



The Potential of Internet for Enterprise Creation and Rural Transformation: A Review

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Abstract: This paper reviews evidence about the potential of internet for enterprises development and rural transformation. It is based on the theory of globalization, particularly economic globalization and specifically the use of the internet. It is noted today, more than ever before that, there is an increasing realization of the potential of internet as a basic need of life and human right. Internet is illustriously used for a variety of reasons that are domestic, commercial and official and is the key driver of development. It offers great opportunities for governance, commerce, education, health, agriculture and entrepreneurship. It is, however, noted that while internet presents a big potential and opportunity for enterprise development and rural transformation, a number of barriers still exist, particularly, in rural areas. These include connectivity, knowledge, skills, electricity and solar power. It is suggested that governments explore a number of policy options including investment in overhead infrastructure and subsidies targeting rural areas. They should also focus innovations on rural affordable technologies tapping into existing low cost options, like use of solar powered ICT equipment, long lasting batteries and power banks, setting up ICT centers in both rural and urban areas and deployment of skilled personnel to maintain the equipment. This paper emphasizes the need for an enabling policy environment and strategic leadership and direction with regard to internet use centering on enterprise creation and rural transformation.

Key words: Internet, Enterprise, Rural areas, Transformation, Empowerment, Development.

INTRODUCTION

Internet is a network of computers across the globe. Such connected computers communicate with one another just like individuals would in a physical world. The internet revolution, as known today, appears to have been very fast largely powered by advances in information communication and technology. The initial ideology behind internet was centered on military and scientific progress, particularly, between USA and USSR (Keefer and Baiget, 2001, Abbate, 1999 and Kleinrock, 2010).

Around 1957, USSR launched *Sputnik I* (rockets) into Earth orbit to the surprise of Americans. In response, US designed the Advanced Research Projects Agency (ARPA), a body within the US Ministry of Defence, charged with innovating modern technology so as to keep ahead of its opponents. Currently, this body is known as Defense Advanced Research Projects Agency-DARPA (Science Node, 2017). The internet revolution is largely credited to ARPA with the design of the ARPANET computer program which later adopted the Transmission

Control Protocol/Internet Protocol (Campbell and Garcia-Swartz, 2005; Science Node, 2017). This protocol is the backbone of modern day internet allowing transfer of billions of messages over the net. This is the very protocol that powers the current World Wide Web – a search engine designed by Tim Berners Lee (Berners-Lee, 2000).

Today more than ever before, there is an increasing realization of the potential of internet as a basic need of life (Human Development Report, 2016). In some countries internet is no longer a basic need but a right and there already exists a resolution of UN on the right to promotion, protection and enjoyment of internet (UN Human Right Council-A/HRC/20/L.13 2012). Netizens, i.e., the citizens that rely on internet, are increasingly demanding for the fulfillment of such rights (Unwanted Witness, 2014). Internet is used for a variety of reasons that are domestic, commercial and official, and is the key driver of development (Salter, 2003; Kahn and Kellner, 2005; OECD, 2010; World Economic Forum, 2017). The use and penetration is also largely

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dependent on location, region, purpose and group. For instance, internet coverage is higher in developed regions as compared to developing regions, urban compared to rural, poor compared to rich and educated compared to less educated counterparts.

Irrespective of the penetration, evidence available (Brewer *et al.*, 2006) shows that internet is a transformative agent generating opportunities in governance, commerce, education, health, agriculture and entrepreneurship. The Arab spring revolution is largely credited on the internet and so is online shopping, marketing and sales of services and goods. The use of internet in enterprise development is, therefore, an everyday experience churning out thousands of names as global business leaders – the likes of Zuckerberg Facebook, Apple Iphone` Steve Jobs and Whatsapp, among others. In developing countries, like Kenya and Uganda, internet related enterprises in communication, banking, transfer of money, payments for utilities and security have created thousands of jobs (World Bank, 2013, Ndiwalana and Tusubira, 2012; Nyeko *et al.*, 2013). In Uganda, for instance, the emergency of mobile money services has eased money transfers, payment of cable television bills (DStv) and more recently school tuition and utilities. Most of these internet services concentrate in urban as compared to rural areas. While, there appear many entrepreneurial opportunities for use of internet in rural areas, the limitations in coverage, knowledge, appreciation have continued to pity rural over their urban counterparts.

This paper reviews the evidence on the potential of internet in enterprise creation. It also proposes a way forward towards enhancing the use of internet in enterprise creation amidst the enormous challenges experienced. The focus of this study is on rural areas in developing countries with Uganda serving as a reference point.

Potential of internet as an entrepreneurial and rural transformative agent

Rural transformation is the key to sustainable development and fundamental to the attainment of the post-2015 development agenda (Oxfam, 2015; UN, 2015). Realizing this potential requires increased output, improving access of local communities to markets, funding, technology and above all information. The internet is important in reducing abject poverty among both rural and urban populations, thereby enhancing sustainable development through creation of a pool of informed citizens aware of available opportunities for improving their standard of living. Targeted deployment of internet in realizing the disparity essentials of town and countryside societies may thus be a powerful tool for economic, social and political empowerment (International Seminar on Non Convention Energy Sources 2016).

The internet is ushering in a revolution in different ways of living, such as, information

diffusion, community relations, commercial and trade practices and political change. In India, for example, developed internet applications, such as, Warana, Dristee and Sari, have been used to instill information management culture by increasing agriculture extension activity, such as, training and capacity building to farmers resulting into enhanced, diversified and resilient rural economies (Nayak *et al.*, 2010).

Similar internet success stories in rural areas have been reported throughout the world and in different specializations resulting in direct and indirect benefits. Internet enlarges the frontiers of the Micro and Small-Scale Enterprises (MSEs) and markets and ensures the sustainability of their businesses. In Ghana, the introduction of internet in the rural regions led to significant improvements in the number of small scale investments and countryside financial institutions. Approximately 69% of the population is engaged by micro small enterprise and most of these are in the countryside (Alliance for internet Ghana, 2014). Internet has connected most of these enterprises to markets, suppliers of products, exchange of knowledge and payment of utilities.

In Kenya, SMEs, on the other hand, have introduced money transfer services using mobile phones. It is reported that such services have provided a platform of high-quality e-business services which enable people to conveniently make transactions. This has largely been through the introduction of M-PESA, which is an inventive mobile payment system that aids traders/people to complete modest monetary dealings by the use of mobile phone (Mas and Radcliffe, 2010). It is noted that the major purpose of Mobile Money Transfer (MMT) M-PESA facility is to lessen the expenses of making payments among individuals who are far from one another. The other roles of M-PESA are: facilitating trading between businesses, safe money transfer from one person to another, depositing cash and accumulating savings. The large M-PESA network with agents in rural areas has made it cheap for small scale farmers/peasants to reduce the time and money outflow in accessing the money they need to invest in agriculture. Further to the south in South Africa, internet usage by SMEs provides favorable cost factor and the capacity to connect traders and buyers (Ismail *et al.*, 2011). The setup of SMEs has resulted into opportunities for employment and monetary support for the countryside population, something critical for enterprise sustainability.

The rural banking sector has also greatly benefited from internet. Numerous local financial institutions across the globe have been interconnected, help several micro small enterprises, buyers and agriculturalists in the country-side averting risks related to holding large amounts of money (as they can deposit their cash in bank and withdraw it from another). Most deposit and lending institutions provide money transfer services, particularly, using

mobile phones. In countries, like Ghana, some country-side banks, like Kakum, have successfully offered cross boarder money transfer services helping local people in their areas of operation.

In Uganda, Savings Credit and Cooperative Societies (SACCOs) and mobile banks operated on vans provide opportunities for the rural people to deposit, withdraw and save money at ease, while most of these SACCOs may not be directly connected to internet. The introduction of mobile related technologies like mobile money and customized products for purchase of computers, setup of internet café's, payments for utilities and services imply a faster and convenient lifestyle for the rural people. As noted by van Hoorik and Mweetwa (2008), opening an internet cafe is being looked at as a means of creating money.

It needs to be emphasized that a large number of low-income earners in third world countries stay in rural areas and their standard of living directly depends on subsistence farming. As such internet can make a significant contribution in increasing and improving the effectiveness, yield and sustainability of small-scale farms in the rural areas (Ministry of Rural Development, Government of India, Annual report, 2002-2003). Rural/subsistence farming currently encompasses threats and fears, and majority peasants or subsistence farmers experience a lot of challenges such as poor soil, drought, erosion and pests. The internet can provide important information to farmers involved in both crop farming, rearing of animals and bee-keeping among others. Such information can be about crop care or management and animal rearing, fertilizers and feedstock inputs, pest control, seed sourcing and market prices.

In India, AGMARKET, a centric portal for agricultural marketing information system, provides easy access to markets for agricultural commodities, their varieties, prices and other marketing related information, such as durability. The Warana Wired Village Project in Maharashtra and Information Villages Project (IVP) in India are innovations that have resulted into significant agricultural development especially in milk collection dairy co-operatives. This has been possible through extension of broadband internet in the rural areas of India (Bhatnagar, 2004). In addition, farmers'/peasants' groups can benefit from the use of internet to reinforce their own capabilities and make informed decisions for themselves and their communities as they negotiate for farm input and output markets, prices, land claims, resource rights and other ventures related to infrastructure (Stienen *et.al.*, 2007). Similar manifestations have been witnessed in other countries, including Zambia, where the Internet of Things (IOT) technologies has been constantly enhancing the living standards of peasants in rural areas through improving farm output, selling and post-harvest handling information, which, in turn, has reduced agricultural loss and poverty (Dlodlo and Kalezhi, 2015)

Internet further empowers local public to interrelate with other stakeholders, thus lessening inaccessibility. It broadens the chances of rural people's improvement in all spheres of life at both national and global level, opens up new business prospects and allows easier contacts among colleagues (Joseph and Andrew, 2006). It further helps in enabling processes to become more effective and transparent. It aids in making rules and land information more accessible. Internet enables tools, like Global Positioning Systems (GPS) and digital cameras, to aid countryside communities to document and communicate their conditions and circumstances. Mobile banking initiatives offer further scope to reduce costs and stimulate local trade. For example, the Indian AMUL program generates automatic records about milk receipts and payments, that has improved transparency besides ensure prompt and easier payment to farmers (Meera, 2013).

In education, the internet is very useful in improving the quality of teaching and enhances the classroom teaching situation which nurtures critical, integrative and contextual teaching and learning besides improving literacy in the rural areas. It is worth noting that the internet strengthens the effectiveness of the delivery of education in schools and educational management institutions at all levels. Its use aims at improving the standard of teaching and learning as well as enhancing access to education by the rural people. The case of Ghana is, particularly, worth noting where most of the Government aided universities provide education opportunities to the rural people with low income who cannot travel long distances to education. Extension of internet to rural areas strengthened and extended distance learning to the rural areas and has greatly reduced the challenges of teachers and agriculture extensionists who love to transfer from rural areas to urban places as they desire to acquire more education and qualifications. Most importantly, workers have accepted to operate in rural area as they can use internet to access both business opportunities and education to enhance their knowledge and skills (Falch, 2004).

Health is significantly important in fighting poverty and this requires internet access to all the people in both rural and urban areas. Internet contributes to increasing and enhancing health coverage and access in rural areas (Zappacosta, 2001). In the rural areas of Ghana, for example, the use of the internet in the health sector has been focused on delivery of health-care services, using the system called telemedicine, and this has aided the local people in the countryside to gain access to professional expertise irrespective of the geographical location of the patient or the doctor (Cobbinah, 2003). In India, the internet is being used to facilitate treatment that includes distant online consultations, diagnosis and prescriptions (McNamara, 2007). Accessing health care services, by the people via internet, allows health workers to attend to all people

irrespective of location, particularly, those in the hard-to-reach areas where infrastructure and equipment are often inadequate. It also improves coordination of health systems at different levels; district, regional and national for fast and prompt delivery of needed supplies to save lives in the rural areas. With the use of internet, the patients are able to connect with the medical personnel through mobile phones, especially, while reporting the side effects of drugs administered to them at health centres and clinics (Ruggiero *et al.*, 2015).

In Malaysia, extending internet in rural areas has increased health information related to people's capacity to read and understand instructions on prescription of drug bottles, and enabling them to access medical education material, doctor's instructions and consent forms, and the capacity to discuss difficult health care systems among the rural population in Sarawak (Rohaya *et al.*, 2013). In Bangladesh, internet access using telephone has been useful in disseminating information that has enabled the rural people to increase their household income and food security, as well as, investment in health.

The potential of internet for rural transformation and enterprise creation is, therefore, huge and enormous. Internet significantly plays a major purpose of enabling the rural community to communicate and coordinate with the outside world in aspects of information sharing, which is important and a necessity for enterprise development and economic development. When internet is used correctly, it can increase interconnectivity and globalization, break borders and can bring rural communities closer to global economic systems and be of meaningful help to the underprivileged (Nayak *et al.*, 2010).

Limitations of internet usage in rural areas

While internet presents a big potential and opportunity for enterprise development and rural transformation, a number of barriers still hinder the way forward. Some of these barriers relate to the rural people themselves but also the environment in which they live. For internet usage to gain greater importance in rural areas for rural development, there is a need for the availability of electricity that powers both the machines and related connectivity upon which enterprises would thrive. Unfortunately, most of the remote areas in developing countries have limited or no access to electricity. For example in Uganda, connectivity to the national grid is mainly in central, western and partly mid north and eastern parts while some parts of West Nile and Karamoja Region are not yet connected (Uganda Electricity Regulatory Authority, 2012; Africa – EU Renewable Energy Cooperation Program (RECP), 2015). While, there exists alternative sources of energy for electricity, such as, generators, wind mills, thermos and solar systems, these are quite limited due to high poverty rates in the regions.

In developing countries a high failure rate of deployed off grid power systems in addition to sustainability has been reported (Feron, 2016). Prospects for huge investments in wind energy in Zambia are low due to low wind speeds though such energy may pump water for domestic use and small scale irrigation (Energy Policy in Zambia, 2015, Kachapulula-Mudenda *et al.*, 2018). Similar limitations characterize the use of thermal energy and generators since they are uneconomical and sometimes produce unstable power that does not suit computer use. This is probably the reason why there is an overconcentration of internet centres in district and regional towns that are connected to the national grid for consistent supply of power (Falch, 2004).

Internet use for rural development is constrained by the lack of computers and their accessories, as well as, the limited capacity to maintain their use and functioning of the available computers (Gyamfi, 2005). In areas where internet facilities exist, people face challenges when they break down and are not replaced because of the lack of accessories or the skill to repair the equipment. There are very few Information Technology (IT) technicians in the rural areas as compared to the urban centers. Such low literacy affects the acceptance and use of internet in the rural areas. While policy makers often take it for granted that any technology transfer to the rural areas would be accepted, what is often forgotten is that the rural people have their own established cultural and traditional ways of doing things. Any outside imposition of ideas or systems might, therefore, not be easily accepted.

On the other hand, if subsistence farmers and peasants understand the role of the internet they would make good use of it. In this case, governments in the third world countries need to put in place the ICT policies and ICT extension officers who can train and advise farmers on the use of internet in agricultural productivity so that they acquire more knowledge and skills in internet connection and usage. In rural areas of the developing world, there are also challenges related to lack of role models to motivate rural people on the use of the internet and this has created a negative effect in the use of internet in the rural areas of developing countries.

In relation to rural development, one major target group which is not well integrated in the internet revolution is women. They form a large proportion of the workforce in these areas but also make up the largest number of illiterates in such communities as far as internet usage is concerned (Gerster and Zimmerman, 2003). In the area of ICT, there is an even smaller number of women in rural areas who have the capacity to use computers and the internet. The potential for internet use for enterprise development among both women and men is, therefore, limited.

The establishment of internet facilities in rural areas of developing countries also requires access to

telecommunication services. However, as in the case of electricity, in many countries of Africa, most of the telecommunication services are highly concentrated in urban centers. Telecommunication companies are reluctant to move to the rural areas, due to the lack of electricity and fear incurring losses resulting from safety of their equipment. In Uganda, there are cases of theft of telecommunication companies' equipment, such as stealing of radio transmitters and mast equipment (The Observer, 2017). This is the reason why most operators have concentrated their services in the major cities and towns, where there is a big market for their services and reasonable security for the equipment.

Suggested ways for enhancing internet usage for enterprise creation

For a country to utilize internet effectively for rural transformation, a strong policy framework is needed. This provides the strategic leadership and direction for internet coverage, connectivity and mechanisms to strengthen its usage. A number of countries have developed and enacted ICT policies. For example, Uganda's ICT policy emphasizes that, "the government shall encourage, promote and support the implementation of nation-wide ICT systems for social, economic and political development" (Republic of Uganda, 2014). This includes enhancing modernisation of agriculture to encourage rural development in order to achieve long-term growth in both the agricultural sector and the economy as a whole (Uganda National Development Plan 2014/2015-2019/2020). The ICT policy also aims at strengthening and enabling the development of physical and social infrastructure including telephones and internet cables, targeting the rural areas to support the development of ICT. However, just like most policies in other countries, the focus is usually broader while implementation remains lacking. The need for governments to develop ICT sectoral policies, specifically for the rural areas is, therefore, paramount.

A designed policy should emphasize open access or highly subsidized networks so as not only to favour the community members but attract entrepreneurs to invest in the rural areas. Access should, therefore, not be merely seen as availability but it needs to focus more on user retention aspects like speed, stability and simplicity in access of the technologies, an issue that calls for sensitization. Therefore, sensitizing the community about the usage of the internet involves more than awareness to encouraging and convincing them that it is worth when they are connected. It also involves an analysis of internet related challenges and how can they be overcome. Ultimately, the major focus of training should be both on use and maintenance and it may be done through formal, non-formal and informal sessions.

Initiatives should also focus on supply and maintenance, through provision of incentives to internet subscribers and agents to venture rural areas

markets. Such experience has been successful with social marketing of health products and solar energy, among others. It should also be noted that there is a need for governments in the third world countries to venture into production and assembly of computers' parts and other ICT equipments to sustain the internet revolution in both rural and urban areas. Hire/purchase services ought to be extended to people and internet dealers in rural areas through interest free loans. This can provide a good impetus for the sector and result into increased uptake. In addition, ICT and community centers of excellence, that are fully equipped with internet connectivity, need to be established. This is likely to result into generation of a better entrepreneurial platform through sharing of information and experience.

The availability of energy is a major requirement of the use of internet among the people in rural areas in developing countries. Producing energy requires a lot of financial resources which the local people and communities cannot afford because of low income. It is, therefore, imperative that the governments should step in to provide necessary resources and infrastructure needed for energy production and subsidize its cost for the rural dwellers. The current impetus of rural electrification in developing countries needs to be accelerated. Innovations should also focus on rural friendly technologies tapping into the existing opportunities. For instance, the use of solar powered ICT equipment, long lasting batteries and power banks should also be availed in the rural areas and the skilled personnel (to maintain the equipment) must be readily available. This will enable community people in rural areas to access uninterrupted information related to enterprise creation via internet.

CONCLUSION

The internet revolution has opened entrepreneurial and development opportunities in the rural areas. The potential of internet for agricultural transformation, health care, banking and education is extremely high and paramount. Rural areas are limited by connectivity, knowledge, skills and electricity. These limitations can be offset largely through ICT rural sector customized-policies that take into consideration the related peculiarities. Sensitization, training and subsidies, among others, provide effective responses to the underlying challenges.

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