



Factors affecting sustainability of internet usage among youth

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Abstract

Purpose – The purpose of this paper is to determine the factors that affect sustainability of internet usage by Malay youth in Kota Bharu, a rural town in the north east of peninsular Malaysia.

Design/methodology/approach – The study used survey research for obtaining data. Some 225 respondents were sampled from the young Malay internet users in Kota Bharu, Kelantan. They were interviewed using a standard questionnaire. Descriptive and inferential statistical analyses were used to analyse the data. The descriptive statistics included frequency, percentages, means and standard deviation while the inferential statistics included reliability test, computed means and multiple regression.

Findings – From the results there is sustainability of internet usage among Malay youth. As far as factors that have positive effects on sustainability of internet usage is concerned, the results of the study showed that interpersonal and social network and perceived and realized benefits have significant positive effects on sustainability of internet usage by Malay youth. The results also showed that issues relating to security concerns and interruptions have significant negative effect on the sustainability of internet usage by Malay youth.

Practical implications – Sustainability of usage has practical implications on the implementation of innovations, especially the internet and ICT related projects.

Originality/value – The paper is the first of its kind on sustainability of internet usage, especially among Malay youth. It contributes to the innovation diffusion process by including sustainability. It determines and measures sustainability.

Keywords Internet, Malaysia, Youth, User studies

Paper type Research paper

1. Introduction

The internet, which began as a tool for communication, has now become a tool for social interaction, education, business and numerous other functions and activities. Various studies have shown how the internet has been applied and use. For example, the Telecentre Development Programme was carried out under e-Sri Lanka, an initiative to bridge the digital divide (Gamage and Halpin, 2007). A study on internet usage in Greek Libraries reveals that the internet is an essential and rigorous tool for librarians and at the same time plays an important role for providing quality and quick reference services to users (Semertzaki, 2008). Senior citizens are not left out in embracing the new technology as a study in New Zealand reveals that seniors are not afraid of technology, especially internet related technology (Nasmith and Parkinson, 2008).

With all these developments, there are still disparities, especially among developing countries, as far as access to the new information technology is concern. The majority



of rural dwellers in Nigeria, who make up about 80 per cent of the population, lack the basic infrastructures such as internet, libraries and information centres (Kari, 2007).

The youth being leaders of tomorrow need to master the available and latest technology of today; and the internet is one such technology. Mastering this technology provides benefits. In order to benefit from what the internet can offer in the long run, there must be continuous and consistent usage, in short sustainable usage. Indeed, the internet has a lot of benefits to offer ranging from its very nature of providing global connectivity, multimedia capabilities and other facilities to users (Laudon and Laudon, 2000; Stewart, 2003; Semertzaki, 2008; Nasmith and Parkinson, 2008).

Rogers (2003) defines sustainability as the degree to which an innovation is continued over time after a diffusion programme ends (p. 476). Unfortunately, most diffusion studies ended with the decision to adopt, or with implementation of, the new idea or innovation. However, many innovations are important only if they continue to be used and for these kinds of innovation sustainability is a kind of bottom line and the internet is a perfect example of such innovation as the more one continues using the internet the more one realizes what it has in store. Re-invention also led to sustainability (Rogers, 2003, p. 183). The internet has evolved by adding on more function and services on the already existing e-mail communication function. At the moment internet users can pay their bill online, among others. There is also social function like chatting (Yahoo messenger) and e-community (Myspace, Facebook), and business and economic functions such as Amazon.com and others.

Sustainability of usage of the internet can be looked at from many aspects, one of which is indispensability of the internet. In other words if the internet is indispensable to the users then its usage will be sustained, that is continued over time. For any innovation the continuum is from dispensability to indispensability, as it shows the degree at which such innovation can withstand the test of time. In congruence to the claim by Hoffman as far back as 2004 that the internet had reached the indispensability level (Hoffman *et al.*, 2004), this study conducted in 2008, as we shall see later in the findings, supports Hoffman's claim. How relevant an innovation is to the user is also very important for it to be sustained. According to Merkel (2005), the goal of sustaining technology use and learning in community computing context is a difficult problem because often community groups do not realize the extent to which technology has become tied to their mission. In other words the community does not see the relevance of the technology in their daily activities. In this regard the innovation must be of relevance to the individual users for it to be sustained.

Usage of an innovation is likely to be sustained if the innovation provides gratification to the users. The uses and gratifications perspective posits that consumers of media actively attend to media for specific reasons and to satisfy specific needs (Ebersole, 1997). December (1996) identified communication, interaction, and information as the three broad categories for why people use the internet. Therefore, gratifications obtained from using the internet are likely to provide the basis for sustainable usage of the internet, thus an aspect of sustainability. In addition to being indispensable, relevant and gratifying, the internet must also be beneficial to the user in order for it to be sustained. For example, Laudon and Laudon (2000) asserted that internet provides so many benefits to the community such as global connectivity, ease of use, low cost, and multimedia capabilities. According to Stewart (2003), internet is

not just an addiction, but also beneficial. What they thought in 2000 and 2003 is congruent with the findings of this study.

Rogers sees sustainable usage as very important and made a very important remark concerning it. According to him what good does a development program do if it is not going to be there tomorrow or ten years from now, or if the benefits will disappear in the next few years (Singh and Domatob, 2004). For the internet to stay and its benefits to be derived, there must be sustainable usage.

Sustainability has an impact on media use by way of encouraging the people to use the media. Once the people find the media indispensable, relevant, gratifying and beneficial, which are variables of sustainability, it is highly likely that it will encourage their use of the media. It is the indispensability, the relevancy of the media and the gratification and benefits, which are derived from the particular media that gives encouragement for the people to use the media.

This paper will present a study on the sustainability of internet usage among Malay youth in Kota Bharu, located in north-eastern part of peninsular Malaysia. It is rural in a geographical sense, and less developed economically compared to major towns in western part of Peninsular Malaysia. As a typical rural town, not all houses are wired up through either telephone lines or wireless to receive internet services. But internet services are available nonetheless, at internet cafes, schools and university computer laboratories or offices where the respondents study or work. Consequently, people need not have internet connection in their homes to use the internet and the services available therein. For the purpose of this study only those who use the internet were interviewed. The study will report the results of the study concerning sustainability (the dependent variable) and its variables (indispensability, relevance, gratification and beneficial) among young Malay internet users in Kota Bharu, Kelantan. The independent variables for this study are the factors that affect sustainability of internet usage viz communication channels, perceived benefits, interpersonal and social network, moral issues, security and interruptions and cost of upgrading and maintenance among Malay youths.

2. Theoretical perspective

Sustainable usage of an innovation is very crucial as innovations are meant to stay and help in the development of a particular community or people. Falling short of this will amount to waste of resources, which could have been channeled to other areas. To achieve sustainability certain factors do play important role. Communication channels, for example, may provide the needed and up-to-date information about an innovation. The channels include radio, television, newspaper, book, magazine and interpersonal communication. Moreover, people will continue to use an innovation if they get gratifications from using the said innovation. In other words, the innovation must provide satisfaction to the users.

The perceived and realized benefits of the innovation, when met, are able to sustain the usage of the innovation by the adopters. As pointed out by Rogers (2003), the perceived benefits must be present and continuous. Perceived benefits of the internet range from lowering of cost both operational and transactional, ability to reach wider market and information gathering capability and lower cost of sending email (Laudon and Laudon, 2000). Adoption by interpersonal and social network is another important variable contributing to sustainable usage of an innovation. That is if a sizeable

number of the community to which we can relate to adopt the innovation, it may lead to sustainable usage among this group since they can share information about the innovation while communicating through it.

Therefore, from the theoretical perspective and as far as sustainable usage of the internet is concerned, the following statement thus represent the underlying logic for designing and conducting this study. After adoption of an innovation, certain factors do play a role in bringing about sustainable usage and they include communication channels, perceived and realized benefits of the innovation and interpersonal and social network. These factors are likely to bring about sustainable usage of the internet, in other words have positive effects on sustainability of usage. However, to provide reasons why the usage of innovations is discontinued or disrupted, factors that are believed to have negative effects on sustainable usage of the internet are also looked into. The factors include moral and religious issues (Galander, 2001; Rogerson and Begg, 1999), security concerns and interruptions (Samsudin, 2005; Miller, 2005; National Public Policy Conference, 2005; Laudon and Laudon, 2000; Feher and Towell, 1997; MyCERT, 2008), and computer upgrade and maintenance costs (Baltac, 2005; Rahmah and Becker, 2001).

3. Methodology

This study used the survey research method to obtain data from the young Malay population in Kota Bharu, to ascertain the factors, which affect or influence sustainability of internet usage. This study used purposive sampling focusing on the respondents who are already using the internet. Three sampling components were used and comprised of the age, gender and occupation components. The age component consists of those users between 20-39 years of age. To get equal representation of gender, the sample consisted of equal number of males and females. For the occupation component the respondents were categorised into four groups viz government servants, government-linked companies, private businesses and students.

A questionnaire was used to collect data for this study. Some 400 questionnaires were dispensed among the Malays in Kota Bharu in the last week of January 2008. A total of 365 answered questionnaires were collected, three weeks later. Out of which 357 were usable giving a return rate of 91.25 per cent. However, since this study is focused on young Malay internet users, only data from 225 respondents were analysed for this report.

4. Results

The result of the study is categorized into sustainability variables and factors that affect sustainability of internet usage. These are presented in the following.

4.1 Sustainability variables

The results on sustainability were described based on the following variables and the items under them viz indispensability, relevance, gratification and beneficial. A cut-off point was used to determine the satisfactory level for both the variables and the items under them. From the results of the cut-off point all the variables and the items were satisfactory with some of the items very satisfactory. The respondents were asked to rate the items on a 1-7 likert scale. A mean of 3 and above is considered satisfactory and 5 and above is very satisfactory.

4.1.1 Indispensability. As in Table I the computed mean for indispensability was 29.5, which is satisfactory according to the cut-off point set. The eight items, as in Table I, under indispensability were all satisfactory with one (I must use the internet because it makes my life easy) reaching the very satisfactory level, which is a mean of 5.1. The remaining items viz important part of my daily routine (4.4), important as telephone, electricity, radio and television (4.5), access e-government (4.4), access e-banking (3.9), for e-commerce (3.1) and for bill payment (3.7) are all satisfactory. The computed SD for indispensability is 8.8, which is lower than the computed mean indicating the absence of outliers.

4.1.2 Relevance. The computed mean for relevance (see Table II) was 33.6, which is satisfactory according to the cut-off point set. The seven items under relevance were all satisfactory with two (I can use the internet internet as an information source as library, TV, radio; I can use the internet to interact with the outside world) reaching the very satisfactory level, which is a mean of 5.4 and 5.1 respectively. The remaining items, namely internet for communication as telephone (4.8), internet for entertainment (4.4), internet to get in touch with my family and relatives (4.2), internet to get in touch with my friends and colleagues (4.8) and internet to access e-government and other e-services (4.6) are all satisfactory. The computed SD for relevance is 9.2, which is lower than the computed mean indicating the absence of outliers.

4.1.3 Gratification. The computed mean for gratification (see Table III) was 32.2, which is satisfactory according to the cut-off point set. The seven items under

Table I.
Indispensability (means and standard deviation (SD))

Indispensability	Mean score	SD	Level
I must use the internet as ...			
Makes my life easy	5.1	1.5	Very satisfactory
Important part of my daily routine	4.4	1.6	Satisfactory
Important as telephone, electricity, radio and television	4.5	1.6	Satisfactory
Access e-government	4.4	1.8	Satisfactory
Access e-banking	3.9	1.8	Satisfactory
For e-commerce	3.1	1.6	Satisfactory
For bill payment	3.7	1.9	Satisfactory
Computed mean score	29.5		
Computed SD	8.8		

Table II.
Relevance (means and standard deviation (SD))

Relevance	Mean score	SD	Level
I can use the ...			
Internet for communication as telephone	4.8	1.6	Satisfactory
Internet as an information source s library, TV, radio	5.4	1.4	Very satisfactory
Internet to interact with the outside world	5.1	1.6	Very satisfactory
Internet for entertainment	4.4	1.7	Satisfactory
Internet to get in touch with my family and relatives	4.2	1.9	Satisfactory
Internet to get in touch with my friends and colleagues	4.8	1.6	Satisfactory
Internet to access e-government and other e-services	4.6	1.7	Satisfactory
Computed mean score	33.6		
Computed SD	9.2		

Gratification	Mean score	SD	Level
I am satisfied with ...			
Information from digital newspapers on the internet	5.0	1.5	Very satisfactory
Entertainment (games, songs download)	4.4	1.6	Satisfactory
Socialization (meeting people)	4.0	1.5	Satisfactory
E-mail communication	4.9	1.5	Satisfactory
Services (online banking, shopping, flight booking)	4.2	1.6	Satisfactory
Chatting (e.g. MSN, YM)	4.2	1.8	Satisfactory
On the whole I am satisfied using the internet	5.2	1.4	Very satisfactory
Computed mean score	32.2		
Computed SD	8.5		

Table III.
Gratification (means and standard deviation (SD))

gratification were all satisfactory with two (I am satisfied with information from digital newspapers on the internet; on the whole I am satisfied using the internet) reaching the very satisfactory level, which is a mean of 5.0 and 5.2 respectively. The remaining items, namely entertainment (4.4), socialization (4.0), e-mail communication (4.9), services (online banking, shopping, flight booking) (4.2) and chatting (e.g. MSN, YM) (4.2) are all satisfactory. The computed SD for gratification is 8.5, which is lower than the computed mean indicating the absence of outliers.

4.1.4 Beneficial. The computed mean for beneficial (see Table IV) was 62.5 which is satisfactory according to the cut-off point set. The 13 items under beneficial were all satisfactory with five items (save time as I do not have to queue for services, save time on travelling to destination for services, I can do things faster using internet, I can do things with less effort, easier to do my activities online) reaching the very satisfactory level which is a mean of 5.0 and above. The remaining items, namely save time on parking (4.2), save money on travelling to destination (4.5), I can save money on parking (4.3), I can buy goods online (e-shopping) (4.0), I can get information on health (4.9), I can transact with government departments (4.7), I can do banking online

Beneficial	Mean score	SD	Level
The internet is beneficial to me because ...			
Save time as I do not have to queue for services	5.1	1.5	Very satisfactory
Save time on travelling to destination for services	5.0	1.5	Very satisfactory
Save time on parking	4.2	1.9	Satisfactory
Save money on travelling to destination	4.5	1.7	Satisfactory
I can save money on parking	4.3	1.8	Satisfactory
I can buy goods online (e-shopping)	4.0	1.6	Satisfactory
I can get information on health	4.9	1.5	Satisfactory
I can transact with government departments	4.7	1.6	Satisfactory
I can do banking online (e-banking)	4.6	1.6	Satisfactory
I can do things faster using internet	5.4	1.4	Very satisfactory
I can do things with less effort	5.3	1.3	Very satisfactory
Easier to do my activities online	5.2	1.4	Very satisfactory
Internet makes my life stress free	4.7	1.5	Satisfactory
Computed mean score	62.5		
Computed SD	15.7		

Table IV.
Beneficial (means and standard deviation (SD))

(e-banking) (4.6) and internet makes my life stress free (4.7) are all satisfactory. The computed SD for gratification is 15.7, which is lower than the computed mean indicating the absence of outliers.

The Cronbach's Alphas for the sustainability variables in this study are high and this indicates the reliability of the variables. All the sustainability variables tested revealed an Alpha of more than 0.8 with two of the variables having alphas of 0.9. Table V shows the Cronbach's Alpha for all the sustainability variables.

From the results of this study as the descriptive statistics have shown, there is sustainability of the internet usage among the young Malay internet users. The statistical computed means of the sustainability variables viz indispensability, relevance, gratification and beneficial are satisfactory. This is also true with their computed standard deviations. The computed standard deviations are not larger than the statistical means, meaning there are no outliers. This is an indication that there is sustainability of internet usage among the respondents. The Cronbach's Alphas for the sustainability variables in this study are also high. It can be deduced that the internet has become indispensable, relevant, gratifying and beneficial to the respondents making it sustainable.

4.2 Factors affecting sustainability of internet usage

For the factors which are seen to have effects on sustainability of usage of the internet among the Malay youth, especially those factors which have positive effects, two of the three predictor factors viz interpersonal and social network and perceived and realized benefits have influence on sustainability of usage. From the regression analysis the two factors have impact and contributed to the variance in sustainability. This can be seen from their beta, *t* value and sig. *p*, as follows: interpersonal and social network (Beta = 0.371, *t* = 6.611, *p* = 0.000); perceived and realized benefits (Beta = 0.385, *t* = 7.192, *p* = 0.000). Together they contributed to 58.4 percent of the variations on sustainability.

Furthermore, on the factors likely to have negative effects on sustainability, only one factor had impact on sustainability of internet usage, which is security and interruptions (Beta = -0.174, *t* = -3.557, *p* = 0.000). It contributed to 21 per cent of the variations in sustainability with adjusted *R*-square of 0.210. Therefore all the three predictors contributed 79.4 per cent of the variations on sustainability with adjusted *R*-square of 0.794.

From the results, perceived and realized benefits and interpersonal and social network had the highest coefficient value. This means that the influence by and the information giving by perceived and realized benefits and interpersonal and social network such as colleagues and e-government had a positive effect on sustainability of internet usage among the Malay youth in Kota Bharu. Therefore, perceived, and

Table V.
Reliability index of
sustainability variables

	Alpha (<i>n</i> = 225)	No. of item	Level of reliability
Sustainability (DV)	0.91	4	Very satisfactory
Indispensability	0.85	7	Very satisfactory
Relevance	0.88	7	Very satisfactory
Gratification	0.88	7	Very satisfactory
Beneficial	0.93	13	Very satisfactory

realized benefits, is a very powerful and significant predictor for sustainability of internet usage. Also, looking at the Beta value, it was confirmed and evident that perceived and realized benefits was the best predictor that can positively influence sustainability of internet usage. Likewise, security and interruptions was the best predictor that can negatively influence sustainability of internet usage.

Additionally, by examining the *t*-values the best significant predictor of sustainability of internet usage was perceived and realized benefits as it has the highest *t*-value. Further test shows that interpersonal and social network, perceived and realized benefits were of practical importance to sustainability of internet usage. This was because their computed thresholds were smaller than the upper and lower bounds in the confidence intervals.

5. Discussions

5.1 Sustainability of internet usage

Internet usage in Malaysia began around 1992. The internet, which started with a simple browsing and e-mail experience, has now turned into a mechanism to creatively disseminate information. It has complemented the already existing mass media and as this study revealed the internet has overtaken radio and television as a source of information and at par with newspaper. According to Hoffman *et al.* (2004) "the adoption rate of the internet has exceeded that of earlier mass communication technologies by several magnitudes," making it an "irreversible" innovation. Trends about usage have been studied by other researchers. However, what is lacking is the monitoring of sustainability of usage. This makes it appropriate to monitor sustainability of internet usage among the users. This study, therefore, apart from determining the trend and purpose of usage of the internet, was also able to determine sustainability of internet usage and the factors which have influence on the sustainability of internet usage among the young Malay internet users.

From the results of this study, there is sustainability of internet usage, though at a moderate, but satisfactory level, among the young Malay internet users. The statistical computed means of the sustainability variables viz indispensability, relevance, gratification and beneficial are satisfactory. This is also true with their computed standard deviations. The computed standard deviations are not larger than the statistical means, meaning there are no outliers. The findings of the study have therefore proven that there is sustainability of internet usage among the respondents as it is satisfactory. The result of this study, therefore, has lent support to the contention by Hoffman *et al.* (2004) that the internet has reached the indispensability level. Hoffman *et al.* (2004) pointed out that the idea of indispensability is that the internet has become so embedded in the daily fabric of people's lives that they simply cannot live without it. A study by Rahmah and Becker (2001) is also congruent to the findings of this study. Their study shows most Malaysians find the worldwide web (WWW) and e-mail facilities of the internet most indispensable and that the availability of online services is welcomed and the internet has arrived and will be here to stay.

It further lent support to Merkel (2005) that an innovation must be of relevance to the individual users for it to be sustained. The statistical computed mean for relevance in this study is at the satisfactory level, which is acceptable. Shyla (2008) (*New Straits Times*, 2006), a tech writer for over 11 years, contend that there are huge areas in the

lives and experiences of old and young people in which the internet makes a unique contribution to them. In other words the internet has become indispensable to the lives and experiences of both the young and old alike.

Moreover, as the result of this study revealed, other studies also revealed that the usage of an innovation is likely to be sustained if the innovation provides gratification to the users. In this study the internet was found to provide gratification meaning the young Malay internet users were satisfied using the internet. According to Ebersole (1997), the uses and gratifications perspective posits that consumers of media actively attend to media for specific reasons and to satisfy specific needs. December (1996) identified satisfaction from communication, interaction, and information as the three broad categories for why people use the internet. Similar to this study the communication, interaction and information capabilities of the internet were gratifying to the young Malay users.

Furthermore, an innovation must also be beneficial to the user in order for it to be sustained. Laudon and Laudon (2000) asserted that internet provides so many benefits to the community such as global connectivity, ease of use, low cost, and multimedia capabilities. Moreover, Stewart (2003) was also of the opinion that internet is not just an addiction, but also beneficial. There are people who think that the internet is just only an addiction. What Laudon and Laudon and Stewart thought in 2000 and 2003, respectively, turns out to be exactly right because this study has revealed that the internet is beneficial as the young Malay internet users attest to this fact and this has contributed to sustainability of usage of the internet.

Also, the reliability indexes of the sustainability variables also show that there is agreement to the fact that the internet is sustainable among the young Malay internet users. This is because the reliability indexes of all the factors are satisfactory. It can therefore be deduced that all the four variables are suitable for testing sustainability. This has strengthened the dependent variable, sustainability of internet usage and has also set the mark or standard for testing sustainability of internet usage.

From the discussions, therefore, the internet is indispensable, relevant, gratifying and beneficial to the young Malay internet users. The usage of internet is therefore sustainable among the young Malays as far as this study is concerned.

5.2 Factors which influence sustainability of internet usage

The results of the study have shown that there are factors, which influence sustainability of internet usage. Three of the factors viz interpersonal and social network (beta = 0.371), perceived and realized benefits (beta = 0.385) and security concerns and interruptions (beta = -0.174) have influence on sustainability of internet usage among the Malay youth. Two of the factors viz interpersonal and social network, perceived and realized benefits are of practical importance to sustainability of internet usage.

From the results, therefore, the importance of colleagues, friends and place of work which form part of the interpersonal and social network cannot be denied as far as sustainability of internet usage is concern due to their influence. People are known to believe information they get from their friends and colleagues and as the study shows they made use of these interpersonal channels to spread information about the internet, which in turn influence sustainability of internet usage. Looking at the literature of past research, this study supports the study by Coleman *et al.* (1957) about the adoption

by physicians of the new drug tetracycline. Their research finding revealed that social network could help bring about adoption as similar to this study where social network helps in sustainability of usage of the internet. Their study categorically stated that the more embedded into the physician social network the physicians were, the more likely they were to adopt the drug and to do it early.

Thus as this study revealed, apart from its effect on adoption, interpersonal and social networks also have influence on sustainability of internet usage. What this means is that all the available social networks are important in influencing sustainability as far as internet usage is concern. As in Malaysia, in dealing with government agencies the citizens are encouraged to use the internet to download forms and do other activities online. Utilities and services companies as part of the social network are also making their presence felt online. One can now enjoy online internet banking which provides services ranging from paying of bills to buying prepaid reloads. With all these services in place, it is therefore obvious that interpersonal and social network influence sustainability of internet usage and as this study shows it is of practical importance to sustainability of internet usage among the young Malay users.

This study also revealed that perceived and realized benefits, when present, would influence sustainability of internet usage. This includes such benefits like the communication capability of the internet, the speed in sending email coupled with information gathering capability of the internet, among others. Similar to this study where the perceived and realized benefits influenced sustainability of internet usage, perceived and realized benefits were also seen to have effects on adoption of the internet as a study by Rogers (2003) revealed. On the rapid adoption of the internet, Rogers (2003) observes that the perceived attributes of the internet have played a crucial role in this. This is because the internet is perceived as having considerable relative advantages; internet is faster, better, cheaper, compared to the telephone, postal letters, telegrams, or fax letters.

Moreover, as this study revealed, security issues must not be taken lightly as they have influence on sustainability of usage. Computer virus attack is one such threat. Despite the availability of antivirus software, virus attack still remains a big threat, as new viruses are continuously unleashed. According to the National ICT Security and Emergency Response Centre (*New Straits Times*, 2006), hacking still poses a threat in Malaysia, though the number of reported cases has gone down from 301 in 2002 to 86 in 2005. The number of hacking threat for 2003 and 2004 was 276 and 145 respectively. In a report by fortinet (*New Straits Times*, 2006), ICT survey organization, Malaysia is ranked tenth among the top ten countries reporting computer virus infection in February 2006. This could be the reason why only few of the respondents use the internet for e-shopping as it involves the use of credit card and this might not be secured. In fact Laudon and Laudon (2000) writing on the issue of security and privacy, argue that internet-based systems are even more vulnerable than those in private networks because the internet was designed to be open to everyone. Many people have the skill and technology to intercept and spy on streams of electronic information as they flow through the internet and all other open networks.

As a result valuable data that might be intercepted include credit card numbers and names, private personnel data, marketing plans, sales contracts, product development and pricing data, negotiations between companies, and other data that might be of value to competition. They therefore argue that concern over the security of electronic

payments is one reason that electronic commerce has not grown more rapidly on the net. The issue of security on the internet has been dragging for long as evident from numerous findings (Feher and Towell, 1997; *New Straits Times*, 2006; MyCERT, 2008).

This study also revealed that cost of hardware and maintenance does not influence sustainability of internet usage in any way. This shows that the respondents don't see this cost as a threat to sustainability of usage. This might also be due to the fact that over the years the cost of hardware and computer maintenance has drastically gone down. Also moral issues were not a threat to sustainability of internet usage as they have no influence on the variance of sustainability. What this means is that users have come to terms with the immoral content on the internet and thus do not see those contents as worrying, after all there are more to internet than say pornography. Therefore as distinct from the observation by Galander (2001) and Begg (2006) that Muslims are worried over new innovations due to moral and religious concern, the respondents in this study who are Muslims as well, did not see any problem with moral issues as it did not affect sustainability of internet usage. It might be that the Malay youths are not bothered or do not see any problem regarding moral issues as far as the usage and sustainability of internet usage is concern.

However, being rural in nature, the issue of internet charges which is related to cost still need to be addressed. This is because a high monthly access fee is one of the reasons for not having internet connection at home among the respondents. A recent survey by the leading English language newspaper in Malaysia, The Star newspaper found that rural net users in Malaysia feel shortchanged as far as internet services are concern. Therefore, they want providers to improve net services. Among the suggestions put forward, was the reduction in internet charges and other related costs so that surfing becomes more affordable (*The Star*, 2009, p. B5).

6. Implications of the study

This study has given support to the theory of diffusion of innovation, which provided the basis for the proposed model of this study. The theory was developed by Everett Rogers and was used to study how new innovations are adopted over a period of time (Rogers, 2003). Rogers talks about the important of perceived benefits and realized benefits of the innovation, which when met, are able to sustain the usage of the innovation by the adopters. According to Rogers (2003), the perceived benefits must be present and continuous. Perceived benefits of the internet range from lowering of cost both operational and transactional, ability to reach wider market and information gathering capability and lower cost of sending email (Laudon and Laudon, 2000). This study among others, has proven the effects of these benefits on sustainability of internet usage. From the study these benefits have practical importance on sustainability of internet usage.

Furthermore, this study has also proven the existence of sustainability of internet usage among the young Malay users and the predictors of sustainability implying the importance of including sustainability in the innovation adoption decision model. Therefore, what is derived from this study is very important for the theory of diffusion, especially the innovation decision process model as it helps extend the theories further to include sustainability. Scholars and academicians interested in the field of diffusion of innovations will benefit from the inclusion of sustainability to the diffusion model.

Besides perceived and realized benefits, interpersonal and social networks also have positive effect on sustainability of internet usage. In fact, the results have shown that interpersonal and social networks and perceived and realized benefits of the internet are of practical importance to sustainability. Finally, the result of this study implies that to avoid disruptions on the usage of the internet, security concerns and interruptions should be of concern and need to be monitored as they have significant effect on sustainability of internet usage thereby negatively contributing to sustainability.

7. Conclusion

One aspect, which needs attention is that the implementation of every ICT (internet) initiative needs to be focused not only on providing internet facility, but on how to sustain its usage. From the results on sustainability and its variables, there exists a moderate level of sustainability of internet usage among the young Malay users. Apart from establishing sustainability, it is also equally important to find out the factors, which have effects on sustainability of usage. This study has suggested that the factors having effects on sustainability of internet usage should not be overlooked in the implementation process of internet and internet related projects in order to bring about sustainability of usage. Furthermore, the issue of high internet charges requires attention as it still poses a problem to the users in rural areas and thereby denies them the opportunity to get connected to the internet – consequently affecting sustainability of usage. As a result, media use among the populace will be discouraged due to very low level or lack of sustainability. There is therefore the need to formulate a comprehensive and practical policy framework to support the aforementioned. Without sustainability of usage, all efforts towards implementation of the internet will go to waste.

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