

**THE ROLES OF A UNIVERSITY IN SUSTAINING TELECENTRE
IMPLEMENTATION:
The Case of Kg. Oran, Perlis**

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The Researchers

ABSTRACT

This report is based on a case study of a typical rural village in Malaysia, Kampong Oran in Perlis, with the aim to present and propose numerous roles that can be effectively deployed by institutions of higher learning to the rural areas as part of the initiative to bridge the digital divide. This effort can also be seen as a social responsibility coming from academic institutions in extending their knowledge and expertise to reach the underserved communities in the rural and remote areas of the country, in line with the government's Rural Transformation Program that was launched recently. The idea is to bring the experts and knowledgeable people as well as students in numerous disciplines to be within reach of the less educated, largely poor and less fortunate community using information, communication and technology as a platform. The advent of ICT and pervasiveness of the internet has made it possible for rural communities, including Kampong Oran, to reap the benefits of the information explosion. This is made possible through the implementation of a telecentre within the vicinity of a local mosque, a place of worship and congregations of the largely Malay community in the area. However, despite the ICT access and opportunity to gain information, due to over-abundance of information readily available, it is difficult to fine-tune and focus those information that are of interest to the community. This has made the tasks of getting the IHL support to match against the interests of the community even harder. Therefore the case study in which this report is based on was conducted to identify the community requirements in their implementation of the telecentre, to identify the roles of the IHL in order to make the matching possible, and ultimately to propose a model of IHL collaboration vis-à-vis implementation of the telecentre. Methods of data gathering included the administration of questionnaires in the form of surveys to members of the community by means of a purposive sampling in a community gathering event commemorating an ICT Open Day. Apart from this, interviews were also conducted to members of the village management committee, mosque community, and selected individuals representing members of the community. Students were also deployed to assist the researchers as informants and formed part of their course project. The purpose is to identify the community profile and demography, ICT knowledge and skills, requirements of the telecentre, as well as the community's information needs. On the roles of the IHL, series of brainstorming sessions were conducted amongst the members of the research team, ITU-UUM officials and fellows to identify the strengths and domain areas of UUM. The intention is to propose the types of info-mediation, content development, and value creation that can be applied to benefit the community of Kampong Oran based on their information needs. In terms of information needs, results of this study found that the top five most popular information needs identified by the community are Education, Healthcare, Current News/Sports, Religion, and Information Sources. A model of IHL Collaboration in Telecentre Implementation was created to represent the interplay between the roles of the IHLs and the community information needs through the implementation of the telecentre. It is the hope that this model would contribute to other similar rural communities in the country that is in need of intellectual engagement in terms of advisory services, local content development, and socio-economic value creation that would enable ever-lasting sustainability of their existing telecentre.

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CHAPTER ONE

INTRODUCTION

1.0 Background of Study

Telecentre (TC) in general is a public place where people can access computers, the Internet and other digital technologies that enable them to gather information, create, learn and communicate with others. According to EPU (2007), TC is referred as a one-stop centre that provides ICT resources to the public access, dissemination of information and knowledge and e-government services, e-banking, e-health and others to improve the socio-economic status of targeted local communities (EPU, 2007). It is also a community-based effort to provide computer access and training to underserved populations that would otherwise do not have such access. Currently there are different types of telecentre. These include Community Broadband Centres (CBC), Community Broadband Libraries (CBL), Pusat Internet Desa (PID), SchoolNet, Medan InfoDesa (MID) and Kedai.Com. The different models are attributed to different planning and implementation policies of the responsible government agencies.

Today, the number of telecentres in Malaysia are more than 2000 and the number is expected to grow year by year. This phenomenal growth of telecentres might arouse to the issue of sustainability, particularly with the indication that the government will cease funding by 2010. A finding from a study on telecentre sustainability by Zulkhairi et al. (2008) indicates that only 22.0% managed to generate sufficient income to continue their operations. A strategic collaboration from various entities could possibly resolve the issue of sustainability.

Sustainability of telecenters can be achieved through participation and or collaboration with Higher education of institutions (IHLs) or a university. The IHLs can become practically involved in ICT by incubating telecentre, which are part of the worldwide ICT4D movement (Colle, 2005). Telecentre can function in at least three ways for universities:

1. Becoming a center where university can share and widen the knowledge and learning resources to other people including the communities. This includes

translating, adapting, localizing and re-packaging information from external sources to fit the agronomic and cultural characteristics of those local communities.

2. Becoming a centre or where faculty and researchers can practically carry out ICT and extension-related research and development (R&D) projects especially involving ICT awareness and Bridging Digital Divide.
3. Becoming a learning environment for students, as telecentre volunteers, to gain practical experience in helping people in the community including applying knowledge of information and communication technologies to challenges in their daily living. Students' projects or industrial trainings can be attached to varieties of ICT related projects for rural ICT development.

Roman & Colle (2002) have included that (i) community partnerships and participation, and (ii) community relevance as another important dimension in creating a successful implementation of telecentre. As similar to the implementation of information system in organization where user participation ensures the success of information systems, the success of the implementation of telecentre is also influenced by the community participation (Harris et. al, 2007; Wan Rozaini, 2008). Community participation is often not taken into consideration in the planning and implementation of the initiative beyond the basic support. Thus, it is assumed that the communities have the same level of IT knowledge and the needs of all communities are also the same that is only one model needed to suit all.

1.1 Problem Statement

ITU-UUM and The Needs for a Telecenter in Perlis.

International Telecommunication Union (ITU) together with the Government of Malaysia has given the mandate to UUM to set up the ITU Asia Pacific Centre of Excellence UUM Node for Rural ICT Development in 2007. ITU-UUM has carried out training programmes to executives and policy makers in the Asia Pacific, as well as helps train the local communities. Being a centre of excellence for rural ICT development and with its location in the northern Malaysia, ITU-UUM is viewed as the right entity to play a role in the planning and implementation of a telecentre in Perlis.

On this account, there is a room for a university and a community to engage in a strategic collaboration and partnership in creating a successful implementation of a telecentre. An implementation model of for such collaboration will be helpful to guide the planning and implementation of telecentre. A study therefore needs to be carried out to explore into depth the requirements from the community and the roles to be met by UUM in general and ITU-UUM in particular.

Background of Kg. Oran

Kg. Oran is one of the villages situated in the district of Mata Ayer in the state of Perlis. Perlis is a state which is situated in northern most region of Peninsular Malaysia bordering Thailand, (Figure 1). The distance from Mata Ayer to the capital of Perlis (Kangar) is around 10 kilometer. The distance of Kg Oran from Universiti Utara Malaysia is around 25 kilometer. Perlis can be categorized as among the less developed states in Malaysia. but astonishly, it is among the states with highest internet penetration rate.

The high internet penetration in the state can be exemplified at the community level through the implementation of a community center at Masjid As Syakirin in Kg Oran. This report is based on research conducted at the community center in the month of April 2011.



Figure 1: Map of Perlis

Background of Masjid As Syakirin

The composition of community that consist of 95% Muslim has naturally made the mosque as the community centre. Throughout the years, this mosque have conducted few activities such as foster family program with Universiti Malaysia Perlis, youth event (football match, telematch), on top other religious activities.

In addition to the activities mentioned above, the proximity of this mosque to the primary school have made it as the main venue for most of the school activities. This mosque also have a primary tuition centre to the primary school childrens in the community. The community is composed of 95.0% Muslim. The mosque, as typical mosques in rural region in Malaysia, has been the centre of attraction for community gathering particularly with active involvement of mosque committee in encouraging public congregation.

Masjid As-Syakirin in Mata Ayer is surrounded by nine villages while the mosque acts as the centre to the whole community. These villages are Belukar, Hutan Lembah, Hutan Palas, Hutan Temin, Kersik, Oran, Gate, Simpang Geti and Sungai Mati. Majority of these villages were surrounded with paddy fields, making internet penetration a daunting task within the community. Figure 2 depicts the numbers of families in each of the nine villages. Approximately, 1,975 people were residing in this community, with 75% of the population age is above 15 years old. Among this 75% population are: 212 people (14%) with age ranging from 15 years to 20 years, 270 people (18%) which their ages lie between 21 and 30 years, 193 people (13%) between 31 and 40 years of age and 215 people (15%) accommodates between age of 41 and 50. This group is considered as active group within this population while 168 people (11%) comprising age between 51 and 60 and 123 people (9%) consists 61 and 70 old, the majority of these group members were considered less active while the remaining 105 people (6.3%) were categorized as non active.

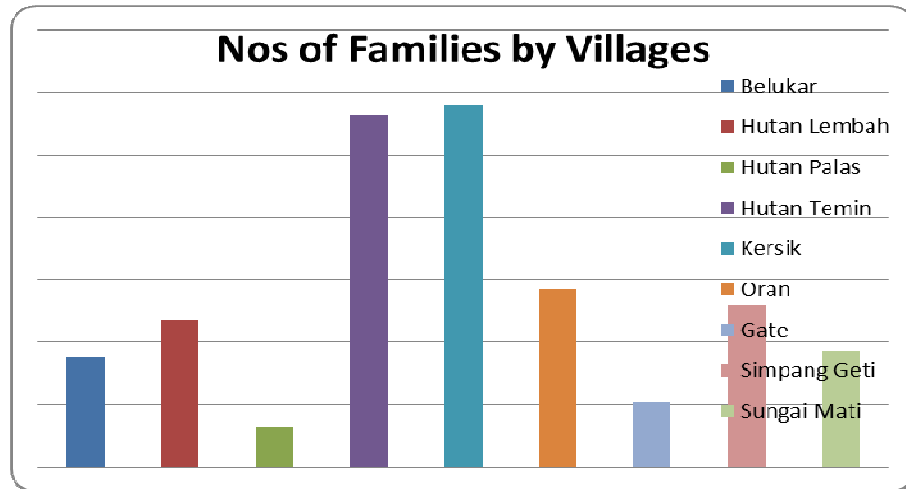


Figure 2: Number of families by villages

Establishment of the Community Internet Access Centre Masjid As-Syakirin (Pusat Akses Internet Komuniti Masjid As-Syakirin), Mata Ayer, Perlis

International Telecommunication Union (ITU) together with the Government of Malaysia has given the mandate to UUM to set up the ITU Asia Pacific Centre of Excellence UUM Node for Rural ICT Development in 2007. ITU-UUM has carried out training programmes to executives and policy makers in the Asia Pacific, as well as helps train the local communities. Being a centre of excellence for rural ICT development and with its location in the northern Malaysia, ITU-UUM is viewed as the right entity to play a role in the planning and implementation of a telecentre in Perlis.

As a Centre of Excellence based in Universiti Utara Malaysia, ITU-UUM will maximize the university's facilities in playing its role. As a strategy to ensure community participation, the community leaders will be consulted and visits will be made to discuss possible activities through collaboration between ITU-UUM and the community. Based on a survey that was conducted with the community in Kg. Kersik Hulu, Mata Ayer, Perlis by UUM in 2008, they are keen to have a telecentre. As prove of their support, the village committee has identified a suitable location for the construction of the telecenter. The picture of the proposed site is shown in Figure 3.

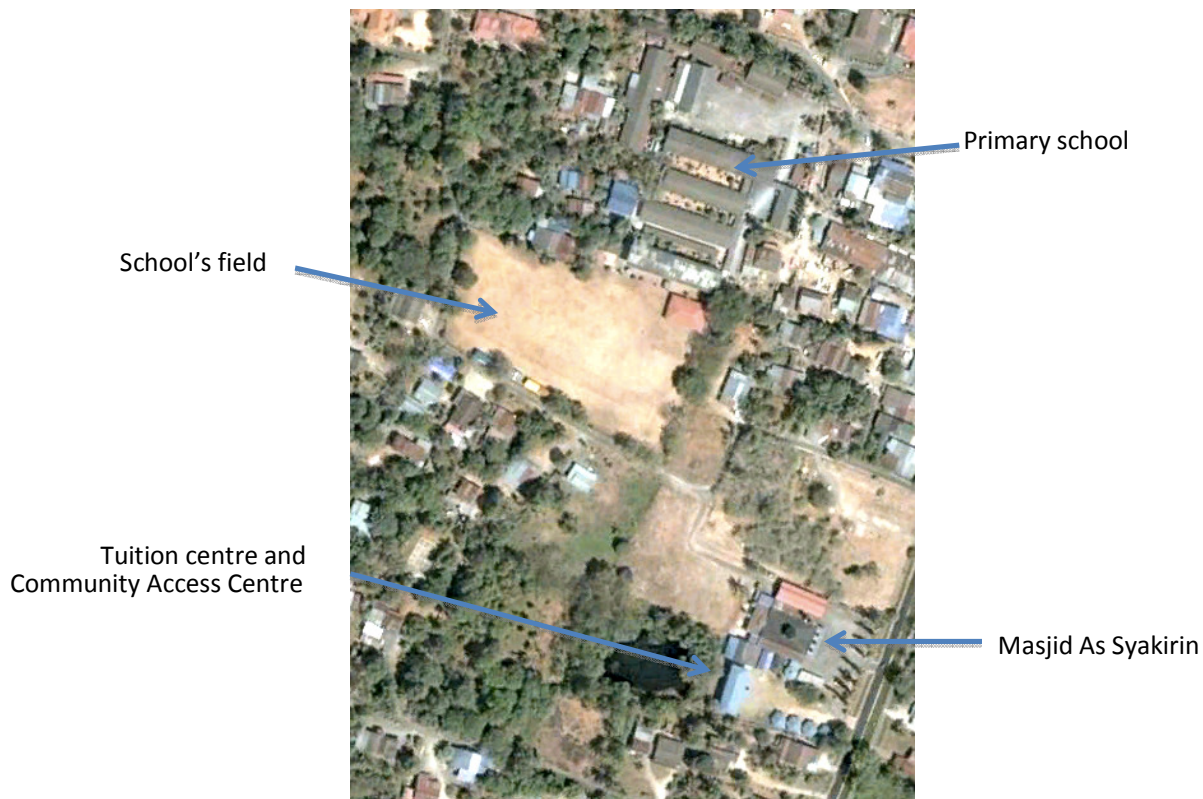


Figure 3: The Proposed Site

The proposed telecentre will provide broadband internet access for rural communities, promote the use of e-applications, provide training and education, job opportunities, and improve local economies to the community. The establishment of the telecentre will help the government to achieve the objective of reducing the digital gap between served and underserved communities. The telecentre does not only provide computers facilities with internet access but also will become a place for social and economic activities. Through telecentre, rural communities can communicate with each other and at the same time the center could provide business and economic opportunities through the Internet. Ultimately the local stakeholder of the telecentre (for example community leaders and telecentre owners) will be able to generate income for the communities through some telecenter-based operations and activities.

The centre is located within the Masjid As-Syakirin premise, and is named as Masjid As-Syakirin Community Internet Access Centre (Pusat Akses Internet Komuniti Masjid As-Syakirin). One of the benefit of having the centre near the mosque relates to the culture of the rural community who usually use it as their gathering place (attachment to the mosque). In

addition, proximity of the mosque to school as well as other places of meeting most of the time the village activities will be carried out at the mosque.

Initially the centre is equipped with five PCs that were purchased using the mosque's fund, while the internet access is provided by TM Bhd. and is sponsored by Malaysia Department of Islamic Development (JAKIM) at the bandwidth of 1 Mbps. Later, the ITU sponsors eight more PCs (refer to Figure 4) making it 13 altogether at the moment. Current analysis of the utilization of the centre is very encouraging where communities have been using the PCs until late of the evening. However, the users are mainly primary school children. They usually come to the centre to use internet applications such as Facebook, online games, and YouTube. At the moment, there is no formal program being organized for the community. Language has become a hindrance for the elderly to use the facilities in the centre in particular the internet. Each user is charged based on hour, RM1.00 for adult and 50 cents for children. The amount collected is used to support the operating costs of the centre. A part-time operator is appointed by the mosque ICT committee on voluntary basis to man the centre.

Within the vicinity of the mosque, there is a tuition centre for the primary school children, which operates during the weekend. The tuition centre, an initiative from the mosque committee, was set up to assist the local children as an extension to the school curriculum.

On this account, there is a room for a university and a community to engage in a strategic collaboration in creating a successful implementation of a telecentre. An implementation model for such collaboration will be helpful to guide the planning and implementation of telecentre. A study therefore needs to be carried out to explore into depth the requirements from the community and the roles to be met by UUM in general and ITU-UUM in particular.



Figure 4: Delivery of 8 PCs sponsored by ITU



Figure 5: The official launching of telenter

1.2 Objectives

This study embarks on the following objectives:

- 1) To identify the community requirements in an implementation of a telecenter in rural area
- 2) To assess the roles of IHL in an implementation of a telecenter in rural area
- 3) To propose a model of IHL collaboration in an implementation of a telecenter

1.3 Scope of Study

The scope of this study is the telecentre at Masjid As-Syakirin, Kg. Oran where data was gathered from the participants of the social event co-organized by ITU-UUM and Biro Pendidikan Masjid As-Syakirin on 2nd April 2011. Based on the data gathered from participants through questionnaires will be analyzed in order to indentify the community requirements in an implementation of a telecenter in rural area. The limitation of the study just to propose a model of telecenter implementation and IHL collaboration in implementing the telecenter for community requirements.

1.4 Methodology

A case study approach is considered in achieving the research objectives. The case study involved ITU-UUM as a center of excellence under UUM and the community of Kg. Oran, Perlis, as the community selected for a set up of a telecenter. Among the techniques used were interviews, and observations. The case study was carried out in three phases:

First phase: Investigate the community requirements in implementing telecenter.

A survey and interviews were conducted in order to gather the requirements. The interviews were based on structured questions. The questionnaires include profile of the community, current knowledge and skills in ICT among the community, community's needs for a telecenter, and the requirements to set up a telecenter.

Second phase: Assess the roles of IHL in an implementation of a telecenter.

Combined knowledge and experience (14 years on average) of researchers with IHL was used to assess the roles of IHL in the telecenter implementation. Series of brainstorming sessions were conducted to investigate the strength of the IHL and its potential contribution to the telecenter development. Knowledge of past researches carried out by the team were also incorporated to examine the various telecenter implementation models such as Community Broadband Center (CBC), Pusat Internet Desa (PID), Medan Info Desa (MID), NGO

telecenters, state government telecenters, privately owned telecenters, as well as overseas telecenters (Bangladesh and Thailand).

Third phase: Propose a model of IHL collaboration in an implementation of a telecenter

Information gathered from the first and second phases were applied in proposing a model of IHL Collaboration in Telecenter Implementation. The model serves as a guideline for IHL to contribute in the successful implementation towards a sustainable telecenter.

1.5 Organization of report

The report contains six chapters. Chapter One provides an introduction to the topic to be studied, problem statement, the research objectives, scope, and limitation of the study. Chapter Two offers a literature review related to telecenter which include the definitions, models, telecentre implementations, issues, and challenges. The roles of IHL in telecentre implementation are also described. The methodology applied in this study is described in Chapter Three. The findings are presented in Chapter Four. Chapter Five provides further discussion on the findings of the study and describes the IHL Collaboration in Telecenter Implementation Model proposed in this study. Chapter Six presents the conclusion and recommendation for future research.

CHAPTER TWO

LITERATURE REVIEW

This chapter provides reviews of related literature pertaining to this research. It begins with a description some of the commonly used definitions and concepts of telecenter, various models of telecenters established both in Malaysia and other countries, issues and challenges faced in telecenter implementaion, and the roles of Institute of Hiher Learning (IHL) in telecenter implementation.

2.0 Telecenter

Generally, a telecentre is a public place where people can access computers, the Internet, and other digital technologies that enable people to gather information, create, learn, and communicate with others. It is a generic concept which Roman and Colle (1999) refer to as “shared premises where the public can access information and communication technologies”. Most importantly, it provides access to Information and Communication Technologies (ICTs) for people who cannot afford to own their own. This is in-line with Masiero’s (2011) definition that states Telecenters (which are also referred to as e-centers, or e-kiosks) as physical centers whose purpose is to provide connectivity to the public through telephones, computers, the Internet and other devices related to ICTs.

There are two categories of Telecenters: (i) cyber cafés and (ii) multipurpose community telecenters. The former refers to telecenters that are built and run for profit, while the latter are community telecentres that aim at fostering development in local communities, through the provision of connectivity and access to ICTs. For multipurpose community telecenters, the location may vary depending on the purpose of the establishments such as religious centers and houses (Gaini et al., 2009). The success of these telecentres is commonly determined by the collaboration of private and public entities (also referred as private-public partnership model) (Naik et al., 2010). The private–public partnership model is suitable especially for developing countries where the operations of the telecenters cannot solely depend on the government due to lack of fund (Nampijja, 2010). This is crucial in supporting the roll out of the project, funding for various programs, and financing operating costs (Bailur, 2007).

While each telecenter is different, the common focus is on the use of digital technologies to support community, economic, educational, and social development; reducing isolation, bridging the digital divide, promoting health issues, and creating economic opportunities. Telecenters are often initiated by private or public business initiatives, which provide communities with information and telecommunication services, with the aim of achieving a variety of development objectives (Rao, 2008; Bishop & Bruce, 2005; Proenza, 2001). Bailey and Ngwenyama (2009) mentioned that Telecenters have been established in many countries as a means of providing access to information and communication technologies (ICTs) in order to enhance community development. One of the key objectives of telecenters in developing countries is the provision of access to ICTs to enable community and social developments (Gurstein, 2003).

2.1 Stakeholders of Telecenter

Telecentre is one of the projects in Information Communication Technology for Development (ICT4D) project that been developed to bridge digital divide between the urban and the rural people. The involvement of stakeholders is one of the indicators for a successful telecentre project (Bailur, 2007). Freeman (2004) defines stakeholders as “those group who are vital to the survival and success of the corporation” and he further acknowledges the trend in stakeholder philosophy by saying that “[In] the stakeholder recourse, Stakeholders may bring an action against the directors for failure to perform the required duty of care”. While Friedman (2006) states that the organization itself should be thought of as grouping of stakeholders and the purpose of the organization should be to manage their interest, needs and viewpoints.” In harmonizing these two definitions stakeholders interest seem to be constant and increasingly influencing how organisations perform, this assertion also applicable to management of telecentres.

The stakeholders can be from a big international organization to the single user or person in the community. As an example, in materializing the telecentre project, a few world's leading agencies such as UNESCO, World Bank, IDRC on top of the government organization (such as Communication Ministry) and privates agencies (Maxis, Telekom Malaysia, Celcom) can be the initiator investing in the roll out of the telecentre program. On top of the international organization, the local communities will also involve during the planning and the

implementation of a telecentre. Other stakeholders that can give impact to the telecentre are the main user group and main community figure that may have impact and the key player within the political context (Bailur, 2007). The involvement of government and private agencies at both international and national levels in programmes of similar interests to of the telecenters help to boost the development of the telecenter. Their participation is vital in providing support in terms of policy and regulation.

The cooperation among the stakeholders of a telecentre started from the planning phase of the telecentre (identifying needs and the expectation for the telecentre) (Whyte, 2000) until the evaluation of the telecentre (Bailur, 2007; Whyte, 2000). Stakeholders' perspectives from all level should be gathered as it is important to understand the issues (sustainability, impact, and best practice) in the telecentre program collectively (Bailur, 2007; Whyte, 2000; Nampijja, 2010).

Community is one of the key stakeholders of a telecentre. Community participation is crucial in creating a telecentre that reflects the community values and needs on top of creating sense of community ownership. It also can provide resources such as volunteers and technical experts (Bailur, 2007). A study on a few implementation of telecentre in Malaysia have shown that the successful telecentres have one same characteristic which is a strong commitment from the community including local champion and user (Ibrahim et al., 2008; Norizan, 2009; Zahurin et al., 2009; Nor Iadah, 2010). Furthermore, as part of the community, users also contribute to the success of a telecentre by actively involved in the programs planned by the operator/manager which later motivates the operator to have more training in the future (Norizan, 2009).

The next stakeholder, the telecenter personnels, plays important roles in managing and operating the telecentres and later assuring the successful of a telecentre. In addition, they also need to find or create training that will increase ICT literacy in the community (Bailey, 2009). This is evidenced from the award-winning telecentre of Simpang Empat, Perlis that shows strong relationship between the good personality and the willingness of the operators to the success of the telecentre (Norizan, 2009).

2.2 Telecenter Implementation in Malaysia

Telecentres help developing countries and rural areas to take advantage in expanding access to ICTs service, extending the reach of public services such as education, health and social services, providing information of general interest to the local community (including government information, and of special interest to specific groups such as farmers, local businesses and NGOs), and providing access to infrastructure, technology support and advice for the development of businesses. The establishment of rural telecenter in Malaysia aims to (a) ascertain the flow of information to local communities; (b) provide access to the Internet and delivering appropriate trainings on computer literacy; (c) increase computer application skills of local communities; and (d) stimulate economic and social activities among local communities (Norizan et al., 2010). These telecenters have successfully attracted local community's interest and marginalized communities to participate in e-inclusion activities and hence benefiting from the facilities provided in terms knowledge and socio-economy (Razak & Malek, 2008).

Among the successful factors of rural telecenter implementation in Malaysia are users' participation, strategic location, effective telecenter management and activities relevant to the community needs (Nor et al., 2010; Nor Iadah et al., 2010). In addition, Noor et al. (2010) indicated that the cooperation among multiple key stakeholders such as the government, managers and the communities is equally important for telecenter success.

2.3 Issues and challenges

For the past ten years, governments all over the world are continuously using information and communication technology (ICT), as one of the mediums, to develop rural areas. Supporting the government agencies, various efforts are taken by private sectors, universities, telecommunication providers, communities and even individuals, either collaborating or working alone, to upgrade ICT infrastructure, knowledge and skills in the rural areas. The investment made, also are practically viewed as initiatives to support the needs to bridge digital divide among the rural communities, particularly on those rural areas that are currently least affected by the latest advances in the 'digital revolution'. To further utilize on the advantages of ICT among rural communities in Malaysia, the rural ICT projects such as

Rural Internet Center (PID), Rural Info Center (MID), Community Broadband Centre (CBC) have been established nationwide in order to ensure that the rural communities will equally benefit from the ICT developments initiated in Malaysia.

The aspects of issues and challenges of ICT on rural community can be discussed from two perspectives. First, is the issues and challenges that drive to the needs and accessibility of ICT in rural areas. These issues, the pre-implementation components, relate to what rural communities have and do not have in meeting the very basic level or needs in bridging the digital divide at rural areas. The issues include insufficient of ICT facilities, utility services and high cost in rural areas, as well as lack of information such as basic knowledge and skills of ICT (Zulhairi et al., 2008; Alam et al., 2008). The second view is associated with the issues and challenges of post-implementation, that is where rural communities have encountered that after the basic facilities, knowledge and skills need to be provided to their villages and environment. These include issues to sustain rural community centres such as continuous enhancement of ICT programme, long-term financial support, an entrepreneurial programme that will draw business strategies, continuous promotion (Norizan & Mohamad Zaki, 2008; Supyan & Norizan, 2009; Huda et al., 2009; Zahurin et al., 2009; Nor Iadah et al., 2010; Huda et al., 2010). There are also other issues that are believed to have contributed to the continuity of ICT usage among rural community, including the attitude of communities leaders, suitability of local applications, as well as those relate to agricultural-based society. The following discusses these issues:

a) Attitude of Rural Community Leader and Committee

The success project of ICT centers such as Pusat Internet Desa, Medan Info Desa, Community Broadband Center and Community Broadband Library depend on internal and external factors. One of the internal success factors relate to the attitude of the rural community leader and the village committees. To encourage rural people to use ICT, the community leader and village committees must have positive attitude towards ICT usage (D'Silva et al., 2010). Community champions are valuable change agents, able to promote the value of ICT projects for rural capacity building. It is an advantage to the community if the leaders themselves not only can appreciate the benefits of ICT skills and knowledge to the community, but also able to use ICT on their own. The challenges normally occurred are

though the communities are very excited and motivated to use ICT through ICT centre or community centre, at the other point, stand the leaders who do not strongly support the projects. Leaders must be involved starting from the beginning of any ICT project for rural community. Local leadership champions should be identified and involved at every phase of a project (APEC, 2008).

b) Local applications

E-Government applications including G2G, G2B, G2C, B2B and B2C are a part of the government's means in developing knowledge-based society. In Malaysia, e-government applications such as myEG, education programme, internet banking are the examples of applications that really can benefit rural communities. The accessibility and usage of ICT facilities provided to rural communities will be more meaningful if they can relate their everyday life and activities through these applications. However, issues such as lack of IT professionals to design a good and more practical and suitable local contents, and inadequate support staff to guide and assist rural communities to use such applications could hinder the effort towards creating full knowledge society based in rural areas (Alam et al. 2008).

c) Agricultural-based society challenges

Agriculture has the ability to offer a big income if it is operated in the right way. To achieve this, the Malaysian government has constructed a number of strategies including cultivating ICT in agriculture. The economic activities of rural communities are closely related to agriculture and as more ICT are integrated to , there is a strong reason for rural communities to advance their ICT knowledge and skills associated to agricultural aspects. The issue here is whether the rural communities are ready to become agro-based entrepreneur using ICT? How much will they use ICT to contribute to their agricultural activities? According to previous study done by Md. Salleh et al. (2009), the level of ICT usage such as internet among Malaysian agro-based entrepreneurs is still at a low level. A number of factors are related to this. One factor is the willingness to change. Agriculture community prefers to use traditional ways instead of using ICT in their agro-business (Irfan et al. (2006) and Hayrol et al., 2009). They relied a lot on information provided by friends, and traditional mass media such as radio and newspaper.

The second issue is language. According to Deraman and Samsul (2000), language is one of the main problems faced by the agriculture community in using ICT. Majority of agro-based entrepreneurs in Malaysia nowadays are elderly and most of them have lower education achievement (Ezhar et al., 2008). Therefore, language becomes a barrier since most of ICT applications are in English.

Taking into consideration the strength of private-public partnership model of telecenter implementation, and the above-mentioned issues, there are evidences that some telecentres in Malaysia are moving towards social business model and network with other organizations as partners in training and economic activities” (Razak (2009) as cited in Noor (2010)). Such organization may include Institute of Higher Learnings (IHLs).

2.4 Roles of Institute of Higher Learning (IHL) in telecentre implementation

Traditionally, IHLs are known to carry out two basic functions, teaching and research. For the teaching function, IHL is expected to teach those who are going to fill up the professional and higher level jobs. While for the research function, the IHL is expected to carry out research that lead to solve the society problem and keep challenging the current status of knowledge. The current knowledge will continuously pass from a hand of IHL professors to their students from time to time. As the professors they are also carrying out research and keep discovering a new knowledge in their area and they will keep passing the updated knowledge to their students. And these students will come out from the IHL and serve the community with the relevant knowledge within their areas of studies. However, this traditional process of knowledge transfer is confine to the university setting and creates an elite group within the society. Within the current modern society, the role of IHL is expended beyond the fence of IHL itself especially when the society is accepting the idea of long life learning. The process of formal learning is not only assigned to certain age group but now it has been scattered across the board. As a result, within this new framework of long life education, IHL has a clear role to reach out to the society either directly or indirectly. One of them is through the initiative of telecentre.

IHLs can become practically involved in ICT by actively getting involved or collaborating in telecentre projects and programs (Colle, 2005) via the following mechanisms:

1. sharing and widening knowledge and learning resources to the communities. This includes translating, adapting, localizing and re-packaging information from external sources to fit the agronomic and cultural characteristics of those local communities.
2. carrying out ICT related research and development (R&D) projects in bridging digital divide.
3. providing students as telecentre volunteers in helping the locals while gaining practical working experience such as applying ICT in their daily living. Students' projects or industrial trainings can be attached to varieties of ICT related projects for rural ICT development.

As the Telecenters are access points for ICT and internet to the communities at the rural and urban, collaborations between IHL and Telecenter will be a good start to ensure democratization of education can be realized. As highlighted by Harris (2007 (b)), most of the problems faced by rural and marginalized communities are isolation, inadequate infrastructure, limited economic activities and limited opportunities for lifelong learning. The collaboration of IHL in Telecenter programs will support Telecenter' role in enabling shared access; reducing the isolation due to geographical areas, increase knowledge and awareness on current issues and assist development of socio-economic activities (Norizan, 2008). The collaboration between IHL and the Telecenter will further reduce the challenges in development of skills and learning contents.

Some possible models of IHL and Telcentre collaborations are as following (Norizan, 2007; Harris 2007(a)):

- a. University-based Telecenter: The Telecenter is physically housed in a university facility, and where ICT resources can be shared under suitable arrangements with people outside the university. This model has been successful in association with lower level schools of World Bank projects.
- b. A university-administered community-based Telecenter: The Telecenter becomes an outreach or extension center apart from the institution's main campus. This model was used as an incubation strategy in South India but has not otherwise been widely exploited.

c. A university-supported arrangement: The university provides continuous services and assists a Telecenter that is owned and operated by a community entity such a local governmental body, or a non-governmental body like a cooperative and university supported commercial cybercafés.

These three models would help the IHL to execute better the training courses for the community, as well as the underserved and marginalized group.

2.5 Summary

This chapter provides description that revolve around the concept of telecenter, stakeholders of telecenter, telecenter implementation in Malaysia, issues and challenges, and roles of IHLs in telecenter implementations. The issues and challenges in telecenter implementation among rural community can be viewed from two perspectives; the issues and challenges that drive to the needs and accessibility of ICT in rural areas, and the issues that are believed to have contributed to the continuity of ICT usage among rural community and hence identify the roles of IHLs in resolving the issues and challenges.

CHAPTER THREE

METHODOLOGY

3.0 Introduction

This chapter describes the research methodology applied in conducting the study. Research methodology is the different approaches to systematic inquiry development within a particular paradigm with associated epistemological assumptions (Research Methods Glossary, 2000). The chapter begins with a description of the research process, follows with research design, population and sampling.

3.1 Research Process

The following diagram show the research process that has been carried out to complete research.

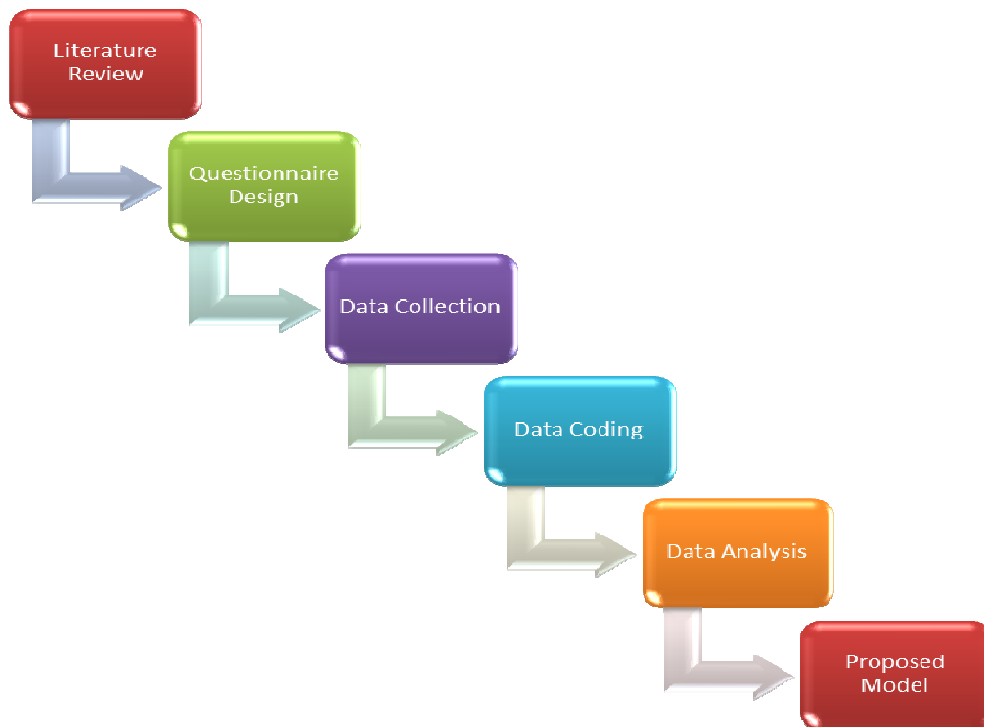


Figure 6: The Research Process

The study started with a literature review on the related aspects including on telecentre operation and sustainability, community involvement in telecenter operation, roles of IHL in telecenter implementation and sustainability. Information on the communities of Kampung Oran and the related Mosque were part of the information gathered. The second stage was the questionnaire design. The questionnaires were adopted from the previous studies on telecentre operations. Data collection was executed at the Kampong Oran, where the research team has organized a one-day social event that involved the community and IHL (UUM). This enabled the team to gather many participants that were used in the data population sample. The process also involved 25 undergraduate students to assist in data collection by guiding the respondents in understanding and answering the questionnaire, and also in making sure that all the questionnaire distributed were completely retrieved. A statistical tool (SPSS) was used to extract and analyze the information from the data collected. Descriptive analysis was employed to describe the demographic part of the questionnaire. To enrich the understanding further, cross-tabulation method was employed to relate the demographic information with ICT knowledge, as well as information requirements of the community. Upon developing a model of IHL Collaboration in Telecenter implementation, several entities in UUM have been identified to match their roles with suitable facilities and services to serve the community depending on their information needs and interests.

3.2 Research Design

This study has implemented a single-case research design approach. The unit of analysis for this study is the community of Kg. Oran. The single-case study approach with multiparticipants data gathering have been used for this unit of analysis. Data collection was carried out within the vicinity of Masjid As Syakirin during a social event organized by the research team in commemoration of the launching of the telecenter.

The questionnaire attempts to capture information on the usage and awareness of ICT applications among the community. It also looked into the availability and accessibility of the ICT related facilities nearby. The questionnaire is divided into two sections:

- a) Demographic profiles of the community
- b) ICT Facilities and Application used in the community

The profiling for the samples have been made in understanding the Kg. Oran community. Age, gender, race, and marital status are among the information gathered from the profile. In addition, their home location (village) in Mukim Oran have also been identified to see the location distribution of the respondents for this study. In order to identify the literacy level of the community, their command of the language and the education level have been captured in this study. The occupation, household income and daily expenses are gathered for the analysis on the economic level of the peoples. On top of that, this study also looked on the number of the family members for each family with the role of the respondent in the community.

In identifying the roles of IHL in the telecenter development in rural area and later developing the model of collaboration of IHL in the implementation of telecenter in rural area, the current ICT penetration need to be studied in the community. In the second section of the questionnaire, computer ownership and the respondent's experience in using a computer are captured. In addition, the internet facilities access and respondent's internet application uses pattern and experience are recorded in this study to see the internet penetration to the community. On the last part of this section, the information and ICT related training required by the community are gathered to see the potential applications or programs to be shared with the community.

3.3 Population and Sample

The total population of the Kg. Oran is 1975. Out of these, approximately 250 members of the community attended the social event (Launching of the Telecenter). Convenient sampling was adopted, where questionnaires were distributed during the event. A total of 203 were returned representing 10.3% of the total population.

3.4 Summary

This is a Single-Case research design with two unit of analysis. The first unit of analysis for this study is the community of the Masjid As Syakirin that is the Demography profiles of the community while the second unit is ICT Facilities and Application that have been used in the community. A purpose sampling technique was deployed by organizing IT related event at the centre of community that is Masjid Kg Oran. In this study descriptive analysis was employed to describe the demographic part of the questionnaire. In order to enrich the

understanding further, cross-tabulation method was employed to relate the demographic information with ICT knowledge, as well as information requirements of the community.

CHAPTER FOUR RESULTS

4.0 Introduction

This chapter gives an analytical inlook to the data collected that starts with demographic composition of the respondents to the community engagement and know-how about Telecenter. It equally looks into the level of knowledge, types of training and exposure of the community with regards to computer applications knowledge such as internet banking, online income tax, online university application, agribazar, webcam, e-mail and computer game among others.

4.1 Profile of respondents

Table 1 tabulates the demographic profile of the Kg. Oran respondents. The distribution between male and female respondents is almost the same, 49.3% and 50.7% respectively. Most of the respondents aged between 6 to 20 years old (57.6%), 42 (20.7%) of them aged between 21-50 years old, and the rests are senior citizens (13.8%). Kg. Oran is dominated by the Malays. The data collection was conducted in the Mosque during the official launching of the telecentre. The nature of the launching activities entice the youngsters is accounted for the high number of their participant. The following table (Table 1) shows that the Mosque creates an enabling environment for the youngsters to be active through activities conducted by the telecentre.

Table 1: Profile of Respondents

| | | Frequency | Percentage | Total Respondents |
|---------|--------------------------|-----------|------------|-------------------|
| Gender | Male | 100 | 49.3 | 203 |
| | Female | 103 | 50.7 | |
| Race | Malay | 202 | 99.5 | 203 |
| | *missing value | 1 | | |
| Age | Less than or equal to 20 | 117 | 57.6 | 203 |
| | 21 – 30 | 16 | 7.9 | |
| | 31 – 40 | 10 | 4.9 | |
| | 41 – 50 | 16 | 7.9 | |
| | 51 – 60 | 14 | 6.9 | |
| | More than or equal to 61 | 28 | 13.8 | |
| | *missing value | 2 | | |
| Marital | Single/Bachelor | 117 | 57.6 | 203 |

| | | | | |
|------------------------|----------------------------|-----|------|-----|
| Status | Married | 73 | 36.0 | |
| | Single parents | 6 | 3.0 | |
| | Widower | 2 | 1.0 | |
| | *missing value | 5 | | |
| Academic Qualification | Primary school | 92 | 45.3 | 203 |
| | SRP/PMR | 34 | 16.7 | |
| | SPM | 39 | 19.2 | |
| | Diploma/STPM/Matriculation | 17 | 8.4 | |
| | Degree | 9 | 4.4 | |
| | Others | 11 | 5.4 | |
| | *missing value | 1 | | |
| Employment | Government Officer | 12 | 5.9 | 203 |
| | Private Agencies | 13 | 6.4 | |
| | Pensioner | 17 | 8.4 | |
| | Unemployed | 1 | .5 | |
| | Student | 107 | 52.7 | |
| | Self-employed | 46 | 22.7 | |
| | *missing value | 7 | | |

Although Masjid As-Syakirin is the centre of the community from nine villages, the research managed to gather respondents from more than nine villages as listed in Table 2. As the Kg. Hutan Temin, Kg. Oran, and Kg. Mata Ayer are the nearest to the mosque, it is not a surprise to see that the majority of the respondents came from those villages with the distributions as highlighted in Table 2. The research also received a significant number of responses from communities of Kg. Belukar and Kg. Simpang Geti as listed in the table. Of these respondents, 21 of them involve in various levels of community management structure as shown in Table 3.

Table 2: Distribution of respondents by villages

| Village | Frequency |
|-------------------|------------------|
| Kg Belukar | 17 |
| Kg Bohor Mempelam | 1 |
| Kg Changkat Lada | 1 |
| Kg Gial | 2 |
| Kg Hutan Lembah | 8 |
| Kg Hutan Temin | 53 |
| Kg Kersik | 12 |
| Kg Mata Ayer | 21 |
| Kg Ngulang | 2 |
| Kg Oran | 27 |
| Kg Pokok Petai | 4 |
| Kg Sg Mati | 3 |
| Kg Simpang Geti | 11 |
| Others | 12 |

Table 3: Involvement in Community Management Structure

| Community Committee Position | Frequency |
|--|------------------|
| Member | 3 |
| Woman Committee Member | 1 |
| Mosque Committee Member | 5 |
| <i>ajk perwakilan</i> | 1 |
| Housing Committee Member | 1 |
| Ex-Army Committee Member | 1 |
| <i>bilal masjid</i> | 1 |
| Class monitor | 2 |
| <i>pemeriksa kira-kira masjid</i> | 1 |
| Muslimat Bureau Chairperson | 1 |
| Village Security and Development Council Chairperson | 1 |
| Assistant Treasurer | 1 |
| Development Bureau Secretary | 1 |
| Village Security and Development Council Secretary | 1 |

4.2 Community Requirements

4.2.1 Current Facilities

This section presents the findings on the current facilities of the respondents. Out of the total number of 203 responses, 137 respondents (67.5%) stated that they have computer at home while the other 65 respondents (32%) do not have it. However, 44 out of 65 (67.7%) respondents who do not have computer at home informed that they have intention to buy computer in the future. About 102 out of 203 (50.2%) respondents reported that they have internet connection at home. Regarding to the type of internet connection, about 60 out of 102 (58.8%) respondents used streamyx and 42 (41.2%) of respondents used either Celcom, Maxis, Digi, or Wimax. Meanwhile 90 (43%) of the respondents were asked to state the reason why they do not have the internet connection. The two most important reasons given by the respondents are identified as high initial cost (13.3%) and no need (or not required) (11.8%). Refer to the following table (Table 4).

Table 4: Reason of not having internet connection at home

| Reasons | Frequency | Percentage |
|--|------------------|-------------------|
| High start-up cost for internet installation | 27 | 13.3 |
| No need | 24 | 11.8 |
| Lack of knowledge on the existence of internet | 12 | 5.9 |
| Limited coverage | 6 | 3.0 |
| High cost | 5 | 2.5 |
| Others | 16 | 7.9 |
| Total | 90 | 44.3 |

The percentages for other reasons include, lack of knowledge on internet existence (5.9%), limited access (3%), high cost (2.5%), and others (7.9%). More than 50% of the respondents house are less than one kilometer to the masjid As Syakirin.

4.2.2 Basic ICT Knowledge

The communities of Masjid As-Syakirin are quite exposed to ICT whereby a high percentage of them have experience in using computer (82.3%). From 17.7% of those who have not use computer, among the reasons given are they did not have any computer at home (52.5%), they are not interested in using computer (16.9%), and they feel that computer is not important in their life (6.8%). A small portion of them have Logizomechanophobia (afraid of computer) or they did not dare to use the computer. This is depicted in Table 5.

Table 5: Reasons of not using computer

| Reasons | Percentage (%) |
|----------------------------|-----------------------|
| Not own a computer | 52.5 |
| Not interested | 16.9 |
| Afraid of using a computer | 5.1 |
| Not important | 6.8 |
| Others | 18.6 |

The Internet penetration rate of the community of Masjid As-Syakirin is slightly more than the Malaysian Internet penetration rate for year 2010, which is 68.6% for Masjid As-Syakirin community compared to 64.6% for Malaysia.

Even though Internet play an important role in our daily lives, there are still part of the community who have not used the Internet for various reasons as stated in Table 6. No knowlegde on the Internet is the largest factor that hinders the community from using the Internet. On top of that, 24% of the responses said that lack of Internet equipment is the constraint for not using the Internet. No time for browsing the Internet is amongst the largest reason why they did not use the Internet (18%), while 1.5% claimed that they do not required information from the Internet.

Table 6: Reasons of not using Internet

| Reasons | Percentage (%) |
|-------------------------------|-----------------------|
| Not interested | 6.4 |
| No knowledge | 57.4 |
| High start-up cost | 4.4 |
| No equipment | 24.6 |
| No time | 18.0 |
| Slow Internet connection | 2.0 |
| Too old/young to use Internet | 4.4 |

| | |
|---|-----|
| Less information required from Internet | 1.5 |
| Worried about viruses and Internet security | 2.5 |
| Others | 3.0 |

With numerous initiatives by public and private sectors in boosting the Internet usage in Malaysia, the Internet services are now available and easily installed. Table 7 lists several locations of using internet by the community. Home (55.8%) is the most popular location, followed by cyber café (20.0%), working offices (10.8%), school (6.8%), and Masjid As Syakirin (2.5%).

Table 7: Location of Internet usage

| Location | Percentage (%) |
|-----------------|----------------|
| Home | 55.8 |
| Cyber Café | 20.0 |
| Office | 10.8 |
| School | 6.8 |
| Mosque | 2.5 |
| Other places | 3.3 |
| Neighbour house | 0.8 |

Table 8 indicates the experience of the members of Masjid As-Syakirin community in using Internet. Most of them have used the Internet for less than one year (32.4%). The others (42.1%) have used between one to six years. Only (20.9) have experienced using Internet more than six years.

Table 8: Experience on using Internet

| Experience on using Internet | Percentage (%) |
|-------------------------------------|-----------------------|
| < 1 years | 32.4 |
| 1 to 3 years | 28.4 |
| 4 to 6 years | 18.2 |
| > 6 years | 20.9 |

In terms of the hourly used of Internet per week (Table 9), majority of the respondents (60.0%) use it for less than five hours, while only (12.0%) use more than 21 hours. The others use the Internet from 5 to 14 hours (16.9%) and 15 to 21 hours (14.1%).

Table 9: Average of Internet usage a week

| Average of Internet usage a week | Percentage (%) |
|---|-----------------------|
| < 5 hours | 57.0 |
| 5 to 14 hours | 16.9 |
| 15 to 21 hours | 14.1 |
| > 21 hours | 12.0 |

Table 10 relates to the awareness of the community regarding various ICT applications and usage. Pertaining to internet banking, only a small number of them (15.3%) are aware of such application. Out of those, most of them (68.0%) claim that they had used internet banking for certain transactions. Based on the 11.0% of the respondents who are aware of paying tax via the internet, 61% of them had actually made such online transaction. As for the 12.0% of the respondents who are aware of the online university application, 78% of them had made used of such internet facility in applying into universities. As per university loan application 16% is aware while only 47% of them had made used of internet in applying for university loan. In term of awareness about checking and paying traffic summon online, only 12% of the population is aware with this application while 59% of those that aware of it had used either checked or paid their traffic summon online. Online examination report shows that, only

11.3% of the whole population aware of it, out of which only 77% of them had participated in one or the other online examination. As for Agribazar, 8.4% of the whole population acknowledged the awareness of it, even among the aware community only 35% of them had used Agribazar. Online tutoring records the lowest, only 7.9% of the entire population aware of it, although a large percentage of this aware-group, that is 75% of 7.9% population had used online means for tutoring. Ironically, there is an increase in the number of those aware of online education compare to online tutoring, 11.8% of the entire population knows what online education is all about and 62% of them have experienced using online education. 15.8% of the whole population were aware Webcam and 62.5% of them have used it. Surprisingly, email and computer game recorded highest number of awareness and usage, 28.1% of the sample population is aware of email and 75% of them had actually used email. As for computer game, 47.3% of the entire population is aware it and 90% of them had played certain game on computer. In the same vein, 32% of the population is aware of internet chatting and staggering 89% of them had chatted via internet. Office automation report shows 14.3% of the entire population has knowledge about among whom 60% had used it.

Table 10: Awareness and Usage of ICTApplications

| Applications | (Percentage) Aware | Have used (Percentage) | Percentage (aware/have_used) |
|-------------------------------|-------------------------------|-----------------------------------|---|
| Internet Banking | 15.3 | 9.4 | 68 |
| Online income tax | 11 | 6.4 | 61 |
| Online University application | 12 | 8.4 | 78 |
| Online University Loan | 16 | 5.9 | 47 |
| Check or Pay summon online | 10.8 | 6.4 | 59 |
| Online examination | 11.3 | 5.6 | 77.3 |
| Agribazar | 8.4 | 3.5 | 41 |
| Online tutor | 7.9 | 5.9 | 75 |
| Online education (E-Bestari) | 11.8 | 7.4 | 62.5 |

| | | | |
|-------------------|------|------|------|
| Webcam | 15.8 | 9.1 | 62.5 |
| Email | 28.1 | 21.2 | 75 |
| Internet chatting | 32 | 28.6 | 89 |
| Office automation | 14.8 | 8.9 | 60 |
| Computer game | 47.3 | 42.3 | 90 |
| Others | 1.5 | 1 | 66.7 |

4.3 Information Requirements

Information was also gathered from the respondents regarding the types of information needed to improve the quality of their life. Most of them (68.0%) consider that the information related to education or new skill is the most important. This is followed by information about healthcare (60.1%), religious issues (55.2%), information sources (51.7%), and current news (46.8%). In addition, they are also interested in accessing information regarding job vacancies (32.0%). Table 11 presents the information needs of the community according to its importance.

Table 11: Information Needs of Kg. Oran Communities

| Types of Information | Frequency | % |
|-----------------------------|------------------|----------|
| Education/New skills | 138 | 68.0 |
| Healthcare | 122 | 60.1 |
| Religious | 112 | 55.2 |
| Information sources | 105 | 51.7 |
| Current news/Sports | 95 | 46.8 |
| Job vacancy | 65 | 32.0 |
| Government information | 64 | 31.5 |
| Tourism | 61 | 30.0 |
| Weather | 60 | 29.6 |

| | | |
|------------------------------------|----|------|
| Product/Service market price | 51 | 25.1 |
| Culture | 51 | 25.1 |
| Product/Service market opportunity | 50 | 24.6 |
| Product/Service renewal | 44 | 21.7 |
| Social & cultural events | 42 | 20.7 |

Based on the information needs, the respondents were required to indicate three types of information that are most important to them. Table 12 shows that the respondents unanimously agree that the most important information is education or new skill (52.7%). The second and the third most important information are healthcare (29.6%), religious (20.7%), and current news/Sports (20.7%). This is followed by information sources (19.2%).

Table 12: Priority of Information Needs

| Types of Information | First Priority | Second Priority | Third Priority |
|------------------------------------|----------------|-----------------|----------------|
| Education/New skills | 52.7 | 5.4 | 6.9 |
| Healthcare | 29.6 | 11.8 | 3.9 |
| Religious | 20.7 | 4.4 | 4.4 |
| Information sources | 19.2 | 11.8 | 3.4 |
| Current news/Sports | 20.7 | 5.9 | 3.9 |
| Job vacancy | 8.4 | 3.4 | 9.4 |
| Government information | 7.9 | 4.9 | 5.4 |
| Tourism | 7.9 | 4.4 | 4.4 |
| Weather | 8.9 | 4.4 | 3.9 |
| Product/Service market price | 8.9 | 4.4 | 4.9 |
| Culture | 7.4 | 4.4 | 3.4 |
| Product/Service market opportunity | 3.0 | 4.9 | 5.4 |
| Product/Service renewal | 5.4 | 3.9 | 5.4 |
| Social & cultural events | 2.5 | 3.9 | 4.9 |

Information on training required by the communities is another important aspect of this research (Table 13). When the respondents were asked on the type of training that will attract their interest, they indicated that they are more interested on basic computer training (54.7%) such as training on basic word processing specifically Microsoft word (52.7%) , basic internet usage (52.7%), e-mail (43.8%), web development (38.9%), spreadsheet (35.5%) and PowerPoint (32.0%). In addition, training related to computer maintenance is also in demand by the respondents as most of them are computer owners.

Table 13: Type of training required by community (n=203)

| | |
|-------------------------------|-----|
| Basic computer usage | 111 |
| Word processing (ex: MS Word) | 107 |
| Internet usage | 107 |
| e-mail usage | 89 |
| Web development | 73 |
| Spreadsheet (ex: Excel) | 72 |
| Presentation (ex: PowerPoint) | 65 |

4.4 Summary

This chapter delved into data collected through a purposive approach, it started with justification of data sample from demographic composition, it received a significant number of responses from all the surrounding communities of Kg. Oran. There is very low knowledge and usage of the internet and internet applications that were available online, this development made activities such as internet banking, online income tax, online university application, agribazar and others to record a very low participation among the community folks. Information related to education, new-skill, healthcare and job vacancies were most sorted for by the members of this community. Apart from high initial cost and lack of interest that affected some members of community in subscribing to internet, it is apparent that large number of this community requires numerous basic computer trainings such as word processing, internet usage, e-mail, etc. Ironically, in term of awareness and usage, computer game recorded highest percentage, this shows that the younger generation has basic

knowledge about computer although most of them are not educatively benefitting from computer and internet knowledge.

CHAPTER FIVE

DISCUSSIONS

This chapter just focus the research findings from Chapter 4 with the research objectives by addressing in and identifying community requirements that were necessary in order to implement a veritable, maintainable and sustainable Telecenter in rural area. It also discussed roles that institution of higher learning (IHL) especially universty could play in making rural telecenters to become center of information and education dessemination hub.

5.0 Introduction

Masjid As-Syakirin, Kg. Oran which is the center of attraction for the community has became the factor that pulled the community to the telecenter. With the location that situated adjacent to the mosque, it has creates attention and draws significant number of crowd to the mosque. However, this is also could be the reason of why it did not catch the attention of the non-Muslim that mainly the non-Malay and hence resulting in none of the respondents is non-Malay. The result also shown that that facilities and their feeling towards computer equally contributed to reason for the community of not using a computer.

5.1 Objective 1: To identify the community requirements in an implementation of a telecenter in ruralarea

The findings indicate that the level of ICT knowledge among the members of the community is considerably low. However, they show high interest in using the Internet and there are indications that Internet is a must to them. Based on the analysis of the community requirements, there is a need for a telecentre to be established and situated in the community's neighborhood. The requirements for the telecentre establishment and sustainable include (i) facilities, (ii) training, and (iii) information.

The facilities are important since most of them have no computer and internet connection at home. Because of the high start-up cost of internet installation, a telecentre is a viable solution

for the community as some use the facilities at the nearby cyber cafes. This provides an indication that there is a high demand for a telecentre and therefore the potential users are almost guaranteed. In addition, most of them are aware of the importance of the Internet. In line with this, suitable trainings have to be provided for meaningful usage of the telecentre.

The findings also suggest that no knowledge on the Internet is the largest factor that avoiding the community from using the Internet. As most of them are new Internet users, relevant trainings should be conducted to equip them with the required knowledge and skills. This includes basic usage of the Internet, utilization of Internet applications such as content search, e-mails, and various online services. In addition, to increase the level of ICT literacy and interest, awareness programs should be offered. In addition, there are also demands for trainings on basic Microsoft Office application and web development. As some of them are also computer owners, there is request for a computer maintenance trainings. All these show that the community has high interest in improving ICT knowledge and skills.

Besides the required facilities and trainings, the community also highlights the kind of information they usually accessed from the Internet to improve their quality of life. The analysis suggest that the most important categories of information required are those related to education and new skills, healthcare, religion, sports and current news. Hence, these categories of information are recommended specifically in the development of relevant contents and applications for the community. This is to ensure that the community can reap the benefits of using ICT for their advantages.

5.2 Objective 2: To assess the roles of IHL in an implementation of a telecenter in rural area

Based on the expertise and the existence of various IHL available in the northern region, this study identified three primary roles that can support the information needs of the community which are Info-mediation, Content Development, and Value Creation. Info-mediation has been extensively used in countries like India in disseminating expert knowledge through telecentres throughout the country. Content development is one of the government initiatives to bring Malaysia to the stage developed economy through innovation and creativity. The lack

of content development somehow has affected the utilization of the telecentre. Value creation has been identified as the ultimate level in bridging the digital divide as prescribed by the government (Yogeesvaran, 2007) that states “The digital divide is seen more in terms of the value of the development benefits that ICTs make possible than in the actual physical access to the technology.” In this sense, value creation is a state in which “the social and economic value of ICT is realised by underserved Malaysians” is ensured.

This study shows that there are three types of information prioritized by the community. The type of information, in order, are education, healthcare and religion. In terms of information mediation, IHL plays an information mediator by providing a customized information to the society. This can be achieved through development of learning objects related to their information needs. The IHL can help the society by identifying the information required and the resources. For instance, different entities such as Computer Centre, Language Centre, College, Health Centre, Islamic Centre, Sports Centre and Centre of Excellence in IHL can provide their expertise and facilities in disseminating the information. In education, several programmes can be implemented for school children and youth through series of tutorial, training, and workshop. With the facilities and resources available at IHL, the programmes can be delivered either through face-to-face mode or on-line approach.

Based on the findings, the highest percentage of the respondents is school children and youth (57.6%). Tutorials for learning English Language for youth, for example, can be delivered from Teleconferencing Room at IHL to the youth at the Telecentre. As for the second largest group, those who are more than 50 years (20.7%) can participate in a religion programme such as Kursus Haji and Umrah through on-line programme provided by Islamic Centre at IHL. The majority of the respondents is woman (50.7%). With cancer is among the critical disease for women, more information should be provided to them anywhere and anytime. Health Centre at IHL can play a role in educating and sharing information about cancer or other diseases by providing series of programmes through ICT facilities.

IHL can be a catalyst in providing numerous expertise in designing suitable customized contents for the community. The contents for a specific group in the community can be properly and practically designed based on their needs in relation to gender, age, work life, education and status of economy. Language centre in IHL, for example, has a group of

expertise to design a specific content for learning English language to school children, adults and senior citizen. The implementation of telecentre is not only to bridge the digital divide in the rural or underserved areas but also to help creating or bringing more values to the community. IHL can play a role to ensure the social and economic value of ICT is realized by the underserved people. An entrepreneurship programme led by IHL social students club can help attracting local youth to come to telecentre and involve in varieties of entrepreneurial workshops.

Apart from the involvement of various expertise, an equally important contribution to the implementation of the telecenter is the engagement of IHL students. Several events and approaches can be proposed through the academic programme or via students development and alumni programme.

Events under Academic programme are directly related to the curriculum of a specific programme. Class projects, and internship are the most related, where students will have to involve in the events and will be accessed based on their participation, report and output. A series of events, either separate or through a collaboration of students from a few courses from Information Technology programme, Education, Mathematics, Social Works can be organized where students can give services, such as tutorials and classes to the local community. This info mediation programme can be arranged for every semester. On the other hand, project classes in Information Technology programme is an example where students could be engaged in IT project for content development and prototype development an on-line programme for local community or an information system for the management of telecenter.

One of the reasons for the failure of Telecentre in all over the world is the problem of human resource, to supervise and manage telecentre. IHL can help to solve this problem by having an attachment programme for final year students at the telecentre, under the Internship programme. In this particular case, UUM students can be stationed at Kg Oran telecentre to help the operation, to spur the dissemination and sharing of ICT knowledge, to support the University's role in developing the local content for local community, as well as to spur the value creation among the local community.

Besides the academic programme, UUM through the Students Affairs Department of UUM and the Dean's Office of Student Development and Alumni Programme, can also increase its collaboration in telecentre implementation through students involvement and programmes. These include through Employability and Enhancement Programme (EEP), Students' association or club, and Alumni programme.

UUM has designed a complementary programme to boost the soft skills including communication, critical thinking and problem solving, entrepreneurship and leadership among the students. A special programme known as Employability and Enhancement Programme (EEP) are introduced to year 1 and year 2 students with two modules; EEP 1032 Personal Development and Character Building and EEP 2032 Living in the Multi-Cultural Society. UUM can engage EEP students to the telecentre through some assignments that involve ICT, entrepreneurship, English, and more, as part of the University's role in info mediation and value creation.

The University has enough number of Students Club and Association that can plan some programmes for every semester to support info-mediation, and value creation to benefits local communities at Kg Oran. Students club such as Computer Club, Multimedia Club can join the Telecentre to plan and organize series of ICT classes or training, competition and debate, IT Games, and other workshop to the local communities.

In overall, UUM has a lot to offer to engage students in supporting telecentre operation and implementation. The diagram below (Figure 7) illustrates the summary of the involvement of students in this effort.

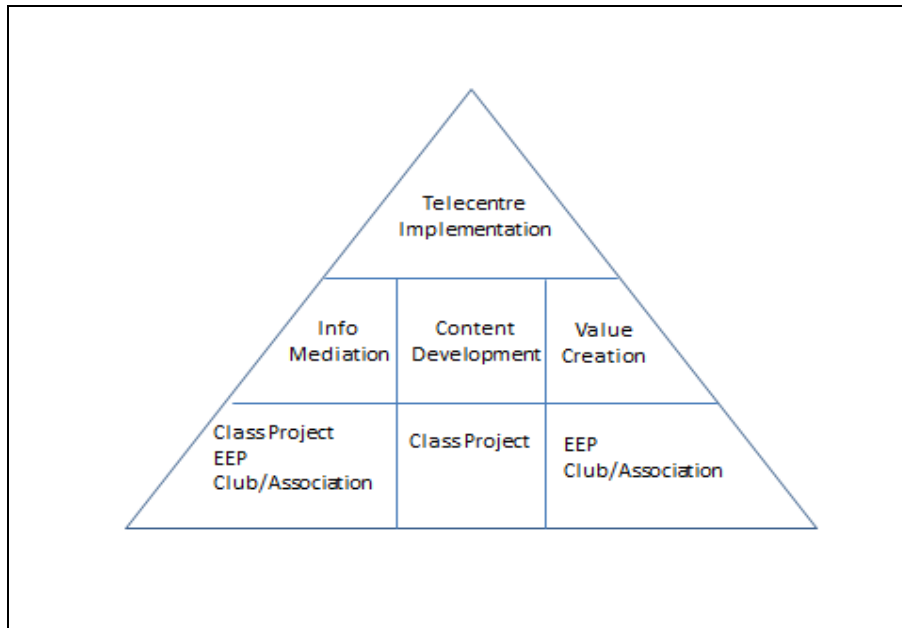


Figure 7: Students Involvement in Telecenter Implementation

5.3 Objective 3: To propose a model of IHL collaboration in telecenter implementation.

Figure 8 represents a model of IHL collaboration in telecenter implementation. This model is purposely designed for the sustainability of financially independent telecenters with the aim to detach telecenters from government or private supports. Moreover, the model acts as a guideline for community to realize the needs of the significant existence of telecenter and the roles played by IHLs in supporting the sustainability of the telecenter.

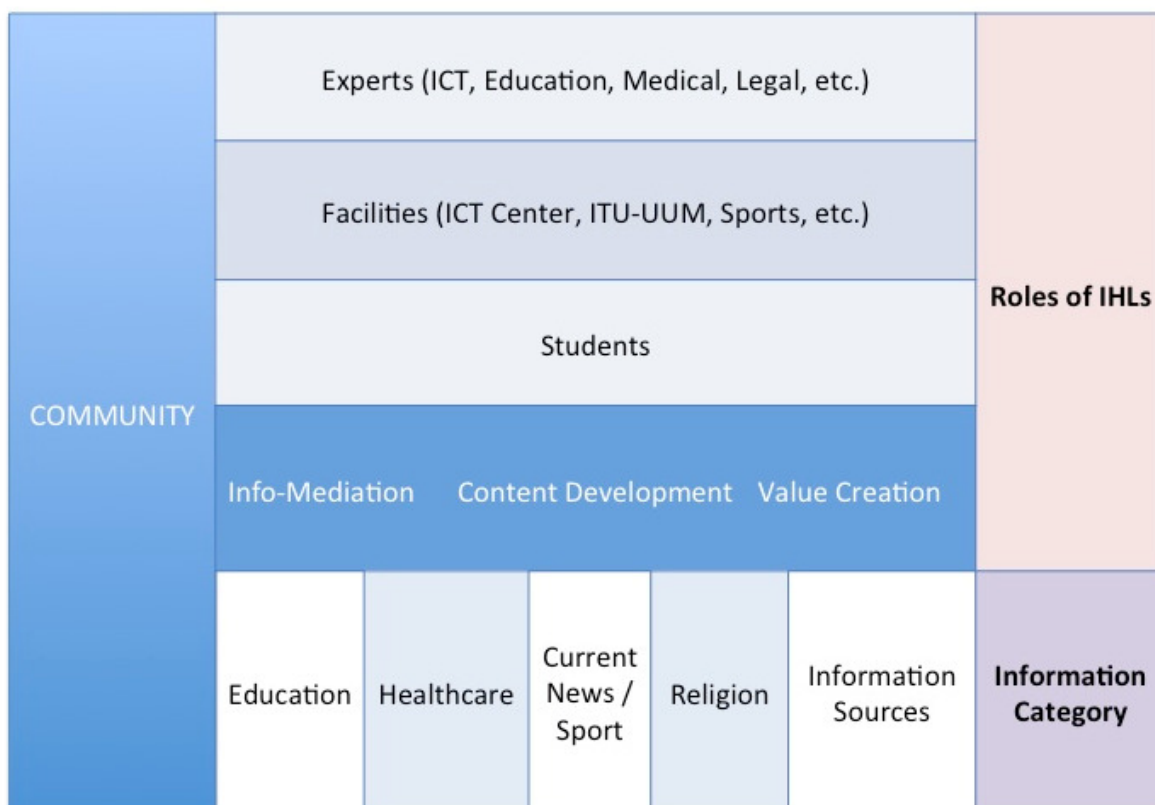


Figure 8: Model of IHL Collaboration in Telecenter Implementation

The model can be broadly categorized into three main components. These are Community, IHL, and Information Category. The Community component is central to the implementation of this model. The governance of telecenters should have clear and well defined structure. It is suggested that a local champion be identified to ensure proper community engagement, commitment and ownership. A champion must be trusted and respected, influential and committed individuals. In the case of Kampung Oran, the champion is Ustaz Haji Ya Ali Dahman @ Abdul Rahman who is the Imam and Chairman of Masjid As-Syakirin. The champion plays a main role in telecenter planning and decision making as well as convincing the community to engage and support the telecenter activities. The champion must have good external linkage including sourcing for financial assistance for capital and operational expenditure of the telecenter.

In order to establish the linkage between the IHL and the Community, a liason person is required. This liason person must be a member of the Community as well as attached with

the IHL to ensure high commitment, i.e. community member who is the IHL staff, IHL student doing internship at the telecenter, and a community member who officially attached with the IHL. In the case of Kampung Oran, Mr. Mohamad Amir bin Abu Seman @ Ismail who is the member of the community and IHL staff. The liason person facilitates in the collaboration processes such as establishing the contact and organizing the planned activities.

The second main component of the model is the IHLs. IHLs provide expertise, facilities and students which will support the community in info-mediation, content development and value creation process. Expertise includes academic community, administrators, as well as individuals directly attached to the IHLs. Facilities are units in the IHL providing certain infrastructures and manpowers that support the functions of an IHL. The utilization of these infrastructures can be extended to the community through special arrangement. Students are those who registered with the IHL for different levels of studies and have various levels of commitments towards the initiative.

The IHL components play crucial roles in the process of connecting with the community through the telecentre as mentioned above. Info-mediation refers to a process where a party work as an agent in disseminating information between the people who use it. In the process of info-mediation, the expert from IHL will identify, customize, and disseminate the information to the community using the IHLs' and telecenters' facilities either through face-to-face or online. This situation is depicted in Figure 9.

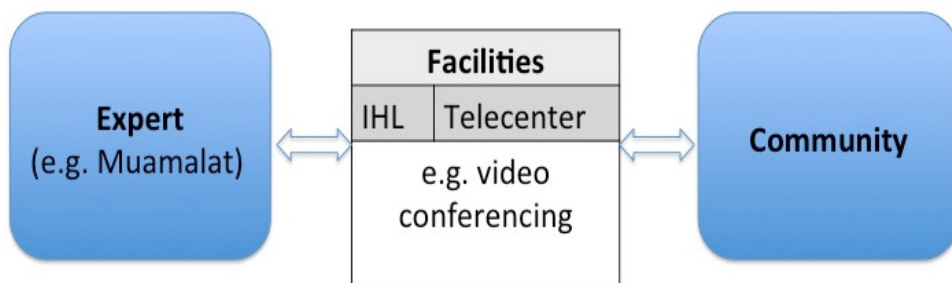


Figure 9: An Example of Components Interaction in Info-mediation

Content development focuses on creating appropriate application based on targeted group. From the identified information requirement, IHL with the experts and facilities can create a customized content based on local uniqueness. This role is very important especially when the applications developed can add values to the socio-economic needs of the community.

In terms of creating socio-economic values in the usage of telecentre, IHL can identify, customize, and deliver various programs that suit the community needs. For instance, while trainings on e-commerce by IHL experts will open a new windows of opportunities to the community to showcase their local products and services, trainings on proper usage of social media can improve both their social networking and enhance their economy.

The whole components of the model discussed above are connected through information category identified in the research. These categories; education, healthcare, current news/sports, religion, and information sources, define the roles of IHL to be carried out in the info-mediation, content development, or/and value creation process. These categories are chosen as the sum of those categories that represent more than half of the total responses. The sixth and subsequent information categories were discarded from the model because they represent insignificant proportion of responses (6.13% and below).

5.4 Summary

The research has indicated that the community is in dire needs for Internet. However, their current possession of IT technology is very low to support their interest. Thus, the needs for telecenter establishment in their community is justified. Moreover, their interest to learn more about IT is high and they are also capable of expressing their needs. Therefore, this study has managed to identify three primary roles played by IHL in supporting the implementation of a telecenter in rural area. These roles include Info-mediation, Content Development, and Value Creation. Different entities in IHL can become an Info-mediation centre or hub of knowledge experts to disseminate knowledge to the community. In the context of content development, experts in IHL have opportunities to share their knowledge in designing a more useful and relevant content to meet different groups of the rural community including school children,

women, and senior citizens. The implementation of telecentre is not only to bridge the digital divide but also to help creating or bringing more values to the community. IHL can play a role to ensure the social and economic value of ICT is realized by the underserved people. Several entrepreneurship programme organized by IHL can help attracting local youth, women, local small medium entrepreneurs to come to telecentre and involve in varieties of entrepreneurial workshops, which can be delivered either in face-to-face or online mode. The proposed model of an IHL collaboration in telecenter implementation shows the interaction among the three main components which are IHL, Information Category and Community. The model emphasizes on the roles of IHL to assist a community in the process of info mediation, content development and value creation for the five most required information by the community namely education, healthcare, current news/sports, religion and information sources. The roles of IHL are facilitated by the expert, facilities and students.

CHAPTER SIX

CONCLUSION AND RECOMMENDATION

This chapter describes the conclusion and recommendation based on the findings in Chapter 5.

6.0 Conclusion

This study has successfully demonstrated that the use of ICT can increase the social economic development of the community particularly in the rural areas. Kg. Oran being a typically rural village that can be found anywhere in Malaysia is a good example of how ICT can be applied using telecenter as a platform for the community to converge and with the support of IHL, programs and activities that contribute to social and economic development can be effectively carried out. This study can be an example to other rural villages in quite the same context as Kg. Oran whereby the existence of a telecenter is pretty much in its infancy with no direct funding from government or private organizations. Kg. Oran possesses strong leadership with village management committee comprising of professionals of various backgrounds, active religious activities, philanthropic culture from well-to-do personalities that are related to/have close relationships with the community, and willingness to adopt to new technology that can bring benefits to the community. A typical Malaysian rural culture/set up inclines towards the mosque or other similar religious establishments as found in this study would also support any initiative emanated from the religious establishment including the setting up of the telecenter.

This concluding chapter is incomplete without describing how the preceding scenario can be better realized. The following section recommends how the proposed IHL Collaboration in Telecenter Implementation Model can be applied to further enhance the role of IHL in telecenter implementation.

6.1 Recommendation

To ensure a long-term sustainable and continuous development of telecenter, arrangement can be made between IHL and the community by having student internship program. This program would require mutual understanding (MoU/MoA) in which IHL can provide constant supply of students to be attached to the telecenters. A win-win situation can be achieved

through this arrangement whereby IHL can secure a placement for the student industrial attachment throughout the year. Whereas for the telecenter, there will be a continuous supply of human resource to help and support the operation and activities of the telecenter. As part of internship requirement, students are required to carry out project within four to six months duration. This project can be relevant and related to the operation of the telecenter or community development earning credits as part of the student fulfillment toward their degree programs. More advanced and focused projects can also be carried out by the post-graduate students in order to fulfill their degree requirement for Master or PhD level. Ad-hoc projects can also be carried out by students as part of their social engagement or based on community demand.

Apart from the normal activities that can be carried out by the telecenter (eg. computer-based training and courses, printing services etc.), internship students can arrange for their respective supervisors to give specific talk or consultations to the community. The subject matter can fall in any of the information categories depicted in the model. For instance, in the education category, the student's supervisor who is also an expert of e-business can provide advisory services on safe online trading, whereas the IHL's center of entrepreneurship development can give trainings and consultations to local participants. Such activities will attract participation from the community and allow them to reap the benefit offered by telecenter. This in turn will add greater social and economic values to the community and will be able to contribute to the sustainability of the telecenter.

Technological advancement has enabled the connectivity between IHL and community to be further enhanced. This has made it possible for the ICT infrastructural facilities such as video conferencing to be within reached by the rural community. As part of the community service, IHL can now extend their academic expertise to the community using the ICT facilities. In the case of UUM, a special lecture on Islamic banking, which is in the religion information category, can be streamed to the community and be viewed by them in the telecenter by using video conferencing application like Skype. By utilizing Skype, an interactive info-mediation process is established in which participant would be able to communicate online with the speaker. Selected conferences and seminars organized by the IHL can be recorded and broadcasted online to the community by using Youtube. These are examples of current news/sports information category.

In addition, an expert from UUM can collaborate with the students to develop local content on specific subjects of interest within the community. To attract participation from the community, the content of the application can come from the community itself as a point of interest that falls under the information sources category. For example, having a famous Pokok Sawa restaurant that serves a special local popular cuisine, the restaurateur can exhibit their specialties digitally to the global community. By engaging multimedia experts, the content can be further enriched with creative and interactive multimedia elements to promote local attractions.

Value creation can be realized through collaboration between the community and IHL. Using the case of PokokSawa restaurant, such collaboration can be established by engaging experts from School of Tourism & Hospitality for expert advice in various aspects of food preparation and serving. In this context, the hygienic aspects of food preparation can be considered as belonging to the healthcare information category. Furthermore, the specialties of PokokSawa can be extended as one of the special menu in the respective IHL. Whilst the engagement with experts can enhance the quality of service thereby attracting more customers to the restaurant, extending the menu to IHL will increase the demand for the specialties. In the long run these would increase more job opportunities for the local which in turn will activate the economic activities down the supply chain.

6.2 Limitations

In the course of embarking on this research, several limitations have been identified. Using a single unit of analysis as a case study may not be representative as the population of Kg. Oran is predominantly Malay. Therefore, the sample may not represent the entire spectrum of the community in Malaysia. However, being a typical village in Malaysia, Kg. Oran may represent a good indication of a successful telecenter implementation model. This can be further substantiated with the fact that the findings on the information category concur with the previous study.

The proposed model may not be suitable to be applied for a newly created and government funded telecenters since the scope of the study does not include the planning stage, funding mechanism, and financial implication.

Another limitation is the composition of the sample whereby more than half of the respondents represent youth (less than or equal to 20 years old). This is due to the sample that is based on convenience sampling where large number of youth turned up during the social event organized by the research team. This limitation may influence the output information category which inclines to education/new skills.

6.3 Future Works

This study can be extended to other community to test the robustness of the model by applying the model to other rural communities in Malaysia. In view of the 1Malaysia concept, future study should incorporate elements of multi-ethnics and cultures. The extension of the study may take into consideration of other IHLs with different expertise, facilities, and students.

Future study should also include how public funded TC can be transformed to be self-sustainable and independent (TTP). This can be done by extending the model of this study to include the financial and funding aspects.

For newly created telecenter, future work should extend the model to include elements of project management to identify the stages at which the IHL can contribute. Among the elements are project initiation, planning, execution, performance monitoring and control, and closing. Future work should also include organizing specific activities to implement the model as recommended in this report.

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