Factors That Influence An Individuals Toward Green Personal Computer Acceptance Intention

Ameen M. AlAgaga[1], Khalil Md Nor[1]

[1] Faculty of Management, Universiti Teknologi Malaysia, UTM Skudai, Johor, Malaysia

Corresponding author:

Ameen M. AlAgaga,

Faculty of Management,

Universiti Teknologi Malaysia,

UTM Skudai 81310, Johor, Malaysia.

E-mail: ameen_mahdi@hotmail.com

Abstract

The main objective of this study is to identify factors that influence individual's intention to accept green personal computer (PC). In line with the reviewed literature, this study has utilized the consumption-value theory as theoretical framework. A self-administrated survey method was employed to collect the data from students at three public universities in Malaysia. A total of 237 usable samples were analyzed using PLS-SEM approach. The result shows that three variables, i.e., functional, price, and emotion as key predictors toward green PC acceptance. More importantly, this study has shown that emotional value plays an important part toward green PC acceptance, followed by functional value and price value. However, social value had not been found to have a significant influence on consumer intention to accept green PC.

Keywords: green PC, consumption-value theory, acceptance intention

1. Introduction

The global sustainability is a major issue and people nowadays, are more aware and concern with the worldwide ongoing spotlight of global warming, climate change and global economic crisis, and have understood the need to review their current behavior (Choizit, 2009). In a study on global warming, 74 percent of 49,243 participants from around the world believe that global warming is a serious problem, and they are more concerned about it than any other issue (Greenpeace, 2007). However, most people do not realize that computers and other IT infrastructure consume significant amounts of electricity, placing a heavy load on electric grids contributing to environmental problems (Choizit, 2009). Additionally, IT products cause environmental problems during its production and disposal (Murugesan, 2008). So, creating more sustainable environment by minimizing or eliminating where possible the environmental impact of IT is essential (Choizit, 2009).

Green PC has become an inescapable subject in the IT industries and it is considered as one of the major trends in modern businesses (Choizit, 2009; Murugesan, 2008). Green PC makes its first appearance during the year 2006, but the green ideas are dated back for several decades (Choizit, 2009). Murugesan (2008, p25) defined it as the designing and manufacturing of computers efficiently and effectively with minimal or no impact on the environment. From the definition, green PC seems to refer to two broad purposes: reducing the carbon footprint of the PC lifecycle and improving the global sustainability (Choizit, 2009). Furthermore, the term brings both environmental issues and IT together and provides the opportunities for IT to address issues related to global ecosystem (Tomlinson, 2010).

2. Research Model

In this study the research model were developed from the work of Sheth et al. (1991) and Sweeney and Soutar (2001). Sheth et al (1991) developed a consumption value theory, based on five dimensions, i.e. social, emotional, functional, epistemic and conditional value, that influence consumer purchase choice, product choice, and brand choice. According to Sweeney and Soutar (2001), the three dimensions, i.e. functional value, emotional value and social value, of customer consumption values were proved to be key determinants on consumer's acceptance behavior, whereas both epistemic and conditional value found not to be influential. Based on the Sheth et al (1991)'s dimensions, Sweeney and Soutar (2001) contributed price value as an additional component into the consumption value theory because price value found to have a different effects on individual's acceptance behavior. Consequently, the four dimensions, i.e. functional value, price value, emotional value and social value found to have a significant effect on individual's acceptance behavior. Functional value is identified as the gain gathered from the perceived functional and expected performance of using the product. The price value is related to cost that derived from the products. The social value is related to what consumers feel when they are in connection with others. The emotion value is related with the feelings. These value dimensions were empirically tested based on the consumers' perceptions of consumer durable goods and found to be reliable and valid in a pre-purchase and post-purchase situation. Numerous studies have found that functional value, price value, emotional value and social value have a significant effects on individual's acceptance behavior (e.g. Lee et al, 2002; Pura, 2005; Turel et al, 2007; Deng et al, 2010; Lu and Hsiao, 2010). However, there still a lack of studies that investigate the impact of these dimensions toward green PC acceptance.

The objective of this study is to investigate factors that influence consumer intention to accept green PC. It is based on the consumption-value theory by Sheth et al (1991) and works by Sweeney & Soutar (2001). Thus, it attempts to examine the impact of functional value, social value, price value, emotional value on individual's green PC acceptance behavior and proposed the following hypotheses:

H1: There is a significant relationship between functional value and individual's acceptance intention.

H2: There is a significant relationship between price value and individual's acceptance intention.

H3: There is a significant relationship between social value and individual's acceptance intention.

H4: There is a significant relationship between emotional value and individual's acceptance intention.

3. Method

The items measuring functional value, social value, price value and emotional value were adopted from Sweeney & Soutar, (2001). The variables were measured by a Likert scale (1 = strongly disagree; 5 = strongly agree). The questionnaire was made up of 23 items distributed into five sections (functional value 5 items, social value 4 items, price value 4 items, emotional value 5 items, and purchase intention 5 items) to which was added a final section of the respondent demographic data. A self-administered survey method was used to collect the data from students at three public universities in Malaysia and a total of 237 valid samples were used for the analysis.

3.1 Demographic Profile

The distribution of the demographic profile is presented in Table 1. The majority of the respondents were female students (59.5%, n=141) followed by male students (40.5%, n=96). The largest age groups were between age 21-23 years (64.6%, n=153) followed by 24-26 years (25.7%, n=61), and lowest one was age 20 years and below (2.5%, n=6). While most of the respondent evaluated themselves as moderate aware about the environmental issue i.e., 55.7% (n=132), only 0.8% (n=2) of the respondents who evaluated themselves as not at all ware about it. Finally, the majority of the respondents were moderate to extreme concern about the environmental issues i.e., 75.1% (n=157).

Table 1. Summary of respondent characteristics (n=237)

Variable	Category	Frequency	Percent (%)
Gender	Male	96	40.5
	Female	141	59.5
Age	=<20	6	2.5
	21-23	153	64.6
	24-26	61	25.7
	=>27	17	7
Environmental Awareness	not at all aware	2	.8
	Slightly aware	16	6.8
	Somewhat aware	62	26.2
	Moderately aware	132	55.7
	Extremely aware	25	10.5
Environmental Concern	not at all concerned	3	1.3
	Slightly concerned	7	3.0
	Somewhat concerned	49	20.7
	Moderately concerned	120	50.6
	Extremely concerned	58	24.5

4. Results

In this study, structural equation modeling (SEM) approach using SmartPLS statistical software (Ringle, et al, 2005) was employed to validate and test the hypotheses.

4.1 Measurements Validity

The data collected were first subjected to convergent validity (to evaluate the degree of relatedness to which the items measuring the same concept are valid) and discriminant validity (to confirm the constructs are not correlated). The convergent validity test (see Table 2) shows that loadings for all items exceeded the recommended value of 0.7 (Hair et al, 2010). Composite reliability values, which showed the degree to which the items indicated the latent construct exceeded the recommended value of 0.7 (Hair et al, 2010). The average variance extracted is in the range of 0.669 and 0.843 which exceeded the recommended value of 0.5 (Hair et al, 2010).

Table 2. Factor loadings and reliability

Variable	Items	Loading	CR	AVE
Purchase intention	A1	0.904	0.964	0.843
	A2	0.917		
	A3	0.926		
	A4	0.926		
	A5	0.915		
Emotional Value	E1	0.807	0.929	0.725
	E2	0.851		
	E3	0.869		
	E4	0.894		
	E5	0.831		
Price Value	P1	0.802	0.910	0.718
	P2	0.869		
	P3	0.868		
	P4	0.848		
Functional value	F1	0.797	0.909	0.669
	F2	0.821		
	F3	0.801		
	F4	0.850		
	F5	0.817		
Social Value	S1	0.872	0.934	0.78
	S2	0.899		
	S3	0.892		
	S4	0.868		

Note. CR = Composite reliability, AVE = Average Variance Extracted.

Next, the discriminant validity was conducted to determine constructs that should not reflect another construct within the same framework. Discriminant validity is determined through the calculation of the square root of average variance extract (Fornell and Larcker, 1981). The square root of AVE (average variance extract) results indicated low correlations among the constructs (see Table 3). Thus the measurement model demonstrated adequate convergent and discriminant validity.

Table 3. Inter-construct correlation

Variable	1	2	3	4	5
Purchase intention	**0.918**				
Emotional Value	0.555	**0.851**			
Price Vale	0.388	0.377	**0.848**		
Functional value	0.446	0.444	0.484	**0.818**	
Social Value	0.392	0.559	0.388	0.328	**0.883**

Note. Diagonals represent the square root of the AVEs while the off-diagonal entries represent the correlations between constructs.

4.2 Findings

Table 4 shows the results of the structural model. The bootstrap run from SmartPLS analysis was performed with 1000 subsamples. The results reveal that functional value ($\beta = 0.193$ p < 0.01), price value ($\beta = 0.124$, $p < 0.05$), and emotional value ($\beta = 0.385$, $p < 0.01$) affect individual's acceptance intention significantly but social value was not. Thus H1 and H2 and H4 were supported but H3 was not supported.

Table 4. Summary of the structural model

Hyp.	Description	β	Standard error	t-Value	Results
H1	Functional ->Acceptance intention	0.193	0.069	2.784**	**Supported**
H2	Price -> Acceptance intention	0.124	0.070	1.750*	**Supported**
H3	Social -> Acceptance intention	0.064	0.100	0.643	Not Supported
H4	Emotional-> Acceptance intention	0.385	0.084	4.555**	**Supported**

*Note. *p < 0.05, **p < 0.01.*

5. Discussion and Cconclusion

Overall, the analysis has identified that hypotheses 1, 2, and 4 are supported but H3 was not supported. More importantly, this study has shown that emotional value is considered as the most important variable among individuals, followed by functional value and price value. This finding shows the importance of the affective aspects of emotional value, especially in the PC sectors. The significance of the affective aspects is logical since personal computers involves a lot of human interactions.   It is, therefore, emotional or functional that plays an important part toward green PC acceptance. Beside the three variables explained green PC's acceptance intentions at the desirable level variance of 0.373. This means that the three variables pertaining to the domain of green PC such as functional, price value, and emotion value explained 37.37% of the variance in individual intentions toward green PC acceptance. As such, they relatively adequately described the phenomenon of green PC acceptance.

In conclusion, this study, hopefully, will assist marketers in determining which factors are important to their customers' intentions to adopt green PC. Therefore, it will help them to formulate marketing strategies that could significantly affect green PC adoption among their customers. Besides, individuals in other developing countries might share the same issues faced by the Malaysian customers. So, it is expected that the findings from this study will help marketers in other developing countries to understand the green PC adoption issues as well.

References

Choizit D (2009). IT Strategy implications of Green IT. Rmit School Of Business Information Technology, Australia, available online: http://www.damienchoizit.com/articles-publications/v/it-strategy-implications-of-green-it

Deng, Z., Lu, Y., Wei, K. K., & Zhang, J. (2010). Understanding customer satisfaction and loyalty: An empirical study of mobile instant messages in China. *International Journal of Information Management*, 30(4), 289-300. http://dx.doi.org/10.1016/j.ijinfomgt.2009.10.001

Fornell, C., & Larcker D.F., (1981), Evaluating structural equation models with unobservable variables and measurement error: A Comment. *Journal of Marketing Research*, 18(1): 39–50. http://www.jstor.org/stable/3150979

Greenpeace, (2007). Habbo and Greenpeace survey reveals teens more concerned about green-house gases than drugs, violence, or war. *Greenpeace International*. Retrieved October 4, 2011, from http://www.greenpeace.org/international/press/releases/habbo-and-greenpeace-survey-re

Hair, J. R., Black, W. C., Babin, B. J., & Anderson, R. E., (2010), *Multivariate data analysis*. Upper Saddle River, NJ: Prentice-Hall.

Lee, Y., Kim, J., Lee, I. and Kim H. (2002), A Cross-Cultural Study on the Value Structure of Mobile Internet Usage: A Comparison between Korea and Japan, *Journal of Electronic Commerce Research*, 3(4), 227-239. http://jecr.org/node/264

Lu, H.-P., & Hsiao, K.-L. (2010). The influence of extro/introversion on the intention to pay for social networking sites. *Information & Management*, 47(3), 150-157. http://dx.doi.org/10.1016/j.im.2010.01.003

Murugesan, S. (2008). Harnessing Green IT: Principles and Practices. *IT Professional*, 10(1), 24-33. http://dx.doi.org/10.1109/MITP.2008.10

Pura, M. (2005). Linking Perceived Value and Loyalty in Location-Based Mobile Services. *Managing Service Quality*, 15 (6), 509-538. http://dx.doi.org/10.1108/09604520510634005

Ringle, C. M., Wende, S., & Will, A., (2005), *SmartPLS 2.0 (M3) beta*, Hamburg: http://www.smartpls.de.

Sheth, J.N.B.I., Newman, B. L. & Gross, B. L. (1991).Why We Buy What We Buy a Theory of Consumer Behavior. *Journal of Business Research*, 22, 159-170. http://dx.doi.org/10.1016/0148-2963(91)90050-8

Sweeney, J. C., & Soutar, G. (2001). Customer perceived value: the development of a multi-item scale. *Journal of Retailing*, 77 (2), 203-20. http://dx.doi.org/10.1016/S0022-4359(01)00041-0

Turel, O., Serenko, A., & Bontis, N. (2007). User acceptance of wireless Short Messaging Services: deconstructing perceived value. *Information & Management*, 44(1), 63-73. http://dx.doi.org/10.1016/j.im.2006.10.005