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Information and Communication Technology (ICT) and the Quality of Life of the B40

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Abstract
Previous studies indicated that information and communication technology (ICT) brings a positive impact on the communities. However, rural areas are not uniform and territorial inequalities in digital infrastructure may affect the lives in rural areas differently. This study aims to investigate the effect of ICT adoption on rural communities. Data were collected through interviews and observations and were analyzed qualitatively. The finding shows limited access to ICT infrastructure and services limits the benefits of ICT to rural communities. The role of government is important in ensuring equal opportunity to access ICT infrastructure and services to improve their quality of life.

Keywords: Information and communication technology (ICT); rural areas; quality of life

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1.0 Introduction

Information and communication technology (ICT) has become one of the most important driving forces of economic growth and social development. In developed and developing countries, ICT has raised economic growth since the 2000s, and ICT is often associated with a factor in global socio-economic development. Although studies have shown that access to ICT positively impacts the community in general, there are still several outstanding issues that need to be investigated to gain a deeper understanding of the expected ICT outcomes for rural communities. This is because rural areas are not uniform, and territorial inequalities in digital infrastructure may have different impacts on the lives in deep rural areas.

As of 2020, the Department of Statistics Malaysia (DoSM) classified the B40 as a household group that earns a monthly income of RM4,850 and below. The COVID-19 pandemic has pushed many Malaysians to lower-income categories due to income reduction and loss of employment. Most rural people fall under the B40 category with low wealth and non-financial ownership and are susceptible to vulnerable economic shocks. In Malaysia, the B40 is a group eligible for government monetary assistance like the cost of living subsidies Bantuan Sara Hidup (BSH) or Bantuan Prihatin Rakyat (BPR), and non-monetary assistance. The government has come up with various plans and projects to uplift the standard of living of the B40. For example, as part of the initiatives to develop rural women entrepreneurs,

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the government, through the Ministry of Science, Technology, and Innovation (MOSTI), came up with the "1nita" project, which provides a platform for rural women entrepreneurs to enhance their businesses through the use of information technology and the internet. Previously on October 15th, 2010, the Prime Minister of Malaysia announced the improvement of ICT as the first strategy with the allocation of RM119 million in the 2011 budget.

Furthermore, the 10th Malaysia Plan 2011-2015 clearly articulated the central role of ICT as a foundation for the nation to move toward a high-value economy. In line with that, Malaysia's government had listed ICT as its 12 National Key Economic Areas (NKEAs). This translates to ICT playing a key strategic role as an enabler of national infrastructure, education, and human capital development. Under the 12th Malaysia Plan 2021-2025, the government further committed to ensuring that 100% of urban and rural citizens subscribe to the internet. The most recent available data shows that 90.1% of citizens have internet access, as indicated in Table 1. However, according to Mohd Hassan et al. (2021), of the total internet users in Malaysia, only 25% of the total users come from rural users. An indication that internet penetration is still very low in rural areas.

Table 1: Access to ICT Services and Equipment in 2019

Computer	71.3%	Radio	97.2%
Internet	90.1%	Pay TV Chanel	75.8%
Mobile phone	98.2%	Television	97.6%
Fixed Phone	23.5%		

Source: Department of Statistics Malaysia, 2020

The impact of ICT and quality of life have long been a research interest by scholar (e.g: Gilhoody, Gilhoody & Jones, 2010; Pena, Lopez & Navarro, 2019). Health, wealth and social relations are among the aspects of quality of life under investigation as a result of ICT usage. Although studies have shown that ICT improves quality of life and positively impacts the community in general, there are still several outstanding issues that need to be investigated to gain a deeper understanding of the actual and expected ICT outcomes for rural communities. This is because rural areas are not uniform, and territorial inequalities in digital infrastructure may have different impacts on the lives in deep rural areas. Hence, this study aims to investigate how the B40 in rural areas is affected by ICT. Specifically, the objective is to gain an in-depth understanding of how ICT usage affect the quality of life of the rural community.

2.0 Literature Review

In a broad term, ICT refers to the use of information and communication technologies. ICT focuses on communication technologies which commonly refers to the use of the internet, computer, mobile phones and other equipment or devices. In general, the study of quality of life is a study of well-being. There is no consensus on measuring quality of life (Nevado-Peña, López-Ruiz & Alfaro-Navarro, 2019). Most commonly, the physical and mental health, wealth and social relations are among the aspects of quality of life under investigation. Previous study by Anderson, Dries, Gaved, Heres, Mooy, Stoneman & Thomas (2006) have identified indicators of QoL which include physical well-being, social wellbeing, development and activity, emotional well-being and material well-being. Previous studies found no consensus on the effect of ICT on the quality of life of a society. Gilhooly et al. (2010) found ICT does not benefit active aging society while Nevado-Peña et al. (2019) found that ICT improves quality of life.

Beginning in the1990s, the world has witnessed the rapid development of information and communication technology (ICT). ICT has become one of the most important driving forces of economic growth and social development. A recent study at the global level by Alhasan and Adam (2021) on the effect of digital inclusion and ICT on quality of life stipulates that ICT access significantly influences the quality of life. In developed and developing countries, ICT has raised economic growth since the 2000s, and ICT is often presented as a factor in global socio-economic development (Palvia, Baqir and Nemati, 2017).

ICT has become pervasive in people's daily life that it has attracted much research interest on the role of ICT on the quality of life. Studies found that ICT directly impacts the rural community by providing relevant information and empowering them in knowledge sharing. ICT can achieve the goals of promoting local economies' growth, improving living standards, increasing business revenues, and eventually alleviating poverty (Luo and Chea, 2017). Furthermore, ICT usage and skills enhance ICT's effect on socio-economic development (Alderete, 2017). However, the evidence on the effects of ICTs in improving quality of life at the individual country level is mixed. There is a growing consensus that poor rural telecommunication infrastructure hinders rural development. Policies for promoting the availability of connections and the adoption and use of ICTs have been responsive in character and largely unsuccessful. The paradox is that rural communities are most in need of improved digital connectivity to compensate for their remoteness, but they are least connected and included (Salemink, Strijker & Bosworth, 2015). As a result, ICT applications in developing countries remain largely uninformed by recent developments in wider literature. Conversely, many development agencies have failed to effectively implement strategies to harness the potential of ICTs (Ghosh, 2016). The research revealed that remoteness strongly predicted home internet and broadband connectivity. Still, the digital divide was exacerbated by other sociodemographic factors such as educational levels and employment status (Park, 2015). Moreover, Ating (2020) stated that geographical location and accessibility, technology literacy, and lifestyle also influence the impact of ICT.

The use of computers and smartphone has a greater impact on the psyche of the farmers to establish a greater change in their behavioral complex comprising of knowledge, skill and attitude (Pradhan, Panda & Prasad, 2018). There are three conditions that led to successful ICT integration: 1) types of ICT tools, 2) rules and regulations that shape the ICT culture, and 3) division of labor within the community. The stakeholders must work together to resolve tensions introduced by systemic contradictions in different activity systems, which shape ICT culture (Razak, Ab. Jalil, Krauss & Ahmad, 2018). ICT can play very different roles in social cohesion for different social

and cultural groups as well as for different kinds of locational communities, but that ICT is becoming an integral part of rural social relations (Wallace, Vincent, Luguzan, Townsend & Beel, 2016). However, for rural populations with low-income levels, affordability to purchase the devices and the cost of internet subscription have become a major challenge that hampers ICT integration (Zainol et al., 2021).

The debate on the new communication technologies or the internet is far from settled. Some emphasize the opportunities while others criticize its impact. This phenomenon can be explained through the perspective of critical theory. Critical theory refers to inquiring, questioning, and challenging the status quo. This research is grounded in the critical theory of communication technology (Feenberg, 2009) that offers an approach to the Internet debate. It acknowledges the increased justification of the prospects of the new communication technology and the associated risks that comes with it, while also highlighting the new forms of community that emerge out of it.

The adoption of broadband and related technologies is critical for the digital economy as broadband is considered the catalyst for growth. When it comes to technology, according to Galperin (2004) wireless technology plays an important role in the expansion of rural telecommunication networks in most developing countries. For rural networks, mobile technology development is more economical than fixed-line infrastructure. Furthermore, in terms of cost, mobile technologies are more affordable for low-income rural populations (Proenza, 2006).

There is no consensus on the measurement of quality of life (Nevado-Peña et al., 2019) as it is contextual based. The concept of quality of life is indeed individualized, hence assessing it in a same way for everyone is pointless (Gilhoody et al., 2010). Therefore, understanding individual perceptions on the effect of ICT on their quality of life is crucial. This research fills in the knowledge gap on how ICT affect the quality life of the B40 in the rural areas.

3.0 Methodology

This study is an exploratory study where data collection was conducted through interviews. The primary objective of this study is to gain an in-depth understanding of the effect of ICT on the B40 in rural areas. Therefore, respondents from this location were approached. Among the respondents, few have experience in using ICT. A sample in qualitative research is not a statistically drawn sample but a purposive sampling based on the established criteria. Informants must be those who have knowledge about a particular issue and those who are willing to participate in the study which leads to a purposive sampling. The criteria of the informants of this study are those who fall under the B40 category and live in rural areas in Malaysia, namely in the state of Selangor (central region), Johor (southern region), Kedah (northern region), and Pahang and Terengganu (east coast region). A total of 34 respondents were willing to participate in the study. Studies have shown that a sample size of 20-25 is adequate when collecting the overall views of a group representing a sector (Crabtree & Miller, 1999).

The interview sessions were recorded, and data were transcribed. The study employed a semi-structured interview. Most of the interview sessions lasted about an hour. The interview transcripts were vigorously read, and notes were created to identify emerging patterns. The analysis was done manually by comparing the transcripts to look at similarities and differences in information. The analysis was not done verbatim as the aim of the study is to look for significant ideas related to the phenomenon under study. Statistical validity is not typical of qualitative research; rather, detailed and rich data offers valuable information that provides an in-depth understanding of the phenomenon. A systematic qualitative data analysis by Miles and Huberman (1994) were adopted and adhered to. The three main activities of data analysis begin with data reduction, followed by data display that leads to conclusions drawing or data verification.

Table 2: Informants

Village	No of informants	State
Village A	8	Selangor
Village B	10	Johor
Village C	8	Kedah
Village D	5	Pahang
Village E	3	Terengganu

4.0 Findings and Discussion

Interviews were conducted with rural citizens in the selected region in Malaysia. The informants who participated in this study fall under the B40 category whose household income is less than RM4850 a month. The main questions asked were related to how ICT affects the quality of life of the B40 in rural areas. The findings showed that all the informants owned television and radio. These devices are the main source of information and entertainment. However, the interview data collected were skewed towards the issue of the internet, broadband, and wireless access. Apparently, the informants were more adamant to share their concerns and predicaments related to access to the internet.

In order to understand how the internet affects the rural population, three important factors need to be observed i.e., the availability of broadband wireless networks and infrastructure, the affordability of the services, and the affordability of the devices. Income is still widely regarded as a major driving force for technology diffusion. According to Handler and Grossman (2009), when annual broadband expenditure is priced at more than 2-5 percent of a household's income, broadband is considered unaffordable. According to the Department of Statistics Malaysia (DoSM) (2021), 95.5% of Malaysian household has access to the internet. However, a study by Mohd Hassan et al. (2021) stated that, of the overall internet user in Malaysia, only 25% of users come from rural areas. This indicates that internet penetration in Malaysia is still very low. The findings from observation and interview showed that broadband wireless networks

are prevalent in rural areas, and most informants perceived the service provided as affordable. However, in terms of the affordability of the devices, most depend on mobile smartphones to access the internet. Due to affordability factors, computers and laptops are not widely used except for those with schooling children. One of the biggest challenges in rural areas is the availability of quality internet connectivity. The majority of the rural areas under study experienced low-quality internet connectivity.

"I have to find the right spot in the village in order to get Internet." (Informant, Village A)

"Even here (community center) we cannot get the Internet reception." (Informant, Village C)

"Telco companies are competing to sell Internet mobile data, but none works well when the problem here is the reception (connectivity)." (Informant, Village E)

"I hope the government will provide us with better internet infrastructure." (The Village Head, Village B)

The above finding is consistent with a previous study on online learning by Zainol et al. (2021) that the availability of internet access is the biggest challenge faced by the lower income group of the B40. Although ICT has brought about benefits and opportunities to many, particularly to the urban, the rural population is still struggling with connectivity. It seems like the main challenge in developing countries is to provide equal opportunities to all populations in terms of access to ICT. Undeniably, technology itself does not have value unless it is adopted. The benefits of ICT occur only after a period of adoption. The study leads to the understanding that current situations indicate that ICT implementation is increasing the gap between rural and urban populations.

As discussed in the literature, access to ICT enables the development of basic ICT skill and provide greater opportunities for greater communication. Therefore, the use of the internet provides a potential connection within the community that allows the exchange of information. It is believed that providing access to ICT in rural areas is not enough to close the digital gap between rural and urban. We also need to understand the people's interaction with ICT and discover any differences that may foster the digital gap brought about by ICT. An important aspect of ICT is communication, and language is a centrally important element of communication. The internet represents English dominance. Therefore, non-English speaking is lack behind in terms of access to knowledge and information. Since most rural informants faced difficulty with quality internet connectivity, the attempt to discover how ICT affects their quality of life seems futile. Therefore, the interview questions were directed toward the informants' perception of the benefits and or challenges of ICT. The informants were also asked how they value the internet. Generally, informants' attitudes towards the internet are positive and they have a relatively high interest in ICT. They believe that the internet would keep them abreast with current development. In terms of the informants' knowledge of ICT, the majority of the informants are familiar with the basic use of smartphones and they claimed that given good Internet connectivity they would use the ICT frequently. They also believe that the internet will connect them to the world, and they are able to keep themselves updated with current issues, news, and development.

The study found that smartphones and internet access are gaining importance among individuals' needs in our study. Owning smartphones is equally important as having internet access. As with many other technologies, we also observed that income is a relevant factor in technology implementation. For example, during the Covid19 pandemic and due to the movement control order (MCO), schools have to resort to online learning. Given poor internet connectivity and the affordability of ICT devices, many children in rural areas could not participate in online learning. In addition, a few of the entrepreneurs' informants lamented that during MCO, training and workshop related to entrepreneurship were conducted online. Due to that, they believed that they were lagging behind in upgrading their skills and knowledge. Furthermore, to embark on online business is not possible when the quality of internet connectivity is poor.

"Now workshops are conducted online, there were quite a number of workshops that I missed. I have to go to town if I want to participate in the workshop." (Entrepreneur from Village B)

"Now is the time (MCO) that businesses start to do online business, how to do online business in our village." (Entrepreneur from Village C)

In brevity, the informants believe the potential positive effects associated with ICT and its ability to contribute to their quality of life and the opportunities to create new economic activities. However, informants are also concerned over the risks associated with the use of the internet, especially towards their underaged children. Parents are worried that children might be exposed to inappropriate content, spend too much time on screen, reduce academic performance, and possible addictive to the gadget. According to them, now they are witnessing that most children who have access to the internet are hooked up to online games. The problem becomes more critical when parents lack exposure and lack of knowledge and skills in information technologies. When children are more technology savvy than their parents, parents might be unable to detect early signs of abuse or addiction, isolation, or school failure due to excessive ICT usage.

Nevertheless, the informants place great emphasis on the need to provide wireless networks and infrastructure. To a certain degree, the study found that individuals' knowledge and experience affect their attitudes toward ICT adoption. Other individual characteristics that affect attitude towards ICT are gender and age. Of the total of 34 informants, only two informants do not own a smartphone. Regarding the affordability of the smartphone devices, 5 of the informants claimed that the children (working children) provide the device mainly for personal communication. Those below 56 years old were found to be more literate compared to the older generation when it comes to the adoption of smartphones. Most female informants who are housewives were indifferent to the benefit of ICT in their daily life.

The inability to access to the internet is the main challenge of the B40 in rural area and it becomes the limitation of this study since the data skewed to the problem with poor internet access. Limited information was gained during the interviews on how ICT usage affect their quality of life. However, the informants believed that technologies would improve their quality of life which eventually able to lift their standard of living. The main concern is internet connectivity, as they believed that poor connectivity deprived the community of accessing to education, the creation of economic activities, and social inclusion. The discussion of the findings based on the critical theory of communication technologies highlights the potential opportunities and predicaments faced by the rural population.

5.0 Conclusion

As the national data on internet access indicates, Malaysia experiences high internet penetration but the quality of internet connectivity in rural areas is still very poor. It limits the study in that, the actual effect of ICT cannot be uncovered instead, the study has to focus on the perceived effects of ICT on the life of the rural population. The main finding indicates that the rural population has not benefited much from ICT due to limited access to the ICT infrastructure, mainly the internet services. This study is important as it contributes to the understanding of the effect of ICT on the B40 in rural areas and how it limits their opportunity to uplift their standard of living and improve their quality of life. The role of government is important in ensuring equal opportunity to access ICT infrastructure and services. The B40 income group is not confined to those living in rural areas but urban poverty is also prevalent. This study focuses on the B40 in the rural areas mainly due to their geographical location and remoteness. Future studies may also consider the B40 living in the urban. In addition, this study does not attempt to achieve representativeness but rather an in-depth understanding of how the rural population is affected by ICT.

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Paper Contribution to Related Field Of Study

The study increases the understanding of the phenomenon through the perspective of critical theory on communication technology. The effect of ICT on quality of life is contextual and this study contributes to increase understanding that quality internet connectivity will likely influence quality of life of the rural community. This research is timely as it lends support to the government agenda digital inclusion. ICT initiatives is a critical area that the policy maker should look into as it reduces digital gap and has the potential to improve the quality of life of the rural community.

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