Factors Influencing Community Broadband Centre Usage:
A Case Study at Sabak Bernam Malaysia

[1]Mohamad Noorman Masrek, [2]Salasiah Rashidi

[1]Faculty of Information Management/Accounting Research Institute, Universiti Teknologi MARA, 40450 Shah Alam Selangor, Malaysia
[2]Faculty of Information Management, Universiti Teknologi MARA, Puncak Perdana Campus, 40150 Shah Alam Selangor, Malaysia

ABSTRACT

In order to address the digital gaps of the rural community, many developing countries had implemented telecentres. In the context of Malaysia, various types of telecentres had been established in the rural areas and one of them is the Community Broadband Centre. Since its establishments, very few studies have attempted to investigate its usage and contributing factors among rural communities. Adopting the survey research methodology involving 155 respondents, this paper reports the findings of a study that investigated the factors that influenced the rural folks in using the Community Broadband Centre. Three variables namely, perceived usefulness, self-efficacy and facilitating conditions were found to be significant predictor of Community Broadband Centre use. The results of this study may be useful to the concerned parties in developing strategies for increasing Community Broadband Centre usage.
KEYWORD: Telecentres, broadband community centre, ICT usage, Malaysia.

1-INTRODUCTION

Realizing the benefits of Information and Communication Technology (ICT) as an effective tool in driving the country towards achieving its mission as developed nation in 2020, Malaysia has embarked on numerous ICT projects which are addressed to citizens living in the urban as well as in the rural areas. Multimedia Super Corridor or MSC is one example of ICT project which meant for the urban folks. As for the rural folks, Malaysia just likeother developing countries have established various telecentre projects. Various agencies within several ministries of the Malaysian government have been tasked to established telecentres across rural districts in all states in Malaysia. The telecentre projects identified with numerous names was chiefly meant for reducing digital gaps between of the rural folks. In addition, they are also aimed at exploiting ICT for the purpose of community development. One of the telecentre projects which have received overwhelming attention among the rural folk is the Community Broadband Centre (CBC).

Since the establishment of telecentres in rural areas in Malaysia, several researchers have attempted to study their use and effectiveness (Norizanand Jalaluddin, 2008; Ibrahim, Sulaiman, and Faziharudean, 2008; Ibrahim and Ainin, 2009; Aziz *et al.* 2009; Yusof*et al.* 2010; Hedberg, 2010; Abdul Wahab and Dahalin, 2011; Bashir *et al.* 2011; Abu Hassan *et al.* 2011; Badsar *et al.* 2011;). While the findings of these studies have revealed that these telecentres were perceived to be very useful and beneficial to the rural folks, they were however not done in the context of CBC. Compared to other telecentres, which are mostly provided with wired Internet connections, the setup and arrangements of CBC is somewhat different. Therefore, questions remains unanswered as to whether the findings of previous studies which were done on wired Internet telecentres are also applicable to the context of CBC. Against this concern, this paper reports the findings of a study which was carried out with the purpose of answering factors that influence the use of CBC among rural community in Malaysia.

2-LITERATURE REVIEW

2-1) Overview of Telecentre and Community Broadband Centre
Gomez and Hunt (1999) defined telecentres as a physical space that provides public access to ICT, notably the Internet, for educational, personal, social, and economic development.According to United Nations (2007), the process of establishing telecentres helps to develop rural and remote infrastructure; generate employment; bring the

hitherto isolated communities into the national mainstreams and international information network; promote knowledge-sharing among communities in a number of areas;provide local producers access to market information; remove the middlemen; and increasing rural incomes. Bashir *et al.* (2011) asserted that telecentres in Malaysia are established to offer a range of services, including telephone, training for ICT literacy, local access to online government information and services, the possibility of partnerships with community welfare schemes in health and education, and sometimes even support for commercial activity.

Table 1 illustrates the various telecentre projects funded by the Malaysian government which are targeted towards different groups of citizens. In terms of number, the Universal Service Provider (USP) project, targeted to all groups of citizens was the highest with a total of 1169. Another telecentre project which was aslo targeted to all groups of citizens was the Community Broadband Centres (CBC). However, the CBC project was dedicated to those living in the rural areas. According to MCMC (2009) the ultimate goal of CBC is to ensure that communities living in underserved areas such as FELDA are connected to mainstream ICT development (MCMC, 2009). In addition it is also aimed to enable and to empower these connected communities via broadband; and to bring about socio-economic development for those communities in agriculture, education, health, business, amongst others (MCMC, 2009).

Table 1: Telecentre Projects in Malaysia (Source: Amat, 2009)

Lead agencies	Target groups	Telecentres Project Name	Total number
Ministry of Rural 7 Regional Development	Rural, Indigenous	Medan Info Desa	**237**
		PKUD Giat MARA	**30**
Ministry of Housing and Local Development	Urban poor	BDD Centre	**6**
Ministry of Youth and Sport	Youth	Rakan Muda Cyber Centre	**57**
Ministry of Women, Family and Community Development	Elderly women, disabled	PDKNet	**17**
State Government	All	Telecentres	**264**
Ministry of Information, Communication and Culture	All	Pusat Internet Desa	**42**
		Universal Serivice Provider (USP)	**1169**
		Pusat Maklumat Rakyat (PMR)	**138**
Malaysian Communication and Multimedia Commission	All	Community Broadband Centre (CBC)	**70**
		Community Broadband Library (CBL)	**105**

2-2) CBC use

Through models such as Technology Acceptance Model or TAM (Davis, 1989) and Unified Theory of Acceptance and Use of Technology or UTAUT (Venkatesh et al., 2003) which are mainly derived from Theory of Reasoned Action or TRA (Fishbein and Ajzen, 1975), and Theory of Planned Behavior or TPB (Ajzen, 1991) studies have consistently showed by that individual characteristics, organizational characteristics and technology characteristics are predictors or antecedents of ICT adoption (*see* Jeyaraj et al., 2006). Individual characteristics that are usually studied include personal information technology (IT) innovativeness, IT experience, and IT self-efficacy. Within the organization characteristics, the most influential variables include top management support, slack resources or culture. With regard to technology characteristics, variables such as perceived usefulness, perceived ease of use, and compatibility are among those that are commonly studied. In the context of telecentres use, influencing factors which have been investigated by researcher include

2-3) Perceived Usefulness

Perceived usefulness is defined by Davis (1989) as the degree to which a person believes that using a particular system would enhance his or her job performance. The extant literature showed that perceived usefulness is an important construct in determining ICT use (e.g. Sukiand Suki, 2011; Safeena, Date and Kammani; Daud*et al.* 2011). According to Abu Hassan et al. (2001), when a community perceived that ICT is useful, it will create a sustainable usage of ICT. D'Silva *et al.* (2010) found that perceived usefulness was a significant determinant of ICT usage among rural community leaders. In another study involving rural community in Malaysia, Abu Hassan *et al.* (2011) also discovered the importance of perceived usefulness for ICT usage. Likewise, Abdulwahab and Dahalin (2011) also showed the importance of perceived usefulness in determining telecentre acceptance among rural community.

2-4) Self-efficacy

Self-efficacy can be described as individual beliefs in their ability to perform a task. This construct was originally explained by Bandura (1977) through Social Cognitive Theory. Researchers in the IS field had applied this construct for measuring computer self-efficacy and internet self-efficacy (Compeau and Higgins, 1995;

Torkzadeh and Van Dyke, 2001; Masrek, 2007; Masrek, Karim and Hussein, 2008). Marakas et al. (1998) defined computer self-efficacy as perception of one's capability to use a computer, both at the general computing level and at the specific application level. Study by Abu Hassan *et al.* (2011) indicated the importance of computer self-efficacy in determining ICT usage among rural community leaders in Malaysia.

2-5) Management Effectiveness

According to Bailey (2009), in order to efficiently manage the telecentre, the staff including the leader should possessa set of core competencies. Mphalele and Maisela (2003) and Bahaman *et al.* (2010) asserted that sound management and administrative skills are very crucial in determining the success of the telecentres. Colle, (2005) also stressed the importance of leadership quality inensuring the success and sustainability of telecentres. Abdul Razak (2009) in his study found that there is positive correlation between the personality of leaders and telecentre success. On the other hand, Abdulwahab and Dahalin (2011) showed that when users perceived the management of telecentre as effective, their inclination towards using or continue using telecentre will also increase.

2-6) Program Effectiveness

A program can be defined as "an organized collection of activities designed to reach certain objectives" (Royse *et al.* 2006). According to Booth and Higgins (1984), program effectiveness in an organization can be generally defined in a number of ways which include(i) percent of clients who experience the desired outcome as a result of service provided (ii) number of units of service rendered per staff member (iii) dollars expended per unit of service rendered (iv) proportion of staffs with appropriate professional training (v) low administrator / staff ratio and (vi) years of professional experience per staff member. Just as other telecentres, CBC must also devise programs such as trainings for the rural folks. Programs which are perceived effective will surely attract more users to using the facilities provided by the CBC. Abdulwahab and Dahalin (2011) in their study involving telecentre in Malaysia discovered that program effectiveness is essential in predicting users' intention in using telecentres.

2-7) Social influence

Social influence refers to the degree to which an individual believes that their adoption of technology should be influenced by relevant referents (Venkatesh and Brown, 2001). In this case influence could come from referents such as family, friends, and workmates or the perceived social status gain in terms of one's personal image (Kivunike*et al.* 2009).For example, if a family member or friends suggests that using the CBC is beneficial and encourages one to use it, one is likely to believe that he or she should also use it. According to Kivunike et al. (2009), ina developing country context, however, other social factors like culture and community practices also affect the adoption of ICT. In the context of telecentre study, Abdulwahab and Dahalin (2011) found that social influence in a significant predictor of telecentre use.

2-8) Facilitating Conditions

Venkatesh*et al.* (2003) defined facilitating condition "as the degree to which an individual believes that an organizational and technical infrastructure exists to support use of the system". In the context of the present study, this construct is defined as the degree to which user believes that the organizational and technical infrastructure of the CBC is adequate to support the use of the facilities provided by CBC. Many studies have found that facilitating condition is a significant predictor of ICT or IS acceptance (e.g. Venkatesh and Davis, 2000; Hu *et al.* 2005; Ellahi and Manarvi, 2010).Venkatesh *et al.* (2003) argued that the influence of facilitating conditions on ICT usage is moderated by age and experience such that the effect will be stronger for older workers, particularly with increasing experience. Within the domain of telecentre study, Abdulwahab and Dahalin (2011) found that facilitating condition to be an important predictor of telecentre use.

2-9) Research Framework and Hypotheses

Figure 1 depicts the theoretical framework used in this study. The framework consists of six independent variables and one dependent variable. The independent variables are perceived usefulness, self-efficacy, management effectiveness, program effectiveness, social influence and facilitating condition. The dependent variable is the CBC use. All the independent variables are posited to be significant predictors of CBC use .The framework is conceptualized based on the work of Abdul Razak (2009; Kivunike et al. (2009); Abdulwahab and Dahalin (2011); Bashir et al. (2011); Abu Hassan et al. (2011); and Badsar et al. (2011). Accordingly, the following hypotheses are formulated in this study:

H1: Perceived usefulness is a significant predictor of CBC use.
H2: Self-efficacy is a significant predictor of CBC use.
H3: Management effectiveness is a significant predictor of CBC use.
H4: Program effectiveness is a significant predictor of CBC use.
H5: Social influence is a significant predictor of CBC use.
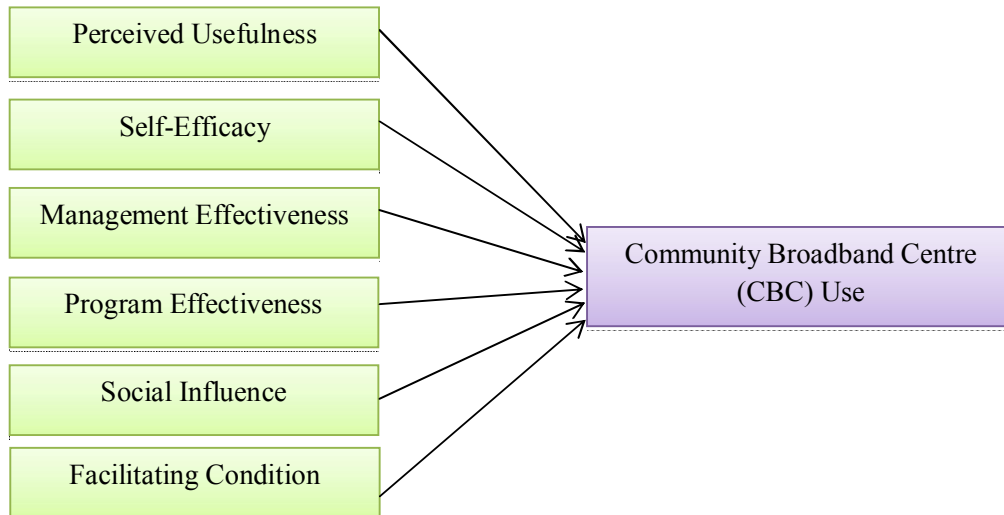*H6: Facilitating condition is a significant predictor of CBC use.*

Figure 1: Research Framework

3) RESEARCH METHOD

This study used the survey research methodology for collecting the research data. The choice of this methodology is based on the research problem and research objective. Gray (2004) noted that survey is the most common methodology in research, because it allows for the collection of significant amount of data from sizeable population. The instrument used for collecting the data was questionnaire. Sekaran (2003) mentioned that a researcher should adopt well validated and reliable measures to ensure that the research is scientific and escape the labourious efforts in developing a new measure. To this effect, in this study, measures that had been used by previous researchers were adapted as shown in Table 2. However, to suit the need and context of the study, the researcher had made appropriate amendments to some of the measures in terms of number of items, wording of sentences and scaling of the items. All measures for the variables shown in Table 2 were using Likert Scale anchored with two extremes with 1 for "Strongly Disagree" and 5 for "Strongly Agree". The population of the study was the community living in Sungai Leman, Sabak Bernam District in the state of Selangor, Malaysia. The community was chosen because the CBC located there was amongst the first to be established. Furthermore, compared to other CBC, the CBC in this district recorded or registered all users' information who used the CBC. As of October 2011, the total registered members at CBC Sungai Leman were 594. Based on this total population and using simple random sampling, 180 questionnaires were distributed to the CBC Sungai Leman members. 157 questionnaires were returned, however two questionnaires were found unusable yielding to 155 for data analysis.

Table 2: Sources of measurement for research variables

Variables	Source of measurement
Perceived Usefulness	Venkatesh et al. (2003); Pick and Gollakota (2010)
Self-Efficacy	Masrek (2007); Bailey andNgwenyama (2009)
Management effectiveness	Balduck and Buelen (2008); Abdulwahab and Dahalin (2011)
Program Effectiveness	Abdulwahab and Zulkhairi (2011) and Badsar et al (2011)
Social Influence	Venkatesh et al. (2003); Pick and Gollakota (2010)
Facilitating Condition	Venkatesh et al. (2003); Badsar et al (2011)
Use	Venkatesh et al. (2003); Pick and Gollakota (2010)

4) Findings

4-1) Respondents Profiles:

Table 3 presents the demographic profile of the respondents. Out of 155 respondents, 56.7% were male while the remaining 43.3% were female. In terms of age, the highest percentage was aged between 13 and 18 while the lowest percentage was above 45. With regard to respondents' occupations, the highest percentage i.e. 61.9% indicated that they were students while the lowest which was 6.4% indicated that they were housewives. Majority of the respondents i.e. 92.9%, indicated that their houses were located about 9 to 20 km from the CBC building.

Table 3: Demographic profile of respondents

Characteristics	Items	Frequency	Percentage
Gender	Male	88	56.77
	Female	67	43.23
Age	7-12	29	18.71
	13-18	60	38.71
	19-24	20	12.90
	25-34	17	10.97
	35-44	20	12.90
	>45	9	5.81
Occupation	Student	96	61.94
	Government servant	11	7.10
	Private	18	11.61
	Self Employed	20	12.90
	House wife	10	6.45
Distance	5-20 km	144	92.90
	21-50 km	10	6.45
	>5l km	1	0.65

4-2) Reliability Analysis

Reliability analyses were performed to determine the scale's internal consistency strength. The results as shown in Table 4 indicated that all variables are above the recommended cut-off value which is 0.7 (Nunally and Bernstein, 1994), hence suggesting that the scale used in the study was highly reliable. Prior to the actual data collection, the questionnaire underwent rigorous pre-testing and pilot testing so as to ensure that study produced valid and reliable results.

Table 4: Reliability analysis of research variables

Variables	No of Items	Cronbach's Alpha
Perceived Usefulness	6	0.833
Self-Efficacy	3	0.748
Management effectiveness	4	0.850
Program Effectiveness	4	0.838
Social Influence	4	0.750
Facilitating Condition	5	0.742
Use	6	0.812

4-3) Correlation analysis

According to Alreck and Settle (1995), when the objective of the study is to test the degree and significance between two continuous variables from interval or ratio scales, the appropriate technique is either correlation or regression analysis. Correlation analysis entails the provision of a yardstick whereby the intensity of strengths of a relationship can be measured (Bryman and Cramer, 2001). The results showed that the values of Pearson correlation are between 0.494 and 0.672. Wong and Hiew (2005) noted that value above between 0.5 and 1.0 is considered strong relationship. As all the Pearson correlation values are less than 0.9, hence suggesting that the variables are not experiencing the problem of multicollinearity.

Table 5: Correlation analysis amongst research variables

Variables	PU	SE	ME	PE	SI	FC	USE
Perceived Usefulness (PU)	1						
Self-Efficacy (SE)	0.401**	1					
Management effectiveness (ME)	0.712**	0.474**	1				
Program Effectiveness (PE)	0.717**	0.516**	0.769**	1			
Social Influence (SI)	0.702**	0.393**	0.633**	0.665**	1		
Facilitating Condition (FC)	0.648**	0.416**	0.690**	0.670**	0.539**	1	
Use (USE)	0.657**	0.494**	0.634**	0.672**	0.603**	0.653**	1

4-4) Regression analysis

Alreck and Settle (1995) noted that correlation analysis gauges only the degree to which two variables are related or tend to move together but there is no assumption that one is causing or affecting the other. Hence, in order to measure the degree and direction of influence of the independent variable on the dependent variable, the multiple regression analysis was also applied in this study. To this effect, the following equation is formulated i.e. *CBC Use = β1 perceived usefulness + β2 self-efficacy + β3 management effectiveness + β4 program effectiveness + β5 social influence + β6 facilitating conditions + ε.* Table 5 and 6 present the results of the multiple regression analysis. As shown in Table 5, R square recorded a value of 0.585, hence implying that 58.5% variance in CBC use can be explained by the combination of the independent variables which are facilitating conditions, self-efficacy, social influence, management effectiveness, perceived usefulness and program effectiveness.

Table 6: Model summary of regression analysis between independent variables and dependent variables

Model	R	R Square	Adjusted R Square	Standard Error of the estimate
1	0.765[a]	0.585	0.568	0.485

a. Predictors: (Constant), facilitating condition, self-efficacy, social influence, management effectiveness, perceived usefulness, program effectiveness

Upon further scrutiny of the results showed that, out of the six investigated independent variables, only three turned out to be influential in predicting CBS use. These variables were perceived usefulness (t = 2.074, p < 0.05), self-efficacy (t = 2.475, p < 0.05) and facilitating condition (t = 3.252, p < 0.05). The other three variables were found not to be significant predictors as the recorded p-values were greater than 0.05. Accordingly, based on the results, the equation is revised to *CBC Use = 0.209 perceived usefulness + 0.126 self-efficacy + 0.030 management effectiveness + 0.154 program effectiveness + 0.150 social influence + 0.281 facilitating conditions + 0.181* . Given these results, H1, H2 and H6 are supported while H3, H4 and H5 were not supported.

Table 7: Coefficient table for variables predicting CBC use

Model		Unstandardized coefficients		Standardized coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	0.181	0.265		0.684	0.495
	Perceived usefulness	0.209	0.101	0.187	2.074	0.040
	Self-efficacy	0.126	0.051	0.155	2.475	0.014
	Management effectiveness	0.030	0.085	0.034	0.359	0.720
	Program effectiveness	0.154	0.089	0.167	1.737	0.084
	Social influence	0.150	0.085	0.140	1.771	0.079
	Facilitating condition	0.281	0.086	0.256	3.252	0.001

Dependent variable: Use

5) DISCUSSION

The findings have showed that three variables namely perceived usefulness, self-efficacy and facilitating conditions were found to be influential in determining the CBC use which are consistent with those of Abdulwahab and Dahalin (2011) and Abu Hassan *et al.* (2011). The other remaining factors which are program effectiveness, management effectiveness and social influence were found to be insignificant predictors of CBC usage. In a CBC context, the most important service to the users is the Internet access. Users who come to the CBC have the options either to use the computer provided by the CBC or to use their own computer. Irrespective of the programs provided by the CBC or the performance of the staffs, the priority of the users is to get easy access to the Internet. On a similar note, the influence of friends or family members is also seen irrelevant because the main aim of most users of CBC is for getting easy Internet access. As long as the Internet could be easily accessed for long hours without any disruptions, the users would feel that the CBC is very useful as their needs are fulfilled. As majority of the respondents in this study was students aged between 7 and 18, their internet and computer skills could be better compared to the other age groups because ICT were taught in schools. Perhaps, due to this reason, respondents indicated that self-efficacy as important determinants of CBC use.

Another important factor revealed in this study, was the facilitating conditions. Simply defined, facilitating conditions are related to the adequate support provided by the CBC in the form of infrastructure and administration to the users for the purpose of using the CBC facilities. When the support of the CBC is favorable to them, for instance, the adequate number of computers and printers; the adequate number of chairs and tables; and the availability of skillful and helpful staff to assist them when needed; are all presents – these would help to improve

users' desire in using the CBC. Thus, the absence of the abovementioned support will not only drive away existing users but also hinder new users from coming to the CBC.

The findings of this study send a strong message to the authority concern on the services and facilities that must be provided by the CBC. Apart from providing adequate ICT facilities which are perceived as useful and needed by the community, the CBC must also conduct appropriate training to improve the ICT skills of the community. A more ICT literate community will certainly boost the usage of the CBC.

6) Conclusion

The conduct of this study has been to investigate factors that influence CBC use among rural community. To achieve the objectives, an empirical based framework consisting six independent variables which are perceived usefulness, self-efficacy, management effectiveness, program effectiveness, social influence and facilitating conditions; and one dependent variable i.e. CBC use has been developed. Based on the analyses of the collected data, only three variables were found to be relevant in determining CBC use. Specifically these variables were perceived usefulness, self-efficacy and facilitating conditions. While this study has only found three determinants of CBC usage, the developed framework can be further tested in other CBC settings. Thus researchers who are interested to further explore the topic may consider adopting the model to be tested in other telecentre or CBC settings. From the practical viewpoint, the instrument which had been developed in this study could be used by the CBC or telecentre to gauge their performance in terms of programs offered and management of the CBC itself. Just as in other study, this study is not without limitation. The first limitation is in terms of the number of participating CBC which was only one. Future study should consider employing more CBCs. In addition, besides using the survey research method, studies adopting qualitative or mixed method will provide richer and deeper understanding on factors that drive users towards using CBCs.

REFERENCES

Abdul Razak, N. 2009. Empowering the Rural Communities Via the Telecentres. European Journal of Social Sciences., 9(3): 423-432.

Abdulwahab, L and Z.M. Dahalin, 2011. Effectiveness of Telecentre Using a Model of Unified Theory of Acceptance and Use of Technology (UTAUT): Structural Equation Modeling Approach. Journal of Emerging Trends in Computing and Information Sciences., 2(9): 401-412.

Abu Hassan, M., B. Abu Samah, H.A.M. Shafrill, and J.L. De'Silva, 2011. Perceived Usefulness of ICT Usage among JKKK Members in Peninsular Malaysia. Asian Social Science., 7(10): 255-266.

Ajzen, I., 1991. The theory of planned behavior. Organization Behavior and Human Decision Processes., 50(2): 179–211.

Alreck, P.L., and R.B. Settle, 1995. The survey research handbook. 2nd Edition. Chicago Irwin.

Amat, S., (2009). Telecentre Development Program in Malaysia. Available online at http://www.unescap.org/idd/events/2009_RW-AP%20Knowledge-hubs/Presentation%20in%20PDF/Malaysia.pdf

Aziz, J. et al. 2009. Community Broadband: Towards Education for All. In the Proceedings of the 8th International Conference on Education and Educational Technology.

Badsar, M. et. Al, 2011. Predictor Factors of Telecentres Outcome from the Users Perspectives in Rural Communities. American Journal of Applied Sciences., 8(6): 617-627.

Bahaman, A.S., M.A. Hassan, N. Osman and M. Badsar, 2010. Information Communication Technologies (ICT) Projects? Telecentres and Rural Community Development. In the Proceedings of the International Conference on Sustainable Community Development in Malaysia, 20-22 July 2010, Putrajaya, Malaysia.

Bailey, A., 2009. Issues Affecting the Social Sustainability of Telecentres in Developing Contexts: A Field Study of Sixteen Telecentres in Jamaica., Elect. J. Inform. Syst. Dev. Countries, 4: 1-18.

Balduck, A., and M. Buelen, 2008. A Two Level Competing Values Framework to Measuring Nonprofit Organizational Effectiveness, Vleric Leuven Gent Working Paper Series. Available at http://www.vlerick.com/en/knowres/publications/working/9638-VLK.html

Bandura, A. 1977. Social Learning Theory Prentice-Hall, Englewood Cliffs, NJ.

Bashir, M.S. et al. 2011. Information and Communication Technology Development in Malaysia: Influence of Competency of Leaders, Location, Infrastructures and Quality of Services on Telecentre Success in Rural Communities of Malaysia. Australian Journal of Basic and Applied Sciences, 5(9): 1718-1728.

Booth, A., and D. Higgins, 1984. Human Service Planning and Evaluation for Hard Times. New York, Human Sciences Press.

Bryman, A., and D. Cramer, 2001. Quantitative data analysis with SPSS release 10 for Windows: A Guide for Social Scientist. New York, Routledge.

Colle, R.D., 2005. Memo to Telecentre Planners. The Electronic Journal on Information Systems in Developing Countries., 21(1): 1-13.

Compeau, D.R. and Higgins, C.A. 1995. Computer self-efficacy: Development of a Measure and Initial Test. MIS Quarterly., 19: 189–211.

D' Silva, J.L., Samah, B.A., Shaffril, H.A.M. and Abu Hassan, M. (2011). Factors That Influence Attitude Towards ICT Usage among Rural Community Leaders in Malaysia. Australian Journal of Basic and Applied Sciences, 4(10): 5214-5220

Daud, N.M., N.E.M Kassim, W.S.R. Wan Mohd Said, and M.M.M Noor, 2011. Determining Critical Success Factors of Mobile Banking Adoption in Malaysia. Australian Journal of Basic and Applied Sciences, 5(9): 252-265.

Davis, F.D. 1989. Perceived Usefulness, Perceive Ease of Use and User Acceptance of Information Technology. MIS Quarterly., 13(3), 319-340.

Fishbein, N., and I. Ajzen, (1975). Belief, Attitude, Intention and Behavior: An Introduction to Theory and Research. Reading, MA, Addison-Wesley.

Gómez, R. and Hunt, P. 1999. Guiding Principles of Telecentre Evaluation. Paper presented at the Telecentre Evaluation: A Global Perspective, Far Hills Inn, Quebec, Canada.

Gray, D.E. 2004. Doing Research in The Real World. London, Sage Publications.

Hedberg, L.J. 2010. Telecentre For Community Development Evaluation of the Tunjang Telecentre, Malaysia, Journal of Community Informatics, 6(2). Available online at http://ci-journal.net/index.php/ciej/article/view/412/601

Hu, P.J., C. Lin, and H. Chen, 2005. User Acceptance of Intelligence and Security Informatics Technology: A Study of COPLINK. Journal of the American Society for Information Science and Technology., 56(3): 235-244.

Ibrahim, Z. and S. Ainin, 2009. The Influence of Malaysian Telecentres on Community Building. Electronic Journal of e- Government., 7(1): 77-86.

Ibrahim, Z., A. Sulaiman, and T.M. Faziharudean, 2008. The Roles of Community Based Telecentres in Bridging the Digital Divide in Rural Malaysia. World Academy of Science, Engineering and Technology., 46: 352-364.

Illahi, A. and I. Manarvi, 2010. Understanding Attitudes Towards Computer Use In The Police Department of Pakistan. EJISDC., 42(1): 1-26.

Jeyaraj, A., J.W. Rottman, and M.C. Lacity, 2006. A review of predictors, linkages and biases in IT innovation adoption research. Journal of Information Technology., 21: 1–23.

Kivunike, F.N., L., Ekenberg, M. Danielson, and F.F Tusubira,. 2009. Examining Contextual Factors that Influence ICT Adoption in Rural Communities in Uganda. In the Proceedings of the IST-Africa 2009 Conference.

Malaysian Communication and Multimedia Commission (MCMC), 2009. The Broadband Push to Rural Communities - Award Ceremony for the Successful Universal Service Providers Tenderers. Available online at http://www.skmm.gov.my/index.php?c=public&v=art_view&art_id=294

Marakas, G.M., M.Y. Yi, and R.D. Johnson, 1998. The Multilevel and Multifaceted Character of Computer Self-Efficacy: Toward Clarification of the Construct and an Integrative Framework for Research. Information Systems Research., 9(2): 126-163.

Masrek, M.N. 2007. Measuring Campus Portal Effectiveness and The Contributing Factors. The Journal of Campus-Wide Information Systems., 24 (5): 342 – 354.

Masrek, M.N., N.S.A. Karim, and R. Hussein, 2008. The Effect of Organizational and Individual Characteristics on Corporate Intranet Utilizations. Information Management & Computer Security., 16(2): 89-112

Mphalele, M.E. and E.M. Maisela, 2003. Critical Success Factors in Telecentre Sustainability: A Case Study of Six Telecentres in the Limpopo Province. Communication., 29(182): 218-232.

Norizan, A.R., and A.M. Jalaluddin, 2008. Bridging Digital Divide in Malaysia: Cyber Learning for the Marginalized Community. In the Proceeding of the Distance Learning and the Internet Conference, 19-22nd November, 2008, Waseda University, Tokyo, Japan.

Nunnally, B.S. and I.H. Bernstein, 1994. Psychometric Theory. 3rd Edition. New York, McGraw-Hill.

Pick, J.B., and K. Gollakota, 2010. Technology of Rural Telecenters In India: A Model and Exploratory Study of Diffusion of Information For Telecenter Use and Sustainability. In the Proceedings of the Sixteenth America Conference on Information Systems, 12-15.

Royse, D., B.A. Thyer, D.K Padgett, and T.K. Logan, 2006. Program Evaluation: An Introduction. Wadsworth Publishing.

Safeena, R., H., Date, and A. Kammani, 2011. Internet Banking Adoption in an Emerging Economy: Indian Consumer's Perspective. International Arab Journal of e-Technology., 2(1): 56-64.

Sekaran, U. 2003. Research methods for business: a skill building approach. 4th Edition. Singapore, John Wiley and Sons.

Suki, M.N. and M.N. Suki, 2011. Exploring The Relationship Between Perceived Usefulness, Perceived Ease of Use, Perceived Enjoyment, Attitude and Subscribers' Intention Towards Using 3G Mobile Services. Journal of Information Technology Management., 22: 1-7.

Torkzadeh, G. and T.P. Van Dyke, 2001. Development and Validation of an Internet Self-efficacy Scale. Behaviour & Information Technology., 20(4): 275–280.

United Nation, 2007. Assessment of the Status of the Implementation and Use of ICT Access Points in Asia and the Pacific. United Nation: Economic and Social Commission For Asia and The Pacific. Available online at http://www.unescap.org/idd/kn/key_knowledge_products/TelecentresAsiaPacific.pdf

Venkatesh, V. and S. Brown, 2001. A Longitudinal Investigation of Personal Computers in Homes: Adoption Determinants and Emerging Challenges. MIS Quarterly., 25(1): 71-102.

Venkatesh, V. and F.D. Davis, 2000. A Theoretical Extension of the Technology Acceptance Model: Four Longitudinal Field Studies. Management Science., 46(2): 186-204.

Venkatesh, V., M. Morris, G. Davis, and F. Davis, 2003. User Acceptance of Information Technology: Toward a Unified View. MIS Quarterly., 27(3): 425-478.

Wong, C.C., and Hiew, P.L. 2005. Diffusion of Mobile Entertainment in Malaysia: Drivers and Barriers. Enformatika., 5: 263-266.

Yusof, N.I. 2010. The Influence of Community Characteristics Towards Telecentres Success. Computer and Information Science., 3(2): 116-120.