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Impact of Individual Characteristics and Telecenter Success in Malaysia

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Abstract: Information and Communication Technology is an important impetus for rural development nowadays. Parallel with this, the Malaysian government has introduced rural telecenter known as Pusat Internet Desa which in English called Rural Internet Center for the purpose of developing the rural community. To ensure its success and its objectives fulfilled, Rural Internet Center has offered a lot of benefits for its users such as developing computer and internet skills, increase their knowledge and widening their networking, but do the rural community utilize the services provided in the telecenter, if yes, are the individual Characteristics such as age, education and computer skills do influence the success of this telecenter. This is a quantitative study where through a stratified random sampling a total of 138 respondents were selected and these selected respondents were the users of the telecenter. Results gained have proved that computer skill have a positive and significant relationship with telecenter success while age and education were detected to have no any significant relationship with telecenter success. It is recommended that number of computer training can be doubled while house to house training conducted by related agencies can be conducted.

Key words: Telecenter success, individual characteristics, rural development, rural community development.

INTRODUCTION

The use of information and communication technology (ICT) for rural community development has increased rapidly over the last two decades. Governments especially in developing countries are now using ICT as a strategy for bridging digital divide that exists between rural and urban Populate, and also for improving the living conditions of people in rural communities. In line with this, Dwyer, (2006) claims that ICT is now been used as an effective tool for minimizing the impact of rural isolation, improving health services, education, as well as public and private services to the rural communities.

Roa (2004) defined ICT as "the set of activities that facilitate to capture, storage, processing, transmission, and display of information by electronic means" (p.261). He further stated that ICT increases the opportunity of local communities by improving their access to information about market and minimize the cost of transaction for local famers and traders; improving efficiency; competitiveness and access to market for firms in developing countries; improving the capacity of developing nations to involve in the global economy and to exploit their comparative advantage; and by improving health and education.

However, telecentre appears to be one of fastest growing means of providing people access to ICT services. This was congruent with Rochild (2008) view that among the fastest growing strategies for providing ICT services to the rural communities is telecentres which provide subsidized and sometimes free public access to ICT. More people now have access to computer and internet as a result of these telecentres. Thus, telecentre is a place that provides people with access to internet and other ICT services such as telephone calls, fax services, computer training and computer typing, printing and so on. They also play tremendous roles in facilitating smooth flow of information and knowledge to the rural communities. According Noor and Ainin, (2005) they have now become a strategy for developing economic, political, and social life around the world.

A common problem with regards to telecentre projects is that, despite the existence of many literatures explaining these projects and providing explanations on how new projects can be executed; there is still lack of clear data explaining the reason for then success and failure of Rochild, (2008). However, on effect to provide the rural people witth services benefit of ICT governments in developing countries including Malaysia established information and communication centres popularly known as telecentres in their rural communities. For example, in India many telecentre projects were established in order to provide information, communication and other ICT services to the rural communities.

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Some of these projects include: village information shops, Gyandoot, Tarahaat projects, sustainable access in rural India (SARI) Network, and MS swamithan, and others. Similarly, in sub-Saharan African countries, Acacia projects were established with the aim of providing sub-Saharan communities with the ability to make use of ICT for their economic and social development.Acacia operates in Mozambique, Uganda, and South Africa (Harris, 2001).

However, in Malaysia the government has engaged in several nationwide programmes for provision of telecentres since the late 1990s in order to provide both rural and urban neglected areas with access to ICT services. In fact provision of ICT was among the top agenda in Malaysian vision 2020. The vision is aims at transforming the country into information by 2020. The ICT Progamme Components of vision include:

1. National Information Technology Agenda (NITA): This programme was launched in 1996 with the objective of providing information and knowledge for all Malaysian citizens. To achieve this; National IT Council (NITC) was assigned with the responsibility to oversee and develop NITA.
2. National Information Technology Council (NITC): This is an advisory body established to lead the use of ICT as a strategic technology for national development.The NITC is headed by the Prime Minister, and the other members include Cabinet Ministers, head of agencies, senior government officials, and leaders of selected private sectors.
3. Multimedia Super Corridor (MSC): This programme was launched in 1994 by the NITC with the aim of providing high speed infrastructure, popularly known as information super highway, to provide state of the art ICT applications and services.

Currently, the Ministry of Energy, Water and Communication (MEWC) and Ministry of rural and regional development (MRRD) are responsible for undertaking nationwide programmes to establish telecentres for shared access to ICT and community development. The two programmes are Pusat internet Desa (PID) runned by MEWC; and Medan InfoDesa (MID) operated by MRRD, (Harris, 2008).These e-community centres were established to create awareness and training to communities. The study therefore aims at identifying factors influencing telecentre success in rural communities in Malaysia with specific focus on Pusat Internet Desa (PIDs).

Measurement of Telecentre Success:

Measuring success or failure is a very difficult task because success or failure of a system is a matter of interpretation that can be changed over time (Jamieson *et al* 2005).The authors continued that measuring success in the area of information system has been a serious concern since its inception.ICT projects like telecentre is a particular example of information innovation that has been judged in the same way (Jamieson *et al* 2003). However, despite the difficulty in measuring success, efforts have been made by researchers in doing so. ONiel (2002) identified five major desirable outcomes of which can be used in measuring telecentre success. They are: revitalizing sense of community, enhancing social capital, empowering members of the community, enhancing strong democracy and providing economic opportunities. Harris (2001) used these outcome variables to evaluate telecentre projects in four Asian countries namely, Malaysia, India, Philippines and Mongolia.He however suggests that the desirable outcome should be determined by the users and also should be related to what the community wants to achieve. In this study the telecentre success is the dependent variable and was also measured through the desirable outcomes such as community needs met, empowering individuals, and providing better economic opportunities.

Community Needs Met:

One of the major purposes of tecentres is to satisfy the needs of the community. In order for a telecentre to be successful, it must serve the needs of the community in which they are established. According to Ariyabandu and Zengpei (2009), telecentres satisfies the needs of the communities by providing them with the information that enables them to meet their economic, political, and social needs. For Rochild, (2008) they serve as a community centre by not only providing people access to information using ICT,but enable them to discuss,share experience and involve in community activities.

Empowering Individuals:

Community empowerment is an important factor for telecentre success. According Yusop *et al*.(2010), empowering the communityis an essential factor that ensures success and sustainability of the telecentres.

Therefore, it has been suggested that telecentres should be used to empower the rural communities so that education, health awareness, training, and access to job opportunities can be improved (Norizan, 2009).

According to Mahmood (2005), telecentres encourage and empower communities to manage their own development by providing them with appropriate training facilities, resources, and services.

Providing Better Economic Opportunities:

Telecentres are set up to empower communities to access and utilize information to improve their economic and social well-being (Harris, 2005).According to Roa (2004) they provide rural people with skills through the knowledge they contribute and also offers employment to community members who are qualified. Also, Perceived job opportunities increase the usage of telecentres (Arlene and Ojalanki, 2009). Because of the job opportunities they provide,telcentres become a source for hunting jobs by youths and other community members (Ariyabandu and Zengpei, 2009). The people always go to the centres especially the youths to search for jobs online. Therefore, providing better economic opportunities will increase usage and activities and finally lead to the telecentre success.

Individual Characteristics:

Individual factors such as age, education, and computer skills are also important factors which according to literature influence telecentre success

Age:

The age of users of telecentre is an important variable which can influence telecentre success. Many studies showed that the active users of telecentres are younger people. According to Proenza J. (2001), young people and children adopt the technology more rapidly than the adult. In fact, he claimed that countries with younger population have potentially large market for telecentres. Norizan (2009) observed that in successful telecentres the active users are between the ages of 15-25.Noor and Ainn (2005) in their study "Domestic computer usage and activities west Coast, in Malaysia", stated that majority (more than three quarter) of the users were between 20 to 34 years of age.

Education:

The level of education of users is also an important factor that determines success, because without education it will be difficult or even impossible for users to get access and explore information in the online resources.According to Arline and Ojelanki(2009), high level of illiteracy identified to be the major reasons why many telecentres in developing countries cannot achieve their objectives. Similarly, Islam and Hassan observed that illiteracy is one of the major problems of telecentres in rural areas of India.Lee (2009) argued that providing people who are illiterate with internet is useless even if it is free.This is because according to Ngwengam *et al*, people with inappropriate education cannot operate and enjoy the benefit of online resources. Wole (2009) found level of education as a significant factor that determines the capability of using ICT.He Further stated that the higher the level of income and education, the greater the access to internet.

Computer Skills:

This also a critical factor to the success of the telecentre. Without computer skill utilization of computers and other online resources such as internet cannot be possible.People require certain skills before they can be able to access and utilize computer and internet to access and enjoy the benefit of online resources.According to Alexender (2005), basic literacy skills in computer are required in order to utilize computer to search, choose, process and apply information and understand the economic, political, social and ethical issues about the information.It has been observed that location of telecentres in place where majority of the residents have digital and computer literacy determine the potential market of the telecentre and chances for the telecentre be patronized and survived economically(Cole D, 2005).

Islam and Hassan (2009) in their study found that lack of computer skill is one among the major problem of ICT in rural areas in Bangladesh. Most of the people are not computer literate as a result they cannot operate computer to search and enjoy the benefit of telecentre services.

Rodrigo *et al*, (2007) also in their study title "problem faced by telecentre users in Mexico" observe that the telecentre users are digitally illiterate in three skills; as a result they lack ability to navigate through a nonlinear to search for needed information, analyze and synthesize the information retrieved and the ability to examine the quality of the information.

MATERIALS AND METHOD

Population and Sample:

The population of the study involved individuals at 11 selected community telecentre called Pusat Internet Desa (PIDs) in Peninsular Malaysia. Stratified random sampling was used in determining the sample size of the study. In the first stage of the sampling, the Peninsular Malaysia was divided into four zones, north, south, west, and east coast. Then one state was randomly selected from each zone to represent the zones. In Northern zone, Kedah was selected, in Central zone, Perak, in Southern zone, Johor and in East coast, Terengganu. Each of the four selected states has three PIDs with the exception of Terengganu with only two (Table 1).

Table 1: Shows the name of the selected states and their PIDs.

Zone	State	Name of PIDs
Northern	Kedah	PID Yan, PID Kuala Nerang, and PID Bukit Kayu Hitam
Central	Perak	PID Langkap, PID Tanjung Malim,and PID Parit
Southern	Johor	PID Sungai Mati, PID Pagoh, PID Labis
East Coast	Terengganu	PIDMarang and PID Kuala Besut

Source: www.pid.net.my

However, in the second stage of the sampling, G. Power Software was used to determine the sample of the study. The reason is that the PIDs do not keep the records of their users; as a result the total population of the users cannot be obtained. Based on the G. power result, the sample size was 138. Finally, about 12 people were ranclornly selected from each of the PIDs.

Pre -Test:

Apre-test was conducted during the first week of October, 2010 before the actual distribution of the questionnaire to the respondents.The pre-test was conducted using 30 respondents in other to ensure reliability of the instruments. Following the pre-testing, vague, invalid, and poorly structured questions were removed and structured in order to make it clear and understandable. Cronbach's alpha was used in testing the reliability of the instruments. Alpha values and numbers of items are presented in Table 2. The result of the Cronbach's Alpha test in Table 2 met the requirement of 0.70 Cronbach's Alpha value for reliability. According to Sekaran (2003) the minimum requirement for Cronbach's alpha value that is accepted is .06

Table 2: Cronbach's Alpha Reliability Test Result.

Variables	No of Item	Alpha
Competency of leaders	14	0.951
Telecentre characteristic	17	0.706
Information characteristic	9	0.884
Individual characteristic	11	0.924
Community characteristic	8	0.877
Telecentre success	12	0.932

Data Collection:

The procedure for data collection for this study was cross-sectional survey design. Data was collected using self-administered questionnaires.The advantages of using questionnaire was that itis objective in the sense that the views of the respondents are obtained without bias; secondly, it is relatively faster in obtaining information, and potential information can be obtained from a bigger portion of a group and it guarantees confidentiality and produce more valid responses from the respondents than personal interviews (Ary *et al*. 1990).

Statistical Analyses:

The data collected was analyzed using SPSS package.Both descriptive and inferential statistics such as frequency, percentage, mean, standard deviation, Pearson product-moment correlation, and multiple linear regreesion (stepwise method) were performed to fulfill the objective determined.

Results:

Demographic of the Respondents:

This section of the research presents a general profile of the respondents' demographic statistics on age, gender, level of education, occupation, and income of the respondents which are shown in Table 3.

Age and Gender:

Table 3 showed the demographic background of the respondents. A total of 138 people were chosen as respondents (sample) of the study. The age of the respondents ranged from 16 to 5 years old (Mean = 27.8 and SD =10.6). About 51.4 % of the respondents were in the group of 16 to 25 years while 7.2% were in the group of more than 45 years. However, the gender proportion seems to be balanced whereby the female respondents outnumbered the male respondents by only 8.6% and accounted 54.3% and the male constitued 45.7% of the total population.

Education and Occupation:

In terms of level of education, most of the respondents that is 40.6% studied up to SPM level (Malaysian Certificate of Education), while 23.9% obtained diploma certificate, 16.7% studied up to STPM (Malaysian Higher Certificate) level and 13.8% studied up to Degree level. However, 4.3% of the respondents obtained PMR (Lower secondary Assignment) and only 0.7% of the respondents had Primary School Certificate.

For occupation, 31.2% of the respondents were students. This is because they use the centre for academic and social activities. Then 24.6% of the respondents were self- employed, while 20.3% work with government and 15.2% of the respondents work with private sector. Other occupations were 8.7%. This indicated that the level of employment in the study areas was high (Table 3).

Income:

In terms of socio- economic background, the income of the respondents ranged from RM 0 to RM 4500 (mean = 1048.6 and SD = 912.5). Most of the respondents (43.5%) of the respondents earned income below RM 500, while only 7.2% of the respondents earned income more than RM2500 (Table 3).

Table 3: Demographic of Respondents.

Variable	Freq	%	Mean	SD
Age			27.8	10.6
16 - 25	71	51.4		
26 - 35	40	29		
36 - 45	17	12.4		
> 45	10	7.2		
Monthly Income (RM)			1048.6	912.4
> 500	60	43.5		
501 - 1500	47	34.1		
1501 - 2000	14	10.1		
2001 - 2500	7	5.1		
> 2500	10	7.2		

Table 4: Demography of Respondents by Gender, level of Education and Occupation.

Variables	Freq	Percent
	Gender	
Male	63	45.7
Female	75	54.3
	Level of Education	
Primary school	1	0.7
PMR	6	4.3
SPM	56	40.6
STPM	23	16.7
Diploma	33	23.9
Degree	19	13.8
	Occupation	
Student	43	31.2
Government worker	28	20.3
Working with private sector.	21	15.2
Self employed	34	24.6
Others	12	8.7

Level of Telecentre Success:

The level of Telecentre success was measured in terms of desirable outcomes benefit by users such as community needs met, empowering individuals, and providing better economic opportunities. A total of 13 items were asked. Each item was measured using 5- point likert scale ranging from 1 = (strongly disagree), 2 = (disagree), 3= (neutral), 4 = (agree), and 5 = (strongly agree).

The first domain was community needs met which refers to the level of users' needs fulfilled by the Telecentre. However, most of the respondents agreed with the seven items used to measure the community needs met. For instance, for item "save time in personal transaction", 79% of the respondents had agreed and strongly agreed with this item, while for item "Find a mate, make new and maintain old friends", 80.5% had agreed and strongly agreed with this item. Meanwhile, for item "Encouraging information sharing", about 90% of the respondents had agreed and strongly agreed with this item. This showed that the telecenter satisfy the needs of the community.

The second domain was empowering individuals, which refers to the level of empowerment gained by the respondents from the telecenter. For item "Improve work related skills", about 88% of the respondents had agreed and strongly agreed with this item. Also for item "Improve skills to get job", 89% had agreed and strongly agreed with this item. However, for item "Keep better informed" 85% of the respondents agreed and strongly agreed with this item. This showed that the respondents were empowered by the telecenter.

The third domain was providing better economic opportunities. Most of the respondents also agreed with the three items used for the measurement of this item. For example, for item "Find employment/job", 83.3% of the respondents had agreed and strongly agreed with this item. Also for item "increase level of income in community" 76.1% had agreed and strongly agreed with this item. Moreover, for item "Increase earning from farms or business", about 64% of the respondents had agreed and strongly agreed with this item. Therefore, this also showed that the telecenter provide better economic opportunities to the respondents (Table 4).

Table 4: Distribution of Respondents bu items of telecenter Success.

ITEMs	1	2	3	4	5
		Community Needs Met			
Connect with employers' office	-	2.9	26.8	44.2	26.1
Save time in personal transaction	-	1.4	19.6	42	37
Make personal purchase online.	-	2.2	20.3	39.1	38.4
Find a mate, make new and maintain old friends.	-	3.6	15.9	43.5	37
Encourage information sharing.	-	1.4	8.7	47.1	42.8
Involvement in entertainment.	-	2.2	19.5	37	41.3
		Empowering Individuals			
Improve work related skill	-	0.7	11.6	48.6	39.1
Improve skills to get jobs	-	0.7	10.9	48.6	39.9
Keep better informed	-	0.7	14.5	42.8	42
		Providing better economic opportunities.			
Find employment/job creation.	-	0.7	15.9	44.2	39.2
Increase level of income in community (through improvement in agricultural production).	-	0.7	23.2	46.4	29.7
Increase income from farm or businesses.	-	3.6	33.3	37.7	25.4

However, in order to determine the level of telecenter success, the scores of the five points scale were summed up and categorized into: low, moderate and high. Table 18 showed the level of telecenter success.

As shown in the Table 5 below, most of the respondents, 81.2% had indicated of telecenter indicated high level successwhile 18.8% had indicated the moderate level of success and none of the respondents low level of telecenter success. This means that the telecenter met the needs of the communities, empowered individuals and providing better economic opportunities. The high level of the telecenter success may not be unconnected to the competency of leaders, community needs, appropriate infrastructures in the centre, community participation, and high level of computer skill of the respondents.

Table 23: Level of telecenter Success.

Level	Freq	Percent	Mean	SD
Low (1 - 2.33)	-	-	4.1	.56
Moderate (2.34 - 3.66)	26	18.8		
High (3.67 - 5)	112	81.2		

Level Ofcomputer Skills:

The level of computer skills was measured using 11 instruments whereby the respondents were asked to respond to series of statements based on five-Points liker t scale, ranging from 1= (uncomfortable) 2 = (somewhat uncomfortable) 3 = (somewhat comfortable) 4 = (comfortable) and 5= (Very comfortable).

As shown in the Table 6, most of the respondents can operate computer very comfortably. For stances, for item "Turn on computer", 63% of the respondents indicated that they can turn on computer very comfortably.

For item "Connecting to internet services", 67.4% of the respondents indicated that they can connect to the internet "very comfortably", while for item "opening web page", 59.4% of the respondents also indicated that they can open the web page very comfortably. However, for item "use a search engine to locate information on internet 52.9% of the respondents indicated that they can use the search engine very comfortably while, 56.5% of the respondents indicated that they can communicate through Email, messenger and chat very comfortably. This showed that majority of the respondents in the study areas have the basic skills to operate computer and internet very comfortably.

Table 16: Distribution of Respondents by items of Perception towards Computer Skills.

Variables	1	2	3	4	5
Turn on your computer	-	0.7	9.5	26.8	63
Identify the make and model of your of computer.	0.7	2.2	23.2	39.9	34
Restart your computer when lock up.	8	8	28.2	32.6	23.2
Safely turn off your computer.	0.7	1.4	5.9	32.6	59.4
Connect to an internet services.	-	1.4	4.3	26.9	67.4
Open a web page.	0.7	2.9	8	29	59.4
Move forward and backward in the web pages.	2.2	2.9	17.4	33.3	44.2
Create a book a bookmark or save a favorites web page.	2.2	5.9	10.9	31.4	49.6
Use search engine to locate information on the internet.	2.2	4.3	13.8	26.8	52.9
Communicate through email, yahoo messanger and chat.	-	3.6	11.6	28.3	56.5
Working with word processing and power point.	0.7	5.8	15.2	31.2	47.1

However, the scores for the computer skill was summed up and categorized into low, moderate, and high in order to determine the level of computer skill of the respondents. Most of the respondents that is 84.8% had high level of computer skill while 13% had moderate level of computer skill, and only 2.2% of the respondents had low level of computer skill. This showed that the level of computer skills of the respondents in the study area was high. They can operate computer and use internet very comfortably (Table 7).

Table 17: Level of Computer Skills of the Respondents.

Level	Freq	Percent	Mean	SD
Low (1 - 2.33)	3	2.2	4.2	0.7
Moderate (2.34 - 3.66)	18	13.0		
High (3.67 - 5)	177	84.8		

Correlation Between Individual Characteristics and telecenter Success:

This paper next focus is to determine the relationship between individual characteristics (such as age, education, and computer skill) and telecenter success. In relation to this, the following hypotheses were postulated.

H1:

There is positive relationship between age and telecenter success.

H2:

There is positive relationship between education and telecenter success.

H3:

There is positive relationship between computer skills and telecenter success.

1. Age:

The findings of the analysis revealed that the relationship between the age of the respondents and PID success was not significant (r =.-0.101, p=.230). The r value indicates that the relationship was very weak and negligible. However, the reason for the insignificant relationship between age and telecenter success was because the age variation among the age categories of the respondent was very small. However, Ismail (2000) in similar study "Factors influencing usage of internet" also found that there was no relationship between age and internet usage.

2. Education:

The analyses had revealed that there was no relationship between the level education of the respondents and telecenter success (r = .030, p =.729). This means that education of the respondents do not have significant

influence on telecenter success in the anatinus finely. This reason is that despite their low level of education in the study area, majority of the respondents had high level of computer skills. So they can operate computer and other facilities in centre and access internet very effectively.

3. Computer Skills:

The study found that the relationship between computer skills and telecenter success was positive and significant (r = .256, p = .002). This means that as the level of computer skills of the respondents' increases, the level of telecenter success will also increase. Hence, the hypothesis 3 was supported.

Table 8: Correlation Coefficient between individual characteristics and telecenter success.

Variables	r	P
Age	-.0101	.230
Education	.030	.729
Computer Skills	.256	.002

Conclusion:

The result of Pearson correlation also showed that there was a significant positive relationship between computer skills and telecenter success, and a negative and not significant relationship between age and telecenter success. The spearman Rho correlation also revealed that there was a positive and not significant relationship between education and telecenter success. Therefore, Hypotheses 1 and 2 were rejected, while hypothesis 3 was supported

The PIDs achieved high level of success, meaning that the majority of the respondents achieved desirable outcomes from the telecenter. For community needs met, majority of the respondents indicated that the telecenter connect them with their employers, enable them to make personal purchase on line, maintain old friends and make new ones, and involve in entertainment. For empowering individuals, majority of the respondents indicated that the telecenter improved their work related skills, improved their skills to get jobs and keep better informed. However, for providing better economic opportunities, majority of the respondents also indicated that the telecenter created job opportunities, increased the level of their income, and increased their earnings from farms and businesses. The reason for the high level of the telecenter success was associated with high level of competency of leaders, high level of local and relevant content, and high level of computer skills of the respondents, community needs met by the centre, availability of infrastructure and community participation.

Majority of the respondents in the study areas have high levels of computer skills. They have the basic skills to operate computer such as to put on and off the computer, restart the computer when blocked off, connect to internet, open web pages, move forward and back through web pages, create a book or save favorite web pages, use search engine to locate information on internet, communicate through online, use word processor and power point presentation.

Recommendation:

Based on the results gained, it can be recommended that a computer trainings and courses can be doubled at the Telecenter as this variable has a significant and positive relationship with telecenter success. Moreover, house to house computer training can be conducted, where officers from related agencies can be assigned to a selected villager's house for teaching computer skills. Off course, this kind of training must be persistent and continuous

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