INDIAN RURAL DEVELOPMENT AND INFORMATION AND COMMUNICATION TECHNOLOGY (ICT)

Sunil Vyankatesh Samag
Assistant Professor, Head of the Department, Sociology,
Sant Ramdas College, Ghansawangi, Dist.-Jalna, PIN: 431209 (Maharashtra)
Email: svsamag@gmail.com

ABSTRACT: Our lives are being transformed by ICTs (Information and Communication Technologies). ICT has a significant influence in rural regions because of the remarkable advancements in internet technology. ICT has a tremendous impact in rural regions, particularly in the agriculture sector. The ICT-led extension services are also expected to play a vital role in farmers' access to and sharing of information and expertise. Because of this, there has been an increase in the number of e-initiative pilot projects in India. Agricultural information and expertise are the exclusive focus of the inventors' ICT experiments. ICT projects in agriculture may not work as effectively as they do in other industries. ICM and Information and Communication Management (ICM) should be included into agricultural extension programmes sooner rather than later. Access to knowledge is a major factor in the disparity in economic benefits between urban and rural populations. This gap may be bridged with the use of ICT, which in turn reduces poverty. Farmers may use a number of ICT systems to gain access to information that can help them enhance their productivity and possibly increase their profit margins. The writers of this research conducted a thorough review of ICT's role in rural India's development.

KEYWORDS: ICT, E-education, Rural development, E-governance, Agricultural information.

INTRODUCTION:

Across India, ICTs have had a profound impact on people's lives. 68% of India's people live in rural areas, while 31% live in urban areas, according to the 2011 census. Figures like these show that India is still alive in the rural. However, in rural India, illiteracy, poverty, and a general lack of progress persist even after more than 67 years of freedom. Rural India's development is dependent on the use of information and communication technology. Rural India's growth has been boosted thanks in large part to their contribution to the information flow. Rural development may be achieved in a variety of ways using ICTs. With the use of ICTs, we have been able to provide rural India with the tools necessary to achieve its long-term development objectives [1].

Several government programmes have been launched in India to ensure that all rural residents have access to ICTs. The primary goal of these initiatives is to reduce the digital gap that exists in India between urban and rural communities [2]. Because rural regions in India often lag behind metropolitan areas in terms of access to education, health care, and infrastructure, there is an urgent need to overcome this gap. As a result, rural residents are deprived of the services and opportunities they need to contribute to the growth of their communities and the country. Rural isolation can have a detrimental influence on economic growth, which can negatively impact the long-term country's development as a whole. The numerous infrastructural restrictions can be alleviated with the use of ICTs. People in rural regions may readily link to the local, regional, and national economies through the usage of ICTs. They have access to banking services and a wide range of employment options that they would not otherwise have. ICTs can assist rural communities become more aware of new agricultural technology that could help them contribute to the country's GDP. The use of various ICTs can aid in the expansion of education in rural areas and facilitate communication between rural and urban populations. Thus, bridging the information technology helps in overcoming the infrastructure gap and brings the rural people to the forefront of the conversation.

The proliferation of information and communication technology (ICT), particularly mobile phone technology, has altered the development environment. Rural residents' quality of life has increased due to the widespread use of this technology, which has connected them to previously disconnected economies and political systems. It has been discovered that a country's progress toward economic development is closely related to the growth of ICTs [3]. A 0.03 percent rise in GDP was attributed to a one percent gain in ICT(Figure 1), according to research that examined data from 113 nations over a period of 20 years. The correlation was even stronger for mobile networks,

with every 1% increase in mobile network usage resulting in a 5% rise in per capita GDP. It has also been observed that ICTs have a detrimental influence on a country's degree of poverty. According to research, using ICTs is associated with a decreased prevalence of poverty.

Radio and television, which are more conventional types of ICT, have had a greater influence than newer kinds of ICT. These types of ICT will be crucial for rural Indian development because of their ease of use, accessibility, and familiarity with the illiterate populace. When it comes to India's rural development, the cell phone trumps all other information and communications technology types. There are two reasons for this: For starters, they're more accessible to the rural population than other types of ICTs, which are often more costly and involve infrastructure to use. In 2012, there were 929.37 million mobile phone users in India, compared to just 31.53 million landline customers. As a second point, the usage of mobile phones encourages more engagement between the participants. ICTs have evolved from being a one-way information channel to being the continent's largest transaction channel, allowing users to purchase, communicate, connect, 1404rganize, and broadcast their own selves in real time.

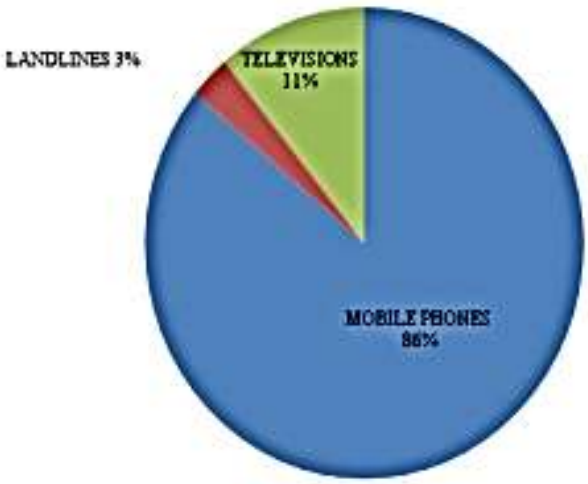

Figure 1: Compared to other forms of media

Development in different areas such as agriculture, health, government and finance has always been viewed as a means to an end. Nonetheless, in the last decade, the use of ICTs has become increasingly widespread, and practitioners in every profession are employing ICTs to solve the same issues of access and quality and cost in their own fields. It's not uncommon for their ideas to be applicable to several industries: Data about rural people may now be collected cheaply and in good quality because of the widespread usage of computers and text messaging. The contact centres are staffed by experts in the fields of agriculture, health, and weather. People in outlying locations can use the contact centres to report problems and get help in particular types of emergencies. Because of the quick distribution of information made possible by ICTs, farmers and dealers can stay abreast of changes in commodity pricing and supply and demand disparities. Class organisation and teaching techniques are based on student feedback mechanisms.

ROLE OF ICT IN AGRICULTURE:

As long as humans have been farming and fishing, exchange of information have always been essential. For instance, they've sought advice from each other on how to best plant on steep slopes, the best seeds or feeds to buy, who's paying the greatest price in the market, etc. For farmers, the solutions to these kinds of inquiries are difficult to come by. They may have been cultivating a certain crop for millennia, but insect outbreaks come and go because of shifting weather patterns and soil conditions. Farmers may benefit from and adapt to these shifts with the aid of up-to-date information. There is still a need for a new revolution that will provide new pricing to consumers, contribute to "smart" agriculture, and incentivise farmers to raise their production despite the Green Revolution's success. In the hunt for long-term and short-term agricultural solutions and answers to the many concerns that farmers confront, there has been a great deal of effort. It has revealed that ICTs might be the answer to these problems. The rural populace has embraced them because of their accessibility, affordability, and versatility. More and more applications are being developed that allow people to transfer money and track goods as they move through a global supply chain, such as multifunction mobile phones, nanotechnology for food safety, and cloud computing services [4]. Farmers may now get answers quickly and accurately to many of their queries. ICTs that can improve the lives of farmers are increasing in quantity and variety. Short message service' (SMS) is by far the most prominent and widely used method of sharing information on a mobile phone (or popularly known as SMS).

An Indian service that serves more than 2,000 rural consumers for about $1.50 per month is Reuters Market Light (RML). Four to five messages a day are sent to farmers from a database that has information on 150 crops and over 1000 marketplaces. These technologies may be utilised in resource-constrained places to obtain temperature data, store huge volumes of data, and transmit information to farmers at a low cost. Natural disasters can cause agricultural losses if they aren't mitigated. Various ICTs can be used to gather and communicate soil data. People in rural areas are also embracing more complex and specialised apps, such as supply chain or financial planning software. These are just a few instances of how ICTs may be employed in India's agriculture to benefit the country's farmers. Smallholders stand to benefit greatly from the emergence of hundreds of agriculture-specific innovations.

ROLE OF ICT IN E-GOVERNANCE:

We can't imagine our lives without them now that they've permeated every aspect of our existence. In today's political, cultural, socio-economic and behavioural decisions, the capacity to acquire, gather, evaluate and utilise information and knowledge is critical. " Information and knowledge may be transmitted to individuals via ICT in order to increase their options for social and economic empowerment [5]. By 2020, the government of India aims to turn all interactions between citizens and the government into an electronic one (E-Governance). The vast majority of Indians reside in rural regions or in small towns. The Government of India has thus created the National E-governance Plan (NeGp) to assure these rural people's long-term development and growth and to lay the basis with numerous programmes starting at grass-roots level and providing momentum for long-term e-governance in nation. Many rural e-governance applications have demonstrated the usefulness of ICTs in this context in recent years. Rural India has significantly benefited from a number of government initiatives that were implemented there (Figure 2).

Rural development is critical to India's future development since most of India's population lives in villages. Several federal programs are unavailable in many isolated areas, forcing residents to travel to neighboring districts to have their job done. Online services provided by e-governance apps can save both citizens and the government money. People in rural areas can learn about the government's perks and services through e-governance software. It is clear that e-governance in rural India has been a success because so many rural Indians are now using internet services. As a result of projects like E-gram panchayat, government authorities are now able to quickly learn about the specific conditions of villages that enter their jurisdiction. A transactional service that involves municipal, state, or national government might be referred to as e-governance. There has been a shift in how governments and individuals engage as a result of ICTs' role in accelerating information and knowledge exchange [6]. E-Government needs a viable ICT application that delivers a one-stop solution for rural populations. E-Governance apps for rural areas have recently highlighted the relevance of ICTs in rural development [7]. An increasing number of government apps are attempting to extend the reach, boost base and reduce processing costs and cycle times. Many governments have constructed State Wide Area Networks (SWANs) in order to make state and district administration services accessible to rural residents.

Figure 2: E-governance and Empowerment

ICT solutions must be designed, developed, and internalised in order to maintain their long-term viability, according to the Centre for Electronic Government at the Indian Institute of Management, Ahmedabad

(CEGIIMA). It is becoming more common for the government to use different types of ICT to expand its services to convenient areas for citizens. These rural ICT apps' goal is to deliver the services of central agencies such as local authority, co-op union, and central and state government departments right to their doorsteps in the rural communities. People in remote areas can benefit from these applications by having better access to the internet and computing power. Many rural e-governance systems aim to make government-to-citizen transactions faster and more convenient [8].

OCCUPATIONAL HEALTH, SAFETY AND ENVIRONMENT:

ICTs may aid in drafting and enforcing relevant laws and regulations and monitoring and enforcing them. In order to better understand the environmental effects of the activity of artisanal miners, an environmental database can be constructed. Statistics on workplace health and safety may be compiled and tracked throughout time and space. Radio, the internet, mobile phones with newsflash, etc., may all be used to spread the word about the hazards of mercury poisoning, while retorts and other environmentally beneficial technology like them can be introduced through ICTs [9]. As disease outbreak signals are relayed via interactive telecentre systems, additional mining communities and health authorities might be kept in the loop.

People in need of knowledge on safe and ecologically friendly gold panning methods would be able to get it if ICTs such as the internet, radio, and television were to be used to broadcast the process. The environmental and social impacts of gold panning are intolerable, but legalising it would alleviate most of them. One participant expressed dissatisfaction with Zimbabwean authorities, claiming that they give them conflicting messages. Politicians are encouraging people to take back their land as police arrest them for illegal mining. This might lessen the environmental effect by utilising the threat of losing a gold panning licence as an incentive for anyone who fails to restore the area to its natural state. Remote licencing, remote sensing, and gathering data on mined quantities might all be done via ICTs. This would help to restore the land, guide taxation, and reduce smuggling by enforcing rehabilitation. Since there is an urgent need to curtail illicit commerce, the existing monitoring strategy only serves to exacerbate crime and its negative effects on the environment. We've already spoken about how it restricts attempts to reduce poverty to a purely utilitarian perspective. To encourage miners' collaboration while also improving health, safety, and the environment, using ICTs instead of criminalising the trade is a smart move. Since they are now afraid of being arrested if they call the police to report their attackers, this might also help to minimise the associated criminality. Therefore, decriminalisation will raise the reducing poverty and development method, which transcends the discredited utilitarianism, to the level of capability improvement.

ECONOMIC, FINANCIAL AND MARKETING:

Through ICT initiatives, such as films (videos may be utilised in many areas of awareness and education activities), more effective mining and recovery processes can be promoted. Data about miners and their organisations may be kept properly so that technical and financial aid can be provided. Advocacy for funding from foundations and the federal government can be made easier with a more efficient organisation and a larger pool of bank loans. Suppressing gold smuggling and increasing income for the fiscus may be accomplished in large part through the establishment of database by Rural District Councils and the Reserve Bank of Zimbabwe and ongoing monitoring and reporting requirements. Consequently, ICT projects can improve the efficiency of the miners, expose them to economic and support options, and allow them to contribute to the fiscus in a meaningful way.. Information on market prices is not available to miners, preventing them from selling their products at the optimum price. If they plan on keeping their product, they risk both arrest and robbery at this time. It is necessary to go beyond miner access to a central information repository when considering ICT-enabled capability augmentation applications. We believe that the use of ICTs in educating Makorokoza about the actual worth of their gold might dispel this mystery. Because they may utilise ICTs to get information without risking legal repercussions (as is the case when visiting government offices), this is especially true. Because miners have context-specific information to offer, ICT programmes must incorporate methods for creating and sharing information.

In various areas of ICT4D, disintermediation has been employed by information technology. Data on equipment pricing, the costs of geologic, analytical and assessment services, and market and financial opportunities may be obtained through the use of ICTs. Using mobile ICT, the Reserve Bank of Zimbabwe may maintain a database of miners and transmit official local and international rates to enable the miners on the ground to deal with intermediaries from an educated perspective. Artisanal miners now have the ability to research the global market on their own, thanks to the internet. To eliminate the role of rent-seeking intermediaries, authorities can develop

market information databases that miners can consult on their mobile ICT or through a village-based online kiosk, as well as news flashes that the government can send to the miners' phones.

CONCLUSION AND FUTURE SCOPE:

All human activities are being reshaped by information and communication technology. In rural regions, ICT is a strong and productive system that can drive economic and social growth. ICTs have been shown to be one of the most effective tools for sustainably empowering rural people. As seen in the following table, this truth is more clearly understood: Rural governance needs to be strengthened. Rural governance in India has seen a significant shift as a result of the adoption of ICTs. Rural institutions have become more transparent, accountable, and efficient as a result. As a result, rural residents have become more involved in the decision-making process, and rural service delivery has become more efficient and responsive. Rural residents have been able to engage quickly, transparently, accountable, efficiently, and effectively because of it. Because of this, government operations have been more efficient, and time and transaction costs have been reduced. Boosting social change: Access to knowledge is essential for any sort of growth. Growth in ICT has increased the flow of knowledge outside of a person's economic or social standing. When it comes to dealing with development difficulties in any developing nation, ICTs are now largely accepted as a key instrument that eventually leads to societal transformation. Enhancing one's well-being Using ICTs in remote and rural locations can improve the quality of life for those who live there by giving substantial commercial, social, and educational advantages. ICTs can help rural communities improve their livelihoods by increasing access to government services. Rural people's higher quality of life can be achieved via greater market access, health, and educational opportunities. As a result, rural India will be pushed to develop economically, create jobs, and alleviate poverty. Strengthening rural communities' information resources: ICTs can handle the requests that rural residents' local requirements produce. In addition, assistance for municipal government can be offered. Rural residents can benefit from ICTs by learning more about their rights, entitlements, and the numerous government programmes that are available to them.

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