

Overview of Information and Communications Technology Adoption among Rural Business

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Abstract

Industry Revolution 4.0 has changed the way business operates and demanded the business transform its operation from traditional into the digital market. The intense to encourage this shift is increasing when it comes to rural economy where geographical distance becomes one of the major barriers that have been eliminated. This transformation is crucial so that rural entrepreneurs can grow their business and attract their potential business stakeholders to reach them locally and globally. However, regardless of the importance of digital economy transitions, rural businesses still face huge challenges that inhibit them to adopt the information and communications technology successfully. Realizing the importance of e-commerce adoption in this era, this study aims to review and critically analyzed the information and communications technology adoption literature specifically in rural areas to provide a generic overview on the current situations of information and communications technology adoption among businesses in rural areas. Finally, fruitful potential researches have been suggested to deepen our understanding and knowledge pertaining to this issue in the future.

Keywords: Rural businesses; Information and communications technology adoption; Digital economy

1. Introduction

Rural areas always synonymous with the areas that always lagged behind compared to the urban areas. Due to various challenges faced by communities in rural areas such as their geographical distance, insufficient infrastructures, small population, lack of education, it turns out like rural people have to pay the price for residing at the rural area. Due to its rurality, businesses in rural area face difficulties to sustain their business due to its locations and small market opportunities (Siemens, 2010) apart from having difficulties to compete with imported goods (Rantšo, 2016). These situations rationalized the low gross domestic product (GDP) contribution by rural economy compared to the urban areas. As a result, it provides lack of job opportunities offered in rural areas due to small market size and lack of economic demands which forces the rural people, especially the young to discover opportunity in the urban areas. These situations contribute to the high percentage of rural-urban migration which resulted to the overcrowded urban areas and left the rural areas with lesser people and continuously underdeveloped.

However, with the development of technology and globalization, rural areas have huge potential to compete with their urban counterparts and able to sustain competitively in the market locally and globally. Despite of various potentials of the digital economy and various studies done on information and communications technology (ICT) adoption starting from the emergence of ICT usage, rural businesses are still struggling to utilize the digital platform to maximize their revenue due to various challenges faced by them. This forces more studies on ICT adoption to be conducted to explore the current issues and what else have to done to encourage ICT participation among rural business. In responding to the needs, this study intends to gather and critically analysed the literatures focusing on ICT adoption among rural businesses to gain insights and provide holistic overview on the current situations pertaining to ICT adoption in rural areas.

2. Rural Areas

As far as it is important to define urban, it is also crucial to define rural areas for development strategies purposes. However, there are various definitions to demonstrate the rural areas and the definitions might be different from one country to another. Sharpley and Sharpley (1997) characterized rural areas with the availability of the forests, beaches, agricultural land, reservoirs and canals. From this definition, rural areas are being classified as the area with nature and environment which is usually still being preserved as compared to urban area.

Meanwhile, OECD (1994) stated that the domination of agriculture and forestry activities are some of the elements to be considered as rural area. This shows that the economic activities in rural area are different if compared to the urban side. This is consistent with the definition of rural provided by UN (2004) cited in Salvatore et al. (2005) which is more general and easier to understand as “what is not urban area”. Therefore, those who hold this definition is easier to classify rural and urban area as there are some differences that shown clearly to distinguished between both.

In clarifying this, Phillipson et al. (2004); Shucksmith and Brown (2016) argued that economic activities in rural areas are more to agricultural, forestry, and tourism based. This is differing compared to their urban counterparts which is more innovative and highly industrialized.

Meanwhile, OECD (2018) argued there are three elements that differentiate between urban and rural namely, “*physical distance to major markets, economic competitiveness and specific economic structures* as compared to urban areas due to the “*disperse economy, concentrated to specific products and lack of high labor skilled workers in the rural areas*”.

Looking at various definitions for rural areas, one cannot regard specific definition of rural area to be applicable to the other regions due to the national differences and thus have to apply their rural urban concept according to their needs as stated by UN (1998) cited in Salvatore et al. (2005). However, generally, rural area can be defined as the place outside of urban area that maximizes their local resources for their economic sources.

3. Importance of ICT Adoption to Rural Economy

In most places, rural areas are always left behind compared to the urban areas in most aspects such as population, knowledge, technology as well as their socio-economic due to various factors such as lower productivity, non-competitive economic demand and supply, geographical barriers as well as insufficient infrastructures and facilities in rural areas. Due to these factors, rural areas faced with a lot of challenges that might affect their sustainability in a long run if there are no efforts to enhance the rural areas especially in terms of their economy sector. One way to improve the rural condition is by the usage and adoption of technology. These are supported by Smallbone et al. (2002) which argued that ICT tools usage have high potential in combating challenges faced by rural business in terms of markets and suppliers. This is because, with the existence of technology, it can lift the geographical distances as one of the economy major barriers in rural areas (Johnson, 2001) with only a single click.

Due to this globalizations and barriers alleviation, Philip and Williams (2019) argued that small rural enterprises have to take this advantage to grow their business not only in meeting the local but also global needs. This can be supported by (Deakins et al., 2004) which conclude that the rural business is not just using ICT to increase their revenue but they are also likely to expand their sales internationally to meet global demands.

By looking at the huge potential of ICT adoption, it is clear that ICT usage is one of the keys to enhance economic sectors not only in urban areas but also in rural areas. Businesses have to explore their environment and put their effort in adapting with current changes to ensure they can sustain their business for a long term. Otherwise, their business is just at the stagnant positions and it might be possible that the performance of the business might decline if their other competitors are using more effective strategies to market their products and operate their business through the usage of ICT which is more effective compared to the traditional business approach. Therefore, it shows that in this globalization arena, ICT adoption is no longer a choice but a necessity for the business to sustain as what have been mentioned by Rodgers et al. (2022) who stated that nowadays, the key for business survival is through the usage of e-business strategies.

Even though it is proven that ICT usage is one of the effective tools to grow the business, one cannot just rely solely with ICT to operate their business. It has to be complemented with the ability to use their entrepreneur's skills to attract their stakeholders and remain competitive in the market. Without these abilities and skills, ICT usage will not give the best business results as expected and desired. This idea has been supported by Polo Peña et al. (2011) which found that the combination of ICT and market orientation strategies give the best results towards the rural tourism business outcomes if compared to the individual strategy usage. Therefore, it is very crucial for the business to equip themselves not only with the knowledge of ICT but also the skills as the entrepreneurs to stay relevant in their industry especially in this digital era.

4. Overview of ICT Adoption

Back in a few decades where ICT started to emerge, it can be seen that even in developed countries, people in rural areas still have low awareness on the importance of ICT adoption. De Noronha Vaz et al. (2006) argued that business in European rural areas have lower level of ICT adoption. This is consistent with the study conducted in developing countries by Ibrahim *et. al* (2009) in which their studies noted that ICT adoption levels among rural community in Malaysia were still at the early stage of adoption. This can be shown as they have limited awareness on the public online applications apart from the lower usage of internet and computers. However, in other studies, adoption of ICT is higher compared to those in developing countries. This can be proven through findings found by Irvine and Anderson (2008) which found that 84 per cent of rural business use ICT effectively for the purpose of providing information and improving their service quality of their business as a tool for them to overcome their rurality and geographical barriers faced by them.

However, even though most of them adopt ICT successfully for the purpose of sales and marketing, some of them ignore the effective usage of ICT in supply function. This shows that even though ICT usage have been adopted by rural business it can be seen that their ICT usage is only limited to sales and marketing strategy as well as maintaining their contact with their customers apart from utilizing a broad ICT functions like the urban businesses have widely used in their business operation. In general, it shows that ICT usage in rural areas is still lagged far behind compared to their urban counterparts.

As time goes by, the ICT adoption among rural business might move beyond the past. This is proven through the study conducted by Philip and Williams (2019) who shows interesting findings whereby all home-based business who participated in the Rural Paws Study in Europe said they have used internet even before participating in the Rural Paws Study. However, the digital inequalities experienced by them were not due to the non-internet adoption, but because digital connectivity is not sufficient to support their online activities as they desired. This clearly portrays that ICT adoption is not the issue nowadays, but how effective their ICT usage in their business transactions which can be affected by various factors and thus demanding the relevant stakeholders to take this issue into consideration to ensure rural business can experienced ICT usage benefits optimized.

Findings found by Jaganatha et al. (2018) also show the same adoption progress as rural SMEs in Malaysia are now more aware that ICT adoption is crucial for their business. However, they still have to face some challenges that need to be overcome to support them in adopting the ICT successfully and one of it is the funding issue. Meanwhile, Lee and Tao (2018) in their studies found that 90 per cent of the rural business has already used e-commerce at certain extent. However, even though majority have adopted e-commerce, 70 per cent did not experience the real advantage of e-commerce usage due to lack of e-commerce marketing and operation.

Thus, it can be concluded that entering into 22nd century, rural business is already aware on the importance of ICT adoption but still face some challenges that inhibit their effective adoption. However, compared with developed countries, rural businesses in developing countries shows they still have limited knowledge, skills and assistance that enable them to adopt the ICT in their business operation successfully.

5. Factors of ICT Adoption

It is undeniable that environmental pressure may force the rural business to adopt the ICT. This is because businesses need to aware and analyse their macro environment in order to stay competitive in the market and this including rural business. PESTEL Analysis theory highlighted that the business organizations have to consider political, economic, social, technology, ecology and legal elements before they plan, and execute their business strategy. This statement is further supported by the findings generated by Mitchell and Clark (1999) in which according to the study, rural businesses are being facilitated to adopt ICT due to the environmental forces such as received pressure from the customers, suppliers and some by the corporate policy. Finding further shows that high technology firms that have strong business links with non-local businesses tend to adopt ICT. Therefore, it clearly shows that business that cater outside market will adopt ICT as it is an important tool for them to sustain their business compared to the business that focus on the local markets.

However, Galloway et al. (2011) found that extra exposure to external markets through online portal could be detrimental to the business who serves local markets. Some of the interviewee said *"the XX site is only there to sell the area to foreigners and so the locals don't use it and they don't like it...it might attract some visitors but it is no use to them and doesn't do anything or give them anything for their business"*. Therefore, it can be seen that ICT usage have the huge potential to serve local and global markets but the strategy to use it have to be adjusted according to the needs of the businesses and the markets they are serving.

Apart from the environment, as mentioned before, the individual awareness is also one of the key facilitators for the business to adopt ICT. Zaremohzzabieh et al. (2015) in their study investigating the ICT adoption among rural young entrepreneurs in Malaysia found that perceived usefulness is the key facilitators towards their ICT adoption behaviour. Perceived usefulness can be defined by the people perception on how useful it is to help them perform the task better (Davis, 1989) such as reducing costs, attract the global potential customers and enhance productivity. Lack perceived usefulness will not influence the business to use it in their business transactions especially when they have lack of resources and have limited knowledge on how to use it effectively. This is further supported by findings found by Nkosana and Skinner (2016) which found that small restaurants in rural areas perceived that awareness on the ICT adoption benefits act as an important element for success adoption result. Further, the findings indicate that these rural businesses also have to receive adequate support from various stakeholders to ensure they can adopt ICT successfully. This is because, apart from themselves, they need help from outside parties to equip them with something that they lack of. One of the important stakeholders is the government as they are responsible for developing, enhancing and maintaining the wellbeing of rural community. They can support them through giving funds, conducting campaigns to educate them and increase their awareness apart from establishing the appropriate policy and investing in improving the infrastructures in rural areas.

However, the responsibility does not lie to the government itself. Community as well as family members in that area may also play important role through giving ICT knowledge to those in need especially those who possess this knowledge beforehand. While private business especially the e-commerce platform can extend their marketing strategy to business in rural areas. This is supported by a study conducted by Price et al. (2018) which shows the evidence of effectiveness of support towards ICT adoption among rural businesses. In this

study, they approached rural SMEs in the area of Lincolnshire, UK who participated on the public funded program which specifically designed to enhance the demand of the broadband in that area. Result from the interview show that both one to one advice as well as the ICT grants received will help those who want to adopt broadband at the early stage. However, accessibility to technology hubs is also crucial to assist them in managing their business effectively through ICT adoption.

6. Barriers of ICT Adoption

It is undeniable that rural businesses are more aware on the importance of adopting ICT in operating their business in this digitalization era. However, even though they are determined to use ICT, they still face huge barriers that inhibit their adoption of ICT successfully. In some cases, it is hard to invest in technology infrastructures due to the lack of demand in the rural areas which force the relevant stakeholders to think twice before invested in that area. Funds and financing mechanism are one of the important systems in supporting the rural business to adopt ICT successfully. This can be portrayed through the findings generated by Jaganathan et al. (2018) which found that most of the respondents agree that insufficient funds and finance is one of the barriers for them to adopt ICT successfully.

Apart from the funding, Corrales and Westhoff (2006); Kapurubandara and Lawson (2009); Yu et al. (2017) noted that among issues faced by rural business are low literacy, lack of skills particularly in technological skills, poor infrastructures in rural areas, lack of national policy and problems with technological support. This is consistent with Lee and Tao (2018) which found that rural agriculture firms argued that the challenges for them to adopt e-commerce successfully are due to the lack of resources, limited knowledge to implement e-commerce as well as insufficient capital, skills and capabilities needed to use e-commerce. Findings of the study further indicate that 70 per cent of the respondents have difficulty to adopt e-commerce due to their heavy farm workload and have lack of workers to help them in operating their business. Based on these studies, it shows that there are a lot of assistance that have to be given by the stakeholders to facilitate them in responding to this Industrial Revolution 4.0 especially the government who are among the top stakeholders to develop the rural areas. This is consistent with findings found by Lekhanya (2016) whom reported that among the challenges that have to be addressed to ensure success rural industrialization through the usage of modern technology are policy, rural infrastructure and government attitudes towards rural industrialization. Without consideration of these elements, rural industrialization through ICT usage is hard to be achieved.

Due to the importance of technology among rural business, governments have to develop the aim to encourage facilitation of ICT usage in rural areas and establishing effective strategies to overcome these challenges such as developing the policy, give financial assistance, allocating some resources for the infrastructures development and conduct a campaign on the importance of ICT in rural areas. With the help of government, it is not possible that the other stakeholders including the private sectors will work together to achieve the mission in ensuring rural businesses to stay competitive not only in local but also in a global market.

However, even though assistance and infrastructures investment are crucial to facilitate their adoption, it is undeniable that all the assistance given is not sufficient if the rural

communities themselves have limited knowledge on the importance of utilising ICT. This is supported by Kyobe (2011) which found that major barriers to ICT adoption are lack of individual awareness. All the infrastructures, funds and policy will not work well if the business owners themselves have lack awareness on the importance of using ICT in operating their business. That is why, the rural businesses have to be educated on the importance of technology adoption to achieve the current trends of businesses whereby majority of business without exception those in rural area have to transcend into digital business platform. This argument justifies that the strategies implemented must be in accordance with the needs of the rural people in that particular area. Therefore, any development and strategies implemented will work effectively and efficiently.

7. Conclusion and Recommendations

ICT adoption is a good platform for rural entrepreneurs to grow their businesses as ICT bring a lot of benefits such as overcome the rural barriers, expand the markets, reducing the cost thus the businesses can gain more revenue as well as increasing the productivity.

Throughout reviewing the literatures, it can be seen that the rural business has started to realize the importance of ICT adoption. However, it is noted that there are various factors hindered them to adopt the ICT in their business operation successfully. Meanwhile, in some studies highlighted that the businesses only used ICT as their tools for maintaining relationship with their customers and ignore the other functions of ICT. These show that various stakeholders should play their role actively if the aim to enhance the rural economy globally can be achieved.

In order to do so, all the infrastructures needed to enable online businesses have to be made available and accessible, at the same time, their perception, awareness and knowledge on ICT adoption also have to be facilitated. Thus, it is fruitful for future research to look into the perspective of the government or local authorities related to the factors and inhibitors to provide the facilities required so that the real situation can be understood holistically.

Besides, future research also may conduct a study to look into the personality or motivation of rural entrepreneurs to reach the global audience. Therefore, entrepreneurs can be classified into the appropriate groups to ensure effective strategies can be implemented.

In addition, it is also good to study the role of family in educating their family related to ICT usage looking at the reality that some of family members might have ICT knowledge due to their education level, their occupation, as well as their residential in urban place where ICT usage is a must. Without assistance to encourage online participation and visibility among rural businesses, they are unable to serve wider market thus continuing to face the 'rural penalty' politically, socially and economically. Future research may look into the perspective of various stakeholders to gain deep understanding on this situation.

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