ICT Education as a Catalyst to Bridge Digital Divide: The Roles of UiTM Sarawak in Rural Areas

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Abstract: *The digital divide is a term where it refers to a gap among those who have better opportunities for the Internet of Things (IoT) and those who insufficiently do not have it at all has become a global concern, affecting a particularly rural community in Sarawak. Thus, Information and Communication Technology (ICT) education would be a catalyst to bridge the digital divide. UiTM Sarawak has a significant role as one of the centers of excellence recognized by Sarawak Digital Economy Corporation (SDEC) to support the Sarawak state for the development of ICT education in rural areas. Deliver ICT education in an integrated manner to rural community become issue and challenge to UiTM Sarawak. The main highlighted issues of this paper are insufficient ICT infrastructure and a deficiency of knowledge of the need of having efficient ICT education of the rural community in Sarawak. This issue will handle as the crucial part in educating and exploring continuous opportunities in bridging the digital divide, appreciations to the initiative done by UiTM Sarawak. The goal is to see if UiTM Sarawak can strategically position itself to help the Sarawak state government achieve its goal of being a digital economy-based state in Malaysia by 2030.*

Keywords: UiTM Sarawak, ICT, digital divide, education
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1. Introduction

UiTM Sarawak has taken a progressive role in supporting the Sarawak state with the dispersion of desired ICT education particularly in the rural area of Sarawak and become one of the Center of Excellence for digital economy powered by Sarawak Digital Economy Corporation (SEDC) which taken responsibility to engage in research and development under digital sectors. As one of the well-established public universities situated in Kota Samarahan, UiTM Sarawak undeniably has performed its best in making the people of Sarawak to recognizes its corporate social responsibility to serve the need of Sarawak rural community towards integrated ICT education. In conjunction to this matter, UiTM Sarawak has established a special unit named Industrial, Community, Alumni & Network (ICAN), which aim to build a strategic network with information-based industries and government bodies that benefited Sarawak entirely. This unit has implemented several initiatives aimed at forging strong partnerships with diverse sectors in the management of ICT education, through knowledge transfer activities such as allocating ICT expertise through Entity Research Group, and allowing rural communities to participate directly and indirectly in well-planned projects. In addition to that, UiTM Sarawak Student Affair Division has also taken part to encourage student involvement to organize any ICT-based educational program as a voluntary program to the rural community of Sarawak where the term digital divide is closely in mind.

The entire agenda outlined by UiTM Sarawak lies behind the rationale to bridge the digital divide, which can be described as "the difference between individuals, families, enterprises, and geographic areas at various socioeconomic levels in terms of their ability to access ICTs and use the Internet for a variety of purposes." (OECD, 2001, p. 5). That is important so that UiTM Sarawak's efforts are aligned with the Sarawak state government's main agenda, which is to develop the desired and sufficient human capital with essential skills by leveraging their knowledge and skills to the nation's ICT growth.

However, UiTM Sarawak faces several issues and challenges in educating Sarawak's rural community, including the inadequacy of power supply in certain rural areas, poor network coverage, and resistance to change for improvement, especially shifting people's mindset and attitude toward ICT (ICT readiness and acceptance) and to adapt new skills among the rural community and so forth. To add, these issues occur when UiTM Sarawak students themselves expressing the problem in gaining access to the Internet for online learning, especially those who stay in remote areas. Another issue is most of the ICT program organized by UiTM Sarawak also focus specifically on one specific target group of publics particularly school children (to name a few examples Science Technology English and Mathematics program (STEM) and less ICT program for the senior generation who cover most of the rural community population in Sarawak.

With the shortcomings of ICT education established, this paper will offer some insights and suggestions to help UiTM Sarawak reduce the challenges, restrictions, and major impact of ICT education for Sarawak's rural community. With this paper, it is hoped that these issues could become potential research areas to discover as well as a basis for improvement of effective ICT program in the future.

2. Government Initiatives

Malaysia is making progress in bridging the digital divide, other countries are making faster progress and therefore Malaysia Government has taken initiative with the implementation of the telecentre (TC) in 1998. One of the key topics of the ICT Conference (WCIT) May 2008 in Malaysia, was empowerment (societal empowerment) through ICT. In a world that is becoming increasingly dependency on technology, the theme highlights the involvement of several sectors to promote equal access to and use of ICT.

According to the MCMC year 2020, internet user surveys increased from 87.4% in 2018 to 88.7%. Department of Statistics Malaysia shows that computer access increased from 72.1% to 80.0%, and internet connectivity also increased from 90.1% to 91.7% in 2020. In 2020, the percentage of people who use internet by state and strata revealed considerable differences in nationwide usage between urban (75.6%) and rural (24.4%).

Under the 12th Malaysia Plan (RMK-12 2021–2025), the Malaysian government has introduced an action plan called The Jalinan Digital Negara, which would serve as the country's digital communication improvement platform (JENDELA). Phase one of the plan will run until the end of 2022 and focusing on adding access to gigabit fixed-line broadband to 7.5 million premises and increasing 4G mobile broadband coverage from 91.8% to 96.9% in populated areas to reduce the digital divide and provide quality and inclusive telecommunications services (MCMC 2020).

The COVID-19 epidemic hastened the digitization process by accelerating the use of ICT and networking by people from all ways of life, including business, services, education, communication, and entertainment. The rate of broadband usage is increasing in March 2020 during the Movement Control Order (MCO) by the Malaysian population. Recognizing this, the PRIHATIN Rakyat Economic Stimulus Package (PRIHATIN) has announced by the government includes a variety of unique offers, such as 1GB of free Internet per day, to help people with their daily lives. Simultaneously, a five-year plan starting in 2019, the National Fibre Optic and Connectivity Plan (NFCP) is implementing 5G technology to upsurge the digital accessibility, particularly in rural areas. The NFCP responsible to ensure that people have access to a high-quality internet experience and also bridging the digital divide between communities in the most remote areas of west and east Malaysia, as well as urban and rural areas.

3. Sarawak Digital Divide

Sarawak's ICT sector is critical to the state's overall development. The Universal Service Provision (USP) Fund is supporting the National Broadband Initiative (NBI) that aims to offer equal distribution of ICT infrastructure and facilities, with in mind on improving accessibility in remote areas.

According to the Department of Statistics Malaysia, rural internet use in Sarawak was only 43.1% in 2015, compared to 56.9% in metropolitan regions. Meanwhile, 92.9% of individuals use mobile phones regularly, compared to 44% who used computers in the same year. To ensure that people in Sarawak can use the internet holistically, the collaboration MCMC and Sarawak Multimedia Authority (SMA) on development and facilitating the construction approval process to speed up the construction of digital infrastructure to improve broadband coverage and quality in the state.

Sarawak Multimedia Authority (SMA) reached a new milestone when the Wi-Fi Channel (WS) project reached 50% completion in early February 2021. The SMA Channel telecommunications programme, which will cover 98 percent of Sarawak, includes WS. As an intermediate alternative to the first 300 telecommunication pole project called Very Small Aperture Terminal (VSAT) installation project targeting remote rural areas. When 636 new communication towers are designed, special consideration is given to the people of Sarawak. The Universal Service Provision (USP) programme would upgrade a total of 977 communication transmitters in existing towers across Sarawak. In the meantime, commercial upgrades will be made to 49 new towers and 825 communication transmitters on existing towers. In addition, a total of 43,013 locations will have access to fibre optics.

Sarawak Information System Sdn Bhd (SAINS) and Sacofa Sdn. Bhd. are two companies based in Sarawak that specialise in system integration, solution, and network facilities. Their mission is to promote the sharing of Sarawak's ICT infrastructures among the state's operators. Sacofa took the lead in 2018 in developing a turnkey solution with telco giant Maxis that allows Internet Service Providers to connect directly to Sacofa's fiber-optic network and offer high-speed internet services at affordable prices.

Another initiative taken by Sarawak government is the launch of Centre of Excellence for Digital Economy Openlab (Openlab) in August 2020 by the Honourable Chief Minister of Sarawak housed the first 5G testbed in the nation as an avenue to promote and coordinate test and research into the deployment of 5G. Apart from that, Sarawak state also has started with

an initiative known as Sarawak Linking Urban, Rural and Nation (SALURAN) with the aims to enhance ICT accessibility viable areas of Sarawak. The components of SALURAN consist of:

  i.   SMA Rural Telecommunication Tower (First 300 and Next 300)
  ii. WIFI SALURAN
  iii. Sarawak Rural Broadband Network (MySRBN)
  iv. Fiberisation Project
  v.   Extension of SarawakNet
  vi. Sebauh-Bintulu High-Speed Broadband

For example, SEDC has started a homegrown project known as Sarawak Rural Broadband Network (MySRBN), as part of the state's effort to digitalize Sarawak's economy as well as encountering conventional issues of poor connectivity coverage in the rural areas in Sarawak thus allow global connection among Sarawak rural communities.

4. Challenges and Issues

Strong support and continuous commitment from diverse related ICT-based industries are needed by rural communities for them to receive a better ICT education. Harris (2001) found that educating and providing training to the rural communities, especially when the majorities are illiterate in ICT, will require patience and determination from all parties associated with ICT. Many older generations live in rural areas, and they may no longer be involved in ICT. They still struggle to embrace and ready to apply ICT in daily life, so they will need more time to learn the basics. They may feel ashamed or fearful of new technologies, leading to a disorder known as technology phobia or online phobia.

Aside from that, UiTM Sarawak should take an effort to understand the needs of rural community in the production of effective ICT instructional mechanisms. In reality, many ICT-based projects are still awaiting implementation in these rural communities, but reaching these remote areas for better ICT education is nearly impossible due to inaccessible geographical barriers. With many rivers linking one village to the next, UiTM Sarawak discovered that reaching such remote areas is difficult. It is almost impossible to transport ICT equipment to remote locations in a secure manner.

Another obstacle in ICT education in the rural community's mindset, which seems to be an inability to change and learn about ICT. This is because the majority of them were lack of proper computer facilities, as well as knowledge and even computer literacy. Teaching them basic computer skills would be a difficult task because it would necessitate extra effort on the part of UiTM Sarawak, particularly since all of the computer terms are unfamiliar and alien, and thus more time would be needed for UiTM Sarawak's educators to monitor their learning progress and develop effective modules that cover human elements.

The shortage of equipment used in teaching ICT to the various targeted groups in rural areas is another challenge of educating ICT among the rural population. Owing to a lack of ICT specialists, some of the telecenters, community libraries, and ICT community centres were not adequately managed by the local authorities with less monitoring. When there are not enough computers for all to use in an ICT class, it is difficult to provide good service to the targeted audience. Since some of the machines were damaged due to a lack of proper maintenance, monitoring should be always prioritized.

The deficiencies of ICT infrastructure in several rural areas of Sarawak, especially in areas where there are no communication towers to receive an efficient satellite signal, is one of the challenges of UiTM Sarawak's ICT education. Therefore, educating a rural community about online resources will be a challenging effort because the application is supposed to be online. "In some rural parts of Sarawak, some broadband network infrastructure or communication towers are present, but they provide no communication services to our rural folk," said the late Chief Minister of Sarawak, Tan Sri Adenan bin Satem (2016).

Most of Internet-based services are using English as a medium and without multilingual features in designing web content could create language barrier among rural community. It is suggested that UiTM Sarawak should take into consideration to create local web content in Bahasa Melayu or any local dialects through collaborative effort so that the Internet content can be well understood and manipulated.

5. Discussions

As one of Sarawak's state institutions of higher learning, UiTM Sarawak should focus on proactive efforts in providing inclusive ICT education to the rural people by considering the issues and challenges of using ICT. Rural communities should be exposed to ICT education as a solution to their daily lives to understand the value of activities that are practically all conducted online these days, especially during pandemics. As a result, UiTM Sarawak's involvement in teaching the community based on expertise and experience is critical in ensuring that people benefit from the ICT education delivered. UiTM Sarawak's ICT programmes and projects are still limited in rural regions, necessitating a strategic plan to address this issue.

Geographical barriers, inadequate transportation facilities, and even the river as the primary transportation route can threaten UiTM Sarawak staff and ICT supplies carried to rural communities for instructional purposes. Thus, UiTM Sarawak should carried out a small-scale research and pilot study to determine the appropriate location for ICT education in rural areas. In 2017, Sarawak transitioned from a conventional based economy to a digital economy based on advanced technology in nearly all industries. Agriculture, Industry 4.0 production, ecotourism, smart cities, health, e-commerce, digital governance, green transportation, and social are among them. Despite the budget constraints, UiTM Sarawak remained committed to helping the state government achieve its digital economy goals and the federal government's goal of keeping Malaysia on par with the rest of the world.

In Malaysia, studies on efficient techniques for teaching ICT to rural areas, particularly the lack of IT state of the art, information literacy, and computer skills, are still scarce and difficult to come by. UiTM Sarawak should take the lead in building a user-friendly and community-specific system for increasing ICT education in rural communities. To envisaged that, with this system in place, rural communities will progressively acclimate to ICT education and integrate it into their daily routines.

Other concerns that need to address include insufficient number of ICT infrastructure, a lack of ICT materials, and poor maintenance of ICT facilities in telecentres, rural libraries, and ICT community centres. It is because of a shortage of competent and insufficient personnel in charge of ICT maintenance in Sarawak's rural districts. It will be difficult for UiTM Sarawak to implement ICT education-based programmes because ICT facilities must be practical to use.

However, efforts will be in vain if entire equipment and infrastructure in rural areas are malfunctioned, and only theoretical knowledge can provide to the rural communities.

6. Recommendations

Several efforts have been executed in our country to close the digital divide. Parties at all levels, particularly the government, have taken drastic steps to address this issue, which aims to empower society and develop knowledge by bridging the technological and intellectual gap. One of the government's strategies to bridge the digital divide is to strengthen communications infrastructure facilities in rural areas by launching a social responsibility programme focused on ICT added value. Both public and the private sector should share responsibility in developing ICT infrastructure in rural areas that are less profitable for telecommunications companies to invest in alone.

UiTM Sarawak and the state government should build strong collaboration with the parallel direction to provide effective ICT education to the rural community. These collaborations are being realized when UiTM Sarawak become a host of the 2nd International Conference on Computer and Drone Application (IConDA) in December 2019. The efforts of UiTM Sarawak focus on ensuring that the rural community has access to all of the ICT services provided by the Sarawak state government and that no one is left behind. For instance, the INFORMS student club of the Faculty of Information Management hosted an Online Services Awareness Exhibition in Kampung Bajo, Lundu, Sarawak with objective to teach people how to use government-owned online services such as MYEG, Jobstreet Malaysia, mySarawak.gov, and Tabung Haji Online.

Malaysia digital initiative programmes such as 1-Citizen that aim to raise awareness about ICT ethics and the e-Rezeki programme, which is run by the Malaysian Digital Economy Corporation (MDEC), by exchanging best practises and improvements to accommodate the need of target consumers of culturally diverse backgrounds and ages. Sarawak Skills Carnival 2019: Facing the Industrial Revolution 4.0 by NOSS (JPK) hosted by UiTM Sarawak in collaboration with Jabatan Kemahiran Sarawak to promote a standards curriculum and skills developed in response to industry feedback to meet current demands of the 4th Industrial Revolution (IR 4.0). For students and the local community, UiTM Sarawak has become a model for these initiatives.

Collaboration between UiTM Sarawak and other organisations or professional bodies, are in urgent calls to provide outreach programmes and services to the Sarawak rural community, through dissemination of knowledge and skills in the use of ICT through an interactive module, including ethical use, exploratory, distribution, and information authenticity. In addition, UiTM Sarawak may act as a facilitator of ideas, create additional forums for rural people to participate in ICT based invention, innovation, and design, and engaging rural communities in implementing of ICT programmes. Sarawak state government intends to expand existing methods for educating Sarawak's rural communities, and UiTM Sarawak, as an educational institution, must be aware of any worldwide digital initiative, ICT strategies, ICT funds, or other ICT initiatives.

7. Conclusion

In addition to the government, Sarawak's ministries and educational institutions should be dynamically involved in addressing ICT concerns and difficulties throughout the state. UiTM

Sarawak and academia must work together to bridge the digital divide by improving ICT education and embracing opportunities to empower human capital with the most up-to-date digital knowledge and skills. To further comprehend the needs and capacities of ICT in rural areas, a pilot study should be conducted through questionnaires or interviews with the rural community which aim to determine which mechanism are most appropriate for UiTM Sarawak. Therefore, UiTM Sarawak is in a strategic position as a catalyst to bridge the digital divide and enable rural people to explore new prospects for improving their way of living.

While the entire world is dealing with the COVID-19 pandemic, we must remember that technological advancement and telecommunications have become alternative answers for bolstering the economy and improving people's lives, even in the most difficult of circumstances. All the accomplishments of UiTM Sarawak, the state government, NGOs, the private sector, and other agencies engaged, who are in great endeavour to overcome all hurdles to create a brighter future, should be recognised.

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