounts for a significant amount of GHG. As such, RACB is conceptualised as a consumer's obligation in acquiring computers in a responsible manner to mitigate any harmful effects on the environment. Computers, in this paper, are defined as laptop, desktop, hand-held PDA, tablet PC, notebook, and smartphones as these items are broadly accessible throughout the

population. RACBI is conceptualised as a consumer’s plan to engage in acquiring computers responsibly in the future; Attitude toward Responsible Acquisition Behaviour (ATRAB) as positive and negative feelings about practising RACB; SN as a person’s perception of social pressure to practise RACB; PBC as a consumer’s perceptions of difficulty in practising RACB. According to TPB model, ATRAB, SN and PBC predict RACBI; while PBC and RACBI affect RACB. Other factors conceptualised include CO as values reflecting concerns for the welfare of others; PIC as positive effects of a consumer’s engagement in RACB; SI as an individual’s view of oneself as being responsible in the acquisition of computers; and HA as the extent to which people acquire computers responsibly automatically.

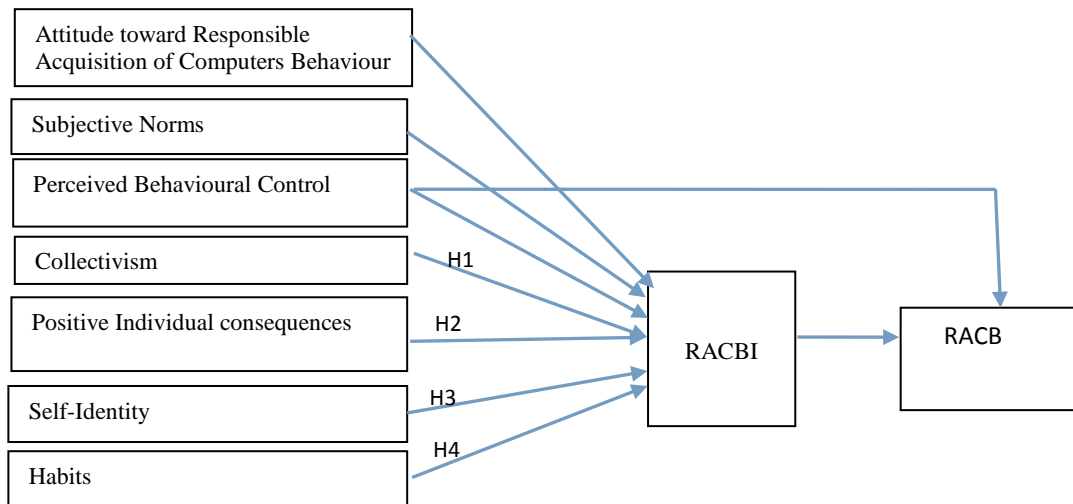


Figure 1: Factors affecting responsible consumption behaviour i.e. responsible acquisition of computers.

RESEARCH METHODOLOGY

One hundred questionnaires were distributed to Malaysian residents who purchase computers. Convenience and purposive sampling methods were used in selecting the participants in the study. We chose non-probability sampling method for the following reasons: (1) this is a pilot study, (2) absence list of computer buyers, and (3) constraint by the time, workforces and budget (laerdthesertation, n.d). This pilot study was confined to Kuala Lumpur (KL), Malaysia, during November 2012 as (1) Kuala Lumpur is the capital of Malaysia, an area experiencing rapid industrialization and, (2) most of the residents purchase and use computers to access internet, thereby keeping pace with the development and urbanization (Emax Computer Technology Info Site, 2010). A cross-section approach was employed to collect data at a single point of time because RACB among individual consumers is at its exploratory stage in developing countries, especially Malaysia (Hussein and Zulkifli, 2012).

The questionnaire was developed based on the research framework and consisted of four sections: (1) respondents’ demographic information, (2) 27 questions (Table 1: Nos. 1-27) related to factors affecting respondents’ RACBI and (Table 2: Nos. 1-7) RACB, (3) 3 questions (Table 3: Nos. 1-3) measuring the extent of respondents’ RACBI, (4) 3 questions (Table 4: Nos. 1-3) pertinent to respondents’ RACB. The questionnaire items were based on a 5-point Likert’s scale: 1= strongly disagree, 2=disagree, 3=neither agree nor disagree, 4=agree, 5=strongly agree and derived from prior literature (Azjen, 1991; Kim and Choi, 2005; Lee, 2008) and The data samples were analyzed using Statistical Package for Social Science (SPSS) software.

RESULTS

Table 1 and 2 present the factor analysis, mean ratings, and standard deviation for items measuring factors that influence RACBI and RACB. 30 items are grouped into 7 factors: ATRAB, SN, PBC, PIC, CO, SI and HA, with an eigenvalue greater than 1, explained variance 68.98%.

Table 1: Factors that affecting Responsible Acquisition of Computers Behavioural Intentions

	<i>Items – Attitudes Toward Responsible Acquisition Behaviour</i>	Mean	S.D	F.L
1.	Buying computers responsibly is a good idea.	3.58	.727	.67
2.	Buying computers responsibly is pleasant.	3.46	.717	.82
3.	Buying computers responsibly makes me feel satisfied.	3.53	.731	.83

	Eigenvalue	7.421		
	Variance (Percentage)	42.39		
	Crobach Alpha	0.841		
	<i>Items- Subjective Norms</i>			
4.	People who influence my behaviour think that I should buy computers responsibly.	3.49	.522	.668
5.	People who are important to me think that I should buy computers responsibly.	3.15	.626	.655
6.	Malaysian government encourages citizens to buy computers responsibly.	3.28	.604	.673
	Eigenvalue	1.21		
	Variance (Percentage)	68.98		
	Crobach Alpha	0.886		
	<i>Items- Perceived Behavioural Control</i>			
7.	There are few environmental advertisements that encourage me to practise green acquisition on computers.	3.91	.877	.739
8.	I perceive that it is unreasonable to pay a higher price for computers that are produced in an eco-friendly way.	3.98	.876	.729
9.	I perceive that it is difficult to find outlets that sell eco-friendly computers.	3.96	.875	.754
10.	Eco-friendly computers are marketed in such a way that I really find it incompatible with my lifestyle. For example, I prefer computers are marketed in such a way that emphasized on its price, colours, style instead of their green attributes	3.99	.847	.755
11.	I am knowledgeable about the types of computers suitable for purchase to protect the environment.	4.16	.825	.748
12.	I know how to differentiate energy saving computers from other computers.	3.84	.762	.774
13.	I often read to obtain more information about the impacts of buying eco-friendly products to save the environment.	3.91	.753	.716
14.	I feel I can help solve natural resource problem (e.g. saving electricity needed to produce computers) by buying computers responsibly.	3.90	.674	.724
15.	I can protect the environment by buying computers responsibly.	3.89	.680	.755
16.	I feel I can help solve environmental problems by buying computers responsibly.	3.88	.671	.728
	Eigenvalue	9.419		
	Variance (Percentage)	25.46		
	Crobach Alpha	0.932		
	<i>Items –Collectivism</i>			
17.	I respect the majority's wish.	3.75	.575	.758
18.	I support my group, whether they are right or wrong.	3.48	.594	.652
19.	I respect the decisions made by my social group.	3.59	.570	.750
20.	I maintain harmony in my social group.	3.66	.590	.764
	Eigenvalue	6.12		
	Variance (Percentage)	48.51		
	Crobach Alpha	0.805		
	<i>Items- Positive Individual Consequences</i>			
21.	It is important to me that practising green acquisition doesn't hurt my relationship with others such as friends or family members.	3.56	.519	.775
22.	It is important to me that practising green acquisition helps to reduce any direct/indirect hazardous effect on me.	3.42	.622	.443
23.	It is important to me that practising green acquisition helps me to reduce my expenses.	3.56	.556	.702
	Eigenvalue	3.56		
	Variance (Percentage)	65.72		

Cronbach Alpha	0.619
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Sample Size=100; Mean=mean based on Likert's 5-point scale; S.D. = Standard Deviation;
F.L. = Factor Loading

Table2: Factors that affecting Responsible Acquisition of Computers Behaviour

<i>Items – Self-identity</i>		Mean	S.D	F.L
1.	I feel better than others if I practise green acquisition of computers.	4.17	.805	.794
2.	It is important to me to be known as someone who practises responsible consumption behaviour.	3.92	.734	.852
3.	Green acquisition will enhance my self-image.	4.00	.853	.823
4.	My involvement in green acquisition is a status symbol.	4.00	.816	.736
Eigenvalue		9.51		
Variance (Percentage)		34.97		
Cronbach Alpha		0.886		
<i>Items- Habits</i>				
5.	Responsible purchase of computers has become a habit for me.	2.88	.537	.800
6.	Practising green acquisition has become natural to me.	2.89	.447	.787
7.	I must practise green acquisition.	2.97	.540	.741
Eigenvalue		5.01		
Variance (Percentage)		53.51		
Cronbach Alpha		0.734		

Sample Size=100; Mean=mean based on Likert's 5-point scale; S.D. = Standard Deviation;
F.L. = Factor Loading

Table 3 shows the factor analysis, mean ratings, and standard deviation for RACBI. Three attributes are grouped into one factor that is RACBI, with an eigenvalue greater than 1 and 88.7% explained variance. The results indicate that respondents do not have strong intention to purchase green or EPEAT computers.

Table 3: Responsible Acquisition Computer Behavioural Intention

Items	Mean	S.D	FL
1. I intend to buy energy efficient (eco-friendly) computers.	3.65	.968	.88
2. I intend to refer to Electronic Product Environmental Assessment Tool (EPEAT) before making purchase decisions.	3.39	.994	.90
3. I intend to buy a computer with consideration of its negative impacts on environment at the end of its life cycle.	3.52	.979	.93
Eigenvalue		2.45	
Variance (Percentage)		81.59	
Cronbach Alpha		0.887	

Sample Size=100; Mean=mean based on Likert's 5-point scale; S.D. = Standard Deviation;
FL = Factor Loading

Table 4 shows the factor analysis, mean ratings, and standard deviation for dependent variable i.e. RACB. The factor analysis indicates that all three attributes grouped into one factor that is RACB, with an eigenvalue greater than 1 and 81.35% explained variance. Respondents gave neutral ratings for their responsible acquisition behaviour, which is in line with prior findings (Kim and Choi, 2005) indicating that the participants are yet to translate their environmental concerns into actual behaviour.

Table 4: Dependent Variable- Responsible Acquisition of Computers Behaviour

Items	Mean	S.D	FL
1. I have bought energy efficient (eco-friendly) computers.	3.15	1.07	.87
2. I have referred to Electronic Product Environmental Assessment Tool (EPEAT) before making purchase decisions.	3.00	.953	.92
3. I have bought a computer with consideration of its negative impacts on environment at the end of its life cycle.	3.14	.985	.91
Eigenvalue		2.441	

Variance (Percentage)	81.35
Crobanch Alpha	0.882

Sample Size=100; Mean=mean based on Likert's 5-point scale; S.D. = Standard Deviation; FL= Factor Loading

Table 5 shows the hierarchical regression, with RACBI as the dependent variable, to determine whether the additional factors (i.e. PIC and CO) will enhance the predictive power of behavioural intentions, beyond that provided by the TPB constructs. The prediction of the dependent variable is tested in 2 blocks. The first block comprised the control variables (TPB variables i.e. ATRAB, SN, and PBC). In addition to the control variables, the second block comprised PIC and CO. Model 1 shows that the TPB variables collectively explained 31.8% of the variance in RACBI, with ATRAB and PBC being the statistically significant predictor. Model 2 shows that with the addition of PIC and CO, the explained variance increased to 37.1% respectively. However, only PIC were found to be significant; therefore, H1 was supported.

Table 5: Hierarchical Linear Regression between the independent and dependent variable - Responsible Acquisition of Computer Behavioural Intention

Independent variables	Responsible acquisition of computer behavioural intention (RACBI)		
	Model 1	Model 2	Hypothesis
R2	.318	.371	
Δ R2	.318	.053	
Attitude Toward Responsible Acquisition	.251*	.165*	
Subjective Norms	.004	.010	
Perceived Behavioural Control	-.420*	-.307*	
Positive Individual Consequences (H1)		.195*	Supported
Collectivism (H2)		.160	Not Supported

Notes: *p < .05; R² refers to the proportion of the variance in the dependent variable accounted by independent variables; Beta weight refers to the relative contribution of each independent variable in explaining the variance in the dependent variable.

Model 1: TPB variables

Model 2: TPB variables, Collectivism, and Positive Individual Consequences

Table 6 shows the hierarchical regression, with RACB as the dependent variable, to determine whether the additional factors i.e. SI and HA will enhance the predictive power of behavioural intentions, beyond that provided by the TPB constructs. The prediction of the dependent variable is tested in 2 blocks. The first block comprised the control variables (TPB variables i.e. PBC and RACBI). In addition to the control variables, the second block comprised SI and HA. Model 1 shows that the TPB variables collectively explained 35.3% of the variance in RACBI, with ATRAB and PBC statistically significant. Model 2 shows that with the addition of SI and HA, the explained variance increased to 37.5% respectively. However, only SI was found to be significant; therefore, H3 was supported.

Table 6: Hierarchical Linear Regression between the independent and dependent variable - Responsible acquisition of computer behaviour

Independent variables	Responsible acquisition of computer behavior (RACB)		
	Model 1	Model 2	Hypothesis
R2	.353	.375	
Δ R2	.353	.022	
Perceived Behavioural Control	-.348	-.323*	
Responsible Acquisition of Computer Behavioural Intention	.692	.764*	
Self-Identity (H3)		.254*	Supported
Habits (H4)		.084	Not supported

Notes: * $p < .05$; R^2 refers to the proportion of the variance in the dependent variable accounted by independent variables; Beta weight refers to the relative contribution of each independent variable in explaining the variance in the dependent variable.

Model 1: TPB variables Model 2: TPB variables, Self-Identity and Habits

DISCUSSIONS

This study re-affirms previous findings (e.g. Tonglet et al., 2004), that additional variables should be included in TPB to account for more explained variances in intention or behaviour. The explained variance of RACBI increased from 31.8 % to 37.1%, with the inclusion of PIC (Table 5); while the explained variance of RACB increased from 35.3% to 37.5% after incorporating SI (Table 6). The hierarchical regression analysis in Table 5 indicates that PBC ($B=.307$) is the strongest predictor of RACBI, followed by positive individual consequence ($B=.195$), and attitudes ($B=.165$). Besides, RACBI ($B=.764$) exerts the greatest influence on RACB, subsequently, PBC ($B=-.323$) and SI ($B=.254$).

The results of this study yield similar findings as the TPB i.e. RACB is predicted by RACBI. Generally, the results reveal that respondents' RACBI and RACB are not intense as shown in the mean ratings (MRs). Tables 3 and 4. The following factors influenced RACB and RACBI accordingly except SN and CO.

Attitude toward Responsible Acquisition of Computers

Respondents neither agree nor disagree that responsible acquisition is a good idea, pleasant, and or satisfying (Table 1, MRs between 3.46 and 3.58). Consistent with Armitage and Conner (2001)'s findings, the impacts of attitudes on behavioural intention will be weak, if users perceived that their ability to perform the behaviour is confined. The present findings yield similar results i.e. ATRAB was moderate due to external constraints (e.g. few environmental advertisement encourages RACB to be practised and exorbitant prices for green computers) which demonstrated in the MRs of PBC between 3.91 and 3.99 (Table 1, Nos. 7-10). This is unsurprising; respondents have enjoyed consumption-oriented lifestyle over the past years. This is supported by the fact that more than half of Malaysians own three or more PC devices.

The results revealed that respondent' purchasing green/EPEAT computers decisions are not influenced by *Subjective Norms*. This is in line with Trafimow and Finlay's (2001) that found that an individual's behavioural intention will be determined by their individual attitude instead of SN if he or she has preferences and confident with their own decision. In sum, the Malaysian respondents were not influenced by friend, family or government in determining whether they want to acquire computers responsibly in light of Green IT concepts are still at its infancy stage in developing countries and responsible acquisition has yet to become a norm among Malaysians. Instead, they were influenced by their own attitudes i.e. preferences and favourable and unfavorable feelings such as purchase computers based on specification, price and quality rather than environmental criteria.

Respondents rated two dimensions of *Perceived Behavioural Control* – external constraints (Table 1, nos.7-10, MRs between 3.91 and 3.99) and internal capabilities (Table 1, nos. 11-16, MRs between 3.88 and 4.16) accordingly. The results revealed that respondents perceived that their RACBI and RACB are restricted by the availability of advertisements on practising RACB, unreasonable to pay higher price for eco-friendly computers, the availability of outlets for selling eco-friendly computers, and the incompatibility with their purchase decisions despite being knowledgeable in practising RACB, e.g., being able to differentiate computers based on their environmental attributes, able to identify green computers, and perceive that RACB is able to solve environmental problems (internal capabilities). These support Derksen and Gartell (1993)'s studies where consumers will not buy green product, if there is external constraint, e.g., such products are not available in an accessible locations.

This study revealed that *Collectivism* does not influence behavioural intention. Despite Malaysia is characterised by collectivistic culture (Hofstede, 1980),the respondents would not practice RACB because such behaviour have yet to become a norm in Malaysia as shown in the current findings (i.e. low MR of RACB and SN).

Positive Individual Consequences is a significant predictor of RACBI. The results indicate that respondents' intention to practice RACB was not strongly influenced by the positive effects of their behaviour (Table 1, Nos.

21-23, MRs between 3.42 and 3.56). As Malaysia is a collectivistic society, respondents will tend to give higher priority to others' benefits instead of their self-interest (individual consequences) such as reducing expenses, and negative hazardous effect on oneself resulted from practising RACB (Stern, 2000).

Self-identify: The results indicated that the majority of respondents favour themselves to be viewed as individuals who practise RACB in order to gain social acceptance (Table 2, Nos. 1-4, MRs between 3.92-4.17). Respondents felt better and superior, known by others, their self-image was enhanced and performing RACB was a status symbol. This is unsurprising as Malaysia has a high power distance culture that emphasizes hierarchical order, status and accepts unequal distribution of power (Hofstede, 1980). Similarly, Lee(2008)'s study found that Hong Kong consumers has a high power distance and collectivistic culture were prone to conform to the social expectation and concern of their self-image as an environmentally friendly person; thus they engage themselves in green purchasing behaviour.

The results revealed that respondents' RACB is not influenced by *Habits*. Perhaps, RACB is a non-routine behaviour. In addition, green purchasing or green concept is still a relatively new concept in Malaysia.

CONCLUSION AND RECOMMENDATIONS

Despite Malaysians having collectivistic values, sufficient environmental knowledge and do not prioritise their personal interest (individual consequences), as they failed to have strong RACBI and RACB. Additionally, they did not have favorable ATRAB concept, lack social support and conducive environments for RACBI. Appropriate measures are needed to address these issues to promote RACB.

Firstly, it is important to instill positive attitude in people to promote RACB. This can be done through formal and informal environmental education. Prior findings indicate that formal education systems succeeded in cultivating positive environmental attitudes and in creating public awareness. Hence, it is recommended that specific responsible acquisition of computer issues be included in core subjects/syllabus offered in elementary, secondary to tertiary education level across the country. This will help to enhance students' understanding on how their consumption patterns (i.e. acquire, use and dispose of computers) influence the environment, form favourable attitudes, be prepared to recognise their environmental responsibilities and act upon them. The informal education is found to be an important channel in creating public awareness on environmental protection, forming intention and favourable attitudes (Hassan and Pudim, 2011).

Secondly, to address the non-conductive environment for RACB, the barriers i.e. the external constraints that inhibit individual consumers should be reduced. For example, the lack of advertisement can be addressed by marketers through green marketing strategies. Such advertisements have yet to be seen in Malaysia. Additionally, packaging and eco-labelling are important for marketers or companies to communicate the environmental benefits of their products to their customers. These packaging should be designed in a more visible manner, which may not make any impression in the minds of shoppers (not attractive) or hard to be distinguished between green and non-green computers.

Lastly, to address social support, governments could encourage responsible purchase of computers via policymaking and social advertising media. The enactment of policies pertaining to green purchasing will be effective especially, in countries like Japan and Malaysia with high power distance culture. For example, to address the high prices of environmentally friendly products, governments could provide tax incentives or subsidy policies for those who purchase green computers. This will encourage citizens to consider green computers thus making it more compatible in purchase-decision making. The WWF and Microsoft Malaysia smartphone application (Apps) on "Earth Hours" was a success (Microsoft, 2012) and perhaps, government could allocate fund to WWF (World Wide Fund for Nature-Malaysia) or Microsoft Malaysia.

Implications

This study enriches the existing knowledge in the field of IT, sustainability, environment and social psychology. This is the first attempt to examine factors influencing individual consumers' RACB, particularly in developing countries with collectivistic and high power distance orientation, which differ from developed countries with individualistic and lower power distance, which value personal self-interest against collective gain. The key contributions of this paper include addressing limitations of the TPB and extending the TPB to examine the RA.

This study provides insights into the problems or issues pertaining to RA, not only for the Malaysian government and policy-makers, but also for governments of other countries. Suggestions provided in this paper especially promoting responsible consumption practices, would be critical in mitigating environmental issues prevalent worldwide.

Limitations of Study

The number of respondents is limited (i.e. 100). 1000 questionnaires will be distributed throughout the 13 states and one federal territory to obtain insights on RACB practice across different states, age, gender, incomes and education level. It is suggested that future studies investigate factors that influence responsible bulk computers purchase in government or private enterprise. The extended TPB model mainly focuses on factors that affect personal benefits over cost. Other underlying morality factors in value-belief norms (VBN) might be neglected in predicting the environmental behaviour. In addition, this study is part of a larger study that encompasses all the three consumption cycles and with larger sample. Future studies can focus on RCB during the use and disposal phase. The study also can be improved through developing a comprehensive model i.e. integrating TPB and VBN to observe if the integrated model account for more explained variances based on a larger sample.

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REFERENCES

- Ajzen, I. 1991. "The theory of planned behaviour," *Organizational Behaviour and Human Decision Processes*, (50: 2), December, pp.179-211.
- Armitage, C. J., and Conner, M. 2001. "Efficacy of the Theory of Planned Behaviour: A meta-analytic review," *British Journal of Social Psychology*, (40), pp.471-499.
- Bamberg, S., and Schmidt, P. 2003. "Incentives, morality or habit? Predicting students' car for university routes with models of Ajzen, Schwartz and Triandis," *Environment and Behaviour*, (35), pp.264-285.
- Davies, J., Foxall, G. R., and Pallister, J. 2002. "Beyond the intention-behaviour mythology: An integrated model of recycling," *Market Theory*, (20:1), pp.29-113.
- Derksen, L., and Gartrell, J. 1993. "The social context of recycling," *Am. Social. Rev.*, (58:3), pp.434-442.
- EPEAT, "Buying Greener Computers," Retrieved 5July,2013, from <http://www.epeat.net>
- Emax Computer Info Site. 2010. "Malaysia Internet Penetration," Retrieved 10th July, 2013,from: <http://blog.emax2u.com/2010/03/malaysia-internet-penetration-digital.html>
- Fansson, F., Mare, A., and Nordlund, A. 2010 "Green consumer behaviour: Determinants of curtailment and eco-innovation adoption," *J. of Consumer Marketing*, pp. 358-370.
- Gupta, S., and Ogden, D. T. 2009. "To buy or not to buy? A social dilemma perspective on green buying," *Journal of Consumer Marketing*, (26:6), pp.376-391.
- Hassan, A.,and Pudim, S. 2011. "The informal environmental education value practices among adults in Sabah, Malaysia," *Journal of Turkish Science Education*, (8:1), pp. 20-28.
- Hofstede, G. *Culture's consequences: International differences in work-related values*, Beverly Hills, CA: Sage,

1980.

Hoffmann, S., and Hutter, K. 2011. "Guerrilla marketing: The nature of the concept and propositions for further research," *Asian Journal of Marketing*, pp. 1-14.

Hussein, A., and Zulkifli, M. U. 2012. "Green information technology (Green IT) perspectives, motives, barriers, and solutions within manufacturing companies," In: 3rd International Conference on Technology and Operations Management (ICTOM2012), 4th-6th July 2012, Bandung, West Java, Indonesia. (Unpublished)

Kim, Y., and Choi, S. R. 2005. "Antecedents of green purchase behaviour: An examination of collectivism, environmental concern and PCE," *Advances in Consumer Research*, (32:1), pp. 592-599.

Laerdthesertation.n.d. "Non probability sampling," Retrieved 10th July, 2014, from: <http://dissertation.laerd.com/non-probabilitysampling.php>

Lee, K. 2008. "Opportunities for green marketing: Young consumers," *Market. Intell. Plann.*, (26), 2008, pp. 573-586.

Microsoft, 2012. WWF-Malaysia and Microsoft Malaysia encourage Malaysians to "Live Green" beyond Earth Hour with mobile application. Retrieved 9th July, 2014, from: <http://www.microsoft.com/en-my/press/archive2012/linkpage5004.aspx>

Murugesan, S. 2008. "Harnessing Green IT: Principles and Practices," *IT professional Journal*, (10:1), pp.24-33.

Munasinghe, M. 2012. "Millennium Consumption Goals (MCGs) for Rio+20 and beyond: A practical step towards global sustainability," *Natural Resources Forum A United Nations Sustainable Development Journal*, (36:3), pp.202-212

Stern, P. C. 2000. "Toward a coherent theory of environmentally significant behaviour," *Journal of Social Issues*, (56:3), pp 407-424.

Thøgersen, J. 1999. "The ethical consumer. Moral norms and packaging choice," *Journal of Consumer Policy*, (22: 4), pp. 439-60.

Tonglet, M. Philips, P. S. and Read, A. D. "Using the Theory of Planned Behaviour to investigate the determinants of recycling behaviour: A case study from Brixworth, UK," *Resources, Conservation and Recycling*, (41), pp. 191-214.

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