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ACCESSING THE NEED FOR ICT FOR RURAL DEVELOPMENT IN INDIA

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ABSTRACT

Economic development in rural India has been sluggish as compared to urban areas. This has been attributed to the lack of progress in key developmental areas including healthcare and education. Moreover, agricultural techniques that are used in rural India are traditional and devoid of modern technology, which significantly reduces productivity. This paper has analyzed the value of Information Communications Technology in causing positive changes and streamlining the process in these key development areas. It has been found that the use of ICT makes healthcare and education more affordable and accessible, and information dissemination that it allows positively influences the decision making of farmers and increases productivity. This paper has also concluded that India lacks the necessary technological infrastructure to effectively deploy ICT in rural India. The presence of infrastructure reduces the cost of services borne by individuals and makes them more accessible. Lastly, this paper provides policy recommendations regarding the implementation of ICT in rural India through the stimulation of private investment and the development of a strict networking and monitoring mechanism.

Keywords: Rural Development, Rural India, Government, ICT

INTRODUCTION

Information and Communications Technology (ICT) is a recent development in information technology (IT) that stresses on unified communications and the integration of telecommunications (which includes phone lines, the internet), computers, and native software, and other systems (Murray, 2018). The term ICT is often used to refer to the convergence of audiovisual and telephone networks with computer networks through a single cabling or link system. ICT is a broad subject that is constantly evolving, owing to the emphasis attributed to it at the international level. However, researchers consider it to be an umbrella term that includes the integration of communication devices, encompassing radios, televisions, cell phones, computers and network hardware, satellite systems and so on, as well as the various services and

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appliance with them which have practical utilities such as video conferencing and distance learning (Zuppo, 2016). It covers any product that will store, retrieve, manipulate, transmit, or receive information electronically in a digital form. ICT has been at the forefront of development and innovation in the technology sector over the past decade (Mathur, 2017). The United Nations Millennium Development Goals, which were formulated at the World Summit on Information Society, include the expansion of ICT to every habitable part of the world through a multistakeholder approach which aims to use all stakeholders including civil society and the private sector, in addition to governments (ITU, 2006).

ICT enables users to access, store, transmit, and manipulate information. There are large economic incentives to merge the telephone network with the computer network system using a single unified system of cabling, signal distribution, and management. UNESCO has emphasized the development of Information and Communication Technology because of its contribution to making universal access to education possible (UNESCO, 2016). ICT has been found to bring about enhanced access to formal education, equity in education, the delivery of quality learning and teaching, teachers' professional development and more efficient education management, governance and administration. Research has suggested that the synchronization of ICT with traditional forms of education results in better learning, especially in mathematics (Genlott & Gronlund, 2016).

About 68% of India's population resides in rural areas. These are distinguishable from urban centers in terms of the sparsity of population and dependence on agriculture for income. People in rural areas are at a distance from the technological innovation and sociological progress that occurs in urban India, where economic capital is concentrated. The need for 'modernizing' rural India through technology has been emphasized to achieve higher levels of economic growth and human development, spheres in which rural villages generally lag behind urban cities in India. Moreover, the untapped human potential for innovation and development can be actualized through enhancing access to technology. Despite the global emphasis on the development of Information Communications Technology, innovations have rarely trickled down to rural India. ICT has the potential for streamlining agricultural activities by facilitating networking and sales to enhance profitability and reduce wastage (Mir & Kumar, 2017). ICT also facilitates individuals to avail of the benefits of government schemes through which villagers can access the formal financial structure and avail state-sponsored credit at extremely low rates of interest. It also acts as a tool for the emancipation of women and socially marginalized communities by integrating them with mainstream narratives and opportunities and removing physical and social barriers for empowerment (Mir & Kumar, 2017).

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Access to ICT in rural India is limited, but that is not just because of the lack of technology and devices. Access to ICT does not rest on devices or conduits alone; but also depends on the development of physical, digital, human, and social resources (Warschauer, 2004). The development of ICT must be in line with the development of resources and infrastructure that facilitates access to it. In the absence of this infrastructure, research has suggested that ICT can perpetuate underdevelopment and exclusion (Scribner, et. al., 1981).

BACKGROUND

According to a report by the International Technological Union, there are more than three billion active users of ICT across the world, with usage steadily increasing, especially in developing countries (ITU, 2006). Exponential growth in internet usage, rapid invention, and commercialization of modern communication devices, and emphasis on the development of cloud and grid computing have helped ICT flourish in the global technological field in the last decade (Mohsen & Kenney, 2008). Research has suggested that the mass use of information and communication technology accompanied by the development of technology-conducive infrastructure a nation to create an information-rich society and helps in supporting livelihoods (Kumar & Singh, 2012). The hurdles in development that developing nations, specifically rural areas of those nations include the lack of access to healthcare, gaps in education policy and the lack of facilitation of distance learning. Research has suggested that an online learning platform, that can be accessed at any time throughout the day through tele/video conferencing by geographically dispersed learners contributes significantly to rural education (Roy, 2012).

China, a country that is similar to India in terms of its high population and because a significant percentage of that population are inhabitants of rural areas recently adopted ICT as a catalyst for its rural development. A large scale survey on middle schools in China reveals that the use of ICT has diminished the gap in educational performance between urban and rural areas and that ICT has contributed to the growth of its rural economy (Oreglia, 2014). Agriculture is integral to the rural economy of India. Information and Communication Technology influence farmers' decision making in the supply chain, enhancing their alternatives and reducing the propensity of exploitation by the middle, which is often fueled by social factors such as the caste system in India. ICT has also improved the availability of rural finance in China (Ying, 2015). India's rural population exceeds 600 million people. Research has emphasized the need for a strong backbone infrastructure to provide quality services to high populations through Information and Communication Technology. Factors that impact the infrastructure including its geographical location, climatic conditions; civil infrastructure, per capita income, etc., which usually lacks in rural areas of developing countries.

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Rural development is considered to be a systematic ongoing process of improving the quality of life by socioeconomic well being of the people living in rural areas and opening up new avenues for growth for them. The development of Information and Communication Technology impacts multiple sectors that are integral to rural development in India including education, agriculture, health, economic, and disaster management. However, ICT applications are limited to developed cities in India. Despite 'Digital India' being at the forefront of the government's development program, the development of technological infrastructure has been hampered to the paucity of resources. Through ICT, Digital India behaves as both enabler and beneficiary of other key Government of India schemes, such as BharatNet, Make in India, Startup India, and Standup India, industrial corridors, Bharatmala, Sagarmala, many of which are considered to be key for the economic emancipation of low-income communities. However, the impact of these schemes has been restricted due to the lack of technological infrastructure. Even though India has the cheapest prices for the internet in the world, penetration has been limited to towns and cities because of lower private investments in rural regions.

DISCUSSION

Information Communications Technology, when implemented correctly can target key sectors in development including agriculture, education, and finance. Social barriers such as the caste system and segregation prevent the most oppressed communities in rural regions from accessing state-sponsored programs, including public schools and government hospitals. Information Communication Technology limits the need for physical contact in accessing these facilities and hence enhances access for these communities.

The developing world, including India, faces multiple challenges in bringing people into the fold of formal education due to barriers including poor transport facilities, geographical location, and socio-economic backgrounds. Parts of rural India including states in the North-East, Bihar, and Uttarakhand have suffered from low literacy rates due to the prevalence of traditional and technologically devoid forms of teaching in the formal educational structures. The lack of availability of quality teachers, a poor teacher-student ratio and the availability of daily wage jobs contribute to high dropout rates in India. The adoption of ICT in the teaching system enables and supports the shift from traditional `teacher-centered' teaching styles to `learner-centered' methods which enables a diverse or geographically scattered group of students to simultaneously, even in the absence of teachers. The maintenance of an online repository, teleconferencing, and video conferencing facilities enables uninterrupted access to learning materials. Beyond the access to information that the Internet and World Wide Web provide, the development of ICT has been linked to the enhancement of vocational skills in rural areas (Pramanik, et. al., 2017).

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The neglect of healthcare in rural India has worsened multiple epidemics and outbreaks. Most recently, an encephalitis outbreak in Uttar Pradesh and Bihar led to the deaths of more than 200 children, which could have been avoided but for the absence of trained medical staff and other resources (Srivastava, 2019). ICT has enabled the development of e-kiosks, which enhances accessibility, availability, and affordability of healthcare. With assistance from a trained person, individuals enter information about their symptoms on a system, which communicates it to a central server that doctors can access. Diagnosis and suggested treatment are then communicated to patients through the network. In some rural areas of India staff has also been trained to perform medical procedures instructed by doctors through the system (Pramanik, et. al., 2017). Despite industrialization, agriculture still accounts for the majority of economic activity in rural India. However, the agricultural techniques followed by farmers are mostly traditional which has not only to have adverse consequences on the environment but the low economic productivity that they render has also led to high rates of farmer suicide in India and contributed to the economic backwardness of rural regions (PTI, 2019). The usage of ICT enables farmers to avail of the facilities of testing and consulting. The dissemination of information related to weather forecasts, the necessity of irrigation, the deficit of minerals and the increase in pests occurs through a centralized server to farmers in rural regions. Networking enables the elimination of middlemen leads to the elimination of wastage and an increase in profitability. ICT allows easier access to state-sponsored rural finance (Pramanik, et. al., 2017). The Development Informatics Lab of Indian Institute of Technology, Mumbai developed Aaqua- a Farmer Knowledge Exchange, which is a service that answers queries of farmers from 420 districts in India in 4 languages through the use of Information Communication Technologies (Sahni & Ramamritham, 2007). Natural disasters such as floods and tsunamis have disrupted rural economies and have caused avoidable damage to the lives and property of individuals in rural India. Rural areas are usually more affected by natural disasters than urban areas mainly due to poor transportation and communication facilities. ICT enables the development and usage of an early warning system that uses remote sensing technology. It's usage in Cuba, Mexico, and the USA have helped reduce the loss of life due to natural disasters to zero. Proper usage of ICT tools helps build knowledge warehouses and data warehousing techniques which can facilitate planning and policy decisions for preparedness, quick response and recovery at all levels (Pramanik, et. al., 2017).

However, the development of Information Communication Technology is contingent on the presence of adequate technological infrastructure. The infrastructural backbone includes workstations, high-speed networks, projection technology, interactive devices, and video conferencing equipment. Not only does it enhance the availability of information but it also facilitates business activities and processes. However, the development of this infrastructure in rural areas has been hampered in India due to geographical boundaries, the absence of a

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commonly used application interface, lack of investment by the private sector and paucity of funds with the state. The presence of services such as cloud computing, which is imperative to access information from remote locations is contingent on the availability of technological infrastructure. The development of infrastructure reduces the cost born by individuals and facilitates access to services to economically weaker rural populations (Pramanik, et. al., 2017).

CONCLUSION

Technology has been widely recognized as the means of emancipation for the underprivileged by policymakers across the world. Information Communication Technology is used as a means of integration into the formal economic structure by the developed world. E-Governance has been instrumental in the streamlining of many governmental procedures across the world, including India. Moreover, the usage of Information communications limits the need for physical engagement and eliminates traditional barriers of engagement (Ahmed & Pandery, 2014). This is key for those communities that are marginalized by state structures such as the Dalit and Adivasi communities of India. Due to the access to opportunities that ICT provides to individuals, it is also considered to be a means for women's empowerment in rural India. However, the development of ICT in rural India has been sluggish, which is reflected in the slower economic growth rate of rural regions as compared to urban areas, where technological penetration is much higher.

The implementation of ICT in rural India requires the state to overcome challenges including limited electrical or Internet infrastructure, limited availability of technically skilled support staff, the predominance of minority languages, and under-qualified support staff (Kozma & Vota, 2014). There was a need to develop state regulations to prevent the exploitation of those who avail ICT related services. The enforcement of specific security and communication guidelines and rules is imperative to ensure uniformity and privacy. The development of adequate technological infrastructure can be ensured by pressurizing the government to adopt a Universal Access Policy. The adoption of this policy creates pressure on governments to ensure access to Information Communications Technology. Incentives to private enterprises including tax breaks and the creation of Special Economic Zones can be instrumental in stimulating private investment in technological infrastructure. An integrated approach to ICT development is recommended because projects implemented in isolation often fail due to the lack of support required to maintain momentum in their implementation. Lastly, there is a need for monitoring and evaluating projects to assess their impact during and post-implementation. The lack of evaluation of private projects in the past against measurable outcomes and indicators have also restricted policy-oriented research in the field of ICT development in rural India (Mow, 2014).

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Support through Information Communications Technology for disaster management, agriculture, education, and healthcare is common to all rural regions of India. Moreover, it can also enhance businesses including tourism, banking, and finance. Technology and communication open up unprecedented avenues for the underprivileged, especially those who have been historically denied access to public utilities. The development of Information Communications Technology, through the combined efforts of the central and state governments, private companies and the populace of rural India is key for the socio-economic development of that region, and the actualization of rights and opportunities of those who belong to rural communities.

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