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Bridging the Digital Divide: Effort Towards Establishing the Real Impact of Information Technology to the Rural Community

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ABSTRACT

The Bridging Digital Divide (BDD) Program initiated by the Malaysian government in 1999 has successfully introduced the Information Technology (IT) to the rural communities particularly in Malaysia. The computers and internet connections are available almost at every part of Malaysia including those in the remote areas. However, to have a real impact of technology on people's lives, the effort has to go beyond the infrastructures and technology literacy programs and awareness. Having information available suit to the needs of the local community will bring greater impact of the technology to them. Nevertheless, the new approaches need to be introduced to make the effort less costly. Some of the Digital Divide programs require proper coordination with other projects. Coordination with the responsible agencies in providing power utilities and road infrastructures is essential to make such expensive digital divide program more cost effective and give greater impact to the community. Thus, this paper will provide numerous suggestions on the improvement in providing greater benefits; both the users and the project implementers. Besides, this paper will also discuss on the need of local content in local language with self-sustained nature. It further highlights the importance of having basic infrastructure such as electricity and road accessibility that may have influence over the success of BDD program.

Keywords: *Digital divide, local content, Information & Communications Technology*

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Introduction

Interaction between humans and computers has been anticipated to be greatly increased as we embark on the 21st century. The ability to access computers and the Internet has become gradually more important to completely immerse oneself in the economic, political and social aspects of the world. However, not everyone has privilege to have access to this technology. In the global digital information age those who are unable to access the Internet are increasingly at a disadvantage in term of getting the latest information on their areas of interest or issues. Digital Divide (DD) is the term used to describe the gap between those who have access to the information using technology and those who do not. Willard (2005) defined digital divide as well-documented distance between the information rich and the information poor. According to Besser (2003) digital divide is the gap between what the technology haves and have-nots. Norris (2001) described digital divide as the gap in opportunities experienced by those with limited accessibility to technology, especially the Internet. This includes the limitation of accessibility in social issues, cultural issues, disability issues, economic issues, learning issues and others. There are several studies have provided some evidences as to the importance of Information Technology (IT) access not only serves as a means for acquiring information but also as a catalyst for cooperation within a community and as an instrument for building social capital. In developing countries, there are more obstacles to contend with on the path to a successful use of IT.

Fundamentally, a policy that seeks to address the digital divide in a developing country is definitely needed to solve the issues related to the lack of human knowledge. Harris (2001) affirms that accumulated knowledge, learning by doing over time, represents the most significant factor in the ability to implement new technologies in the context of a developing country. Digital Divide is a phenomenon that is not limited to only the less developed area but it is relevant to most part of the world. The divide mainly contributed by several factors such as technology illiteracy, technology unavailability, cultural barrier toward technology and lack of local content.

In Malaysia, promoting the use of ICT has become the national agenda since 1996 when the government first introduced the Multimedia Super Corridor (MSC). The main aim of MSC is to transform the nation into a knowledge based society driven by the new economy through ICT

via industry and capacity building and socio economic development. In order to allow all Malaysian to gain benefit of the MSC, issues such as digital divide need to be addressed effectively by the government and those involved in implementing the government policies.

Bridging the Digital Divide (BDD)

Although there are gap between those who have access to technology and those who do not in some part of the Peninsular Malaysia especially in the eastern region, there are wider gap in the less-developed part of Malaysia particularly in Sabah and Sarawak. In 1999, the government had introduced a profound initiative to reduce the gap. The initiative is called Bridging Digital Divide (BDD) program with the one aim to bridge the gap especially in the rural areas of Malaysia. Since first introduced, the program's objectives have evolved from focusing on providing infrastructure alone to further consideration of impact to the social aspects caused by gaps. Ministry of Energy Green Technology and Water (KeTTHA) underlined the main focus for bridging the digital divide are through two important elements that can strengthen the community and generating knowledge, which are the technology gap and mind gap. Bridging the technology gap approach is by establishing and providing communication infrastructures through cost effective technology. Technology such as Asymmetric Digital Subscriber Line (ADSL) and Very Small Aperture Terminal (VSAT) technology which have so far provided the cheapest solution in providing voice and data communication in rural areas where availability of basic facilities such as road access and electricity are at very minimum. The second element, which is the mind gap relates to the divide of the benefits received by the community from the technology. The mind divide is usually contributed to the lack of knowledge and skill, lack of local content availability in the internet, and less awareness on the technological benefits.

The program has so far equipped at least 220 schools, 359 clinics and 510 libraries in rural areas of Sabah and Sarawak with internet connections through wired technology – ADSL and satellite communications technology – VSAT. Although the technology provides slower connections compared to the high speed broadband technology available in the developed areas, it has given big impact to the rural community especially on the accessibility to the technology that they have never been introduced before.

Although there were wide range of projects and initiatives undertook aimed at bringing the technology to the people, in order for it to have a *real impact* on people's lives, it is crucial that development efforts go beyond computers and connections. This is to ensure that people have *real access* to internet in order for them to use it effectively. Several issues need to be considered when implementing similar project as the Bridging Digital Divide program which may give more positive impact of technology to the rural communities in Malaysia. The issues among others are local content, local language, self-sustainability and basic infrastructure.

Local Content

The award winning project by Universiti Malaysia Sarawak (UNIMAS) called the e-Bario, started out by focusing on providing IT infrastructure such as computers and internet connections for Kelabit community in remote Bario village in Sarawak. The project's main aim was to introduce the technology and to create awareness amongst the community on the benefits of ICT (Bala, 2002). It was discovered that the communities required more than just having access to the technology. The project team later introduced a community website that provides information about Bario in local language. The collaboration work between UNIMAS and several other state agencies, equipped the website with variety of information on the culture, tourism and economic aspects of Bario. Since then, Bario, a remote village with the only physical connection is through airplane, has been able to connect their lives to the outside world through IT.

The e-Bario scenario indicates that although providing access to technology is critical, but it must be about more than just physical access. In order to maximize the real impact of technology to the society, it is essential that enough relevant *local content* is available in the internet. The term local content is always used to describe information available relevant and tailored to the community culturally, politically and economically in local language (Ballantyne, 2002). Pacheco and Abbagliati (2006) described local content as the expression of the locally owned and adapted knowledge of a community – where the community is defined by its location, culture, language, or area of interest. Depending on the context, "local" could refer to a country, a village, a language or a cultural or special interest group. Furthermore, depending on the perspective taken, one person's local could be another person's global. Willard (2005),

however defined local content as content coming from a community; this content was either created by the community, or taken from external sources and then adapted by the community to meet its needs. Once adapted and assimilated into the knowledge base of the community it is considered local content to that community, which can then be exchanged and shared, locally or globally, in various formats, packages and media (Songan, 2004).

Although there is a worldwide concern in the lack of availability of local content, no profound success efforts in tackling the issue has been established. In Malaysia, almost all of the efforts in providing local content are by government initiatives (*i.e* e-Bario by UNIMAS). Lack of information maintenance that provides up to date and current information is the main cause of these initiatives to be less successful. In the e-Bario context, the lack of information dynamics of the website has made it become less attractive for both the local community and the outside world. Furthermore, minimal community involvement in the project results in the content being unrelated to them. Through time, information becomes worthless and irrelevant. Harris (2001) emphasized that the development of local content suited to domestic or regional needs will encourage social and economic development and will stimulate participation of all stakeholders, including people living in rural, remote and marginal areas. He further suggested that local communities should be empowered to produce this content themselves using IT. However, the effort to increase the availability of local content shall not be the responsibility of the people alone or by one particular agency only such as the local authority but other organizations such as schools, universities, non-government organizations (NGOs) and business entities shall also play their roles. Several large organizations such as Petronas, Maxis and Telekom Malaysia have provided significant contribution under their Corporate Social Responsibility (CSR) program. However, the efforts lack content maintenance and updates thus made the impact of the program less effective over time. The key issue here is the importance of information dynamics that is any approach in providing local content, must consider the information maintenance in the future.

Local Language

Most of the information available on the internet is in English. As mentioned earlier, the local aspects of the information depending on the perspective

taken, that is one person's local could be another person's global. For example, information about Malaysia in English is considered local for high school students in Kuala Lumpur, but it is not for those in Kelabit, Sarawak. Although the number of website available in Bahasa Malaysia (Malaysia official language) has increased at a reasonable rate, they are usually in the form of government websites and personal blogs. Information published in the blog can sometimes provide very useful information and if shared would provide valuable knowledge. For example, a former leader of a community writes about the culture, history and his previous personal experience living in the community in a blog. The blog which is usually hosted in the United States may only be accessible by certain people close to him as their personal reading materials. However, if such information is made known to the particular community, it would provide an additional source of knowledge for them that can be used in educating the younger generation about their community. This is a simple example on how information in blogs, although created for personal benefit, may be also beneficial to community as a whole. Certain mechanism need to be introduced to gather available websites and blogs about a particular community into one web directory that would enhance the availability of local content in local language websites to the local community.

Furthermore, a more aggressive effort by both the public and private sector to provide bilingual websites must be established. The government may want to introduce a new policy that will be mandatory for every organization to have their websites in both Bahasa Malaysia and English. Dewan Bahasa and Pustaka, an institution responsible to look into Malay language usage in Malaysia, could also play a significant role by having collaboration effort with established online service provider such as Google, Facebook, Wikipedia, Amazon.com etc. to have their services in Bahasa Malaysia version. Availability of information in local language in the internet reduces the language barrier impact and provides greater benefits of the technology to the rural communities.

Self Sustainability

In order to remain its attractiveness and dynamic, the websites have to publish the up-to-date and current information to its web visitors. The cyber world has created many innovative forms of online services model that provide self-sustained dynamic websites. Google is good example of

such self-sustained online services. Google has become increasing significant on people's life until to a stage where the cyber world use the brand name "Google" to replace the word "search in the internet". "Where did you get the information?" "I googled it" – is a common and typical conversation between two people. Google provides free search engine services for users to find various kind of information available in the internet. Furthermore, Google also provide free email accounts to those individual registered with them. The free and efficient services it offers have attracted millions of users to Google websites and consequently it attracts businesses to advertise their product and services in Google. The commercial aspect is the main characteristics of Google that makes it self-sustained. Advertising brings revenue to Google. The more people use its website, the more attractive it is to the businesses.

Such form of self-sustained model can be introduced as an effective method to increase local-content availability in Malaysia. There should be a platform made available to make such an effort a reality. Government should take the first step to promote the effort by providing cheap and sufficient facilities in order to start up the initiatives. For example, an e-Village online portal could be introduced that provides services to all village community in Malaysia to set-up their own community portal. Inside the portal, information on every aspect of the community socially, economically and politically is made available in the internet. In the beginning of the implementation, involvement of the local government is essential in order to build the initial content of the portal. Once the portal has successfully provided relevant and valuable content of the particular community, together with proper promotion, the portal may create its own identity thus become attractive to the internet users. Web hits and traffic will attract businesses to the portal and brings revenues to the web operator that will eventually generate its self-sustainability nature. Information dynamicity will emerge automatically due to the market supply and demand forces.

Basic Infrastructure

Essentially, the rural communities need the same services that are available to urban communities and more. Unfortunately, the gap between urban and rural is already large and getting larger, especially as broadband digital networks become available in urban communities. Nearly every rural community in the world suffers communication disadvantages and

could benefit enormously from Internet access opportunities (Parker, 2000). To remain competitive in the global information economy, rural-based businesses and individuals must acquire emerging technologies such as broadband concurrently with their urban competitors. Similarly, rural-based schools, NGOs, and government institutions also need access in order to provide services to their constituents comparable to those available to urban citizens. However, low population density in rural areas translates to low demand levels. This makes it difficult economically to offset the high investment costs required to construct advanced information technology infrastructures (Hollifield & Donnermeyer, 2003).

Rural areas face challenges of geographic dispersion and low subscriber density, which reduce incentives for firms to make investments in broadband networks to offer services to subscribers. In addition, some of the technical and market solutions available in urban areas do not work in rural areas – where there may be no cable television service available, or where potential subscribers are too far from the central office switches of telephone companies to provide digital subscriber lines (Venkatachalam & McDowell, 2002). Most of the rural areas especially in Sabah and Sarawak still lack basic facilities such as electricity, clean water and road access. The cost providing ICT infrastructure to these areas is said to be 10 times higher than the cost in the urban areas. This is due to the cost of accessibility to the area and non-traditional power supply requirements such as solar power and generators. The unavailability the three basic facilities lead to slower growth. Government spending in providing ICT infrastructure will remain as high and involvement of private sector will maintain at a minimum level. In Malaysia, the developments for the three basic infrastructures are the responsibilities of three different agencies. Road infrastructure is the responsibility of Ministry of Works (MOW), electricity is by the Tenaga Nasional Berhad (TNB) and water supply is by the particular state water board and on the other hand the Bridging Digital Divide program is the responsibility of Ministry of Energy, Green Technology and Water.

Currently, the project implementations for the rural areas under these agencies are usually independent from each other and involve minimum interaction and coordination among them. If there exist a mechanism that connects all of them in project planning, cost of providing the basic infrastructure together with the ICT infrastructure can be reduced significantly. Cost of providing electricity to the rural areas will be reduced dramatically if road accessibility is available in that area and consequently the cost for ICT infrastructure will also be reduced. Furthermore, if the

three basic facilities are available in the area, again, the market forces together with minimum government support may create the demand for the private sector to provide the necessary ICT infrastructure. The cost saving achieved from this approach, allows it to be used to focus more on establishing more local content to the community in order to have the real impact of technology on the community's life.

Conclusion

The aim of Bridging Digital Divide program is to bridge the gap between those who have access to IT and those who do not. In Malaysia, the gap is wider especially in the remote areas in Sabah and Sarawak compare to the areas in the Peninsular Malaysia. It is critical that, beyond anything else, IT infrastructure is necessary to allow accessibility to the technology. However, the implementation of providing IT infrastructure requires large spending from the government. The cost can be reduced if BDD initiates proper coordination among the agencies responsible for the basic infrastructure. Furthermore, infrastructure alone is not sufficient to allow the technology to have real impact to the people's lives. The objective of BDD has evolved by not only focusing on the infrastructure gap, but also on the mind gap. The mind gap relates to the degree technology can benefit the people in the form of the information and knowledge accessibility. The approach by establishing more local content in local language that is self-sustained will lead to the success of Bridging Digital Divide program in closing the technological gap amongst the people in the near future.

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