



urban areas. The digital divide is an inability to access and use ICT that limits their ability to reap its potential benefits. Rural areas mainly lag behind urban areas in health, education, government, and infrastructure. Hence there is an urgent need to bridge this gap to help contribute to the Indian economy from rural areas. But the biggest challenge will be to adapt to the new technologies and understand the need of those, who are mostly illiterate.

Rural development programs mainly involve improving health and education services for social and economic development, as well as providing basic facilities for health, education, and other essential sectors. ICT is a unique combination of communication and information technology (IT) functions. The ICT boom in India as a driving force for rural development has already started changing the lives of people.

#### **Data Collection Method Used for Research:**

The research paper has depended on secondary data.

#### **OBJECTIVE OF RESEARCH:**

- 1) To understand the importance of Information and Communication Technology in India's citizen service delivery.
- 2) To study the role of information and communication technology in the rural development of India.
- 3) To know the importance of information and communication technology applications in the agricultural development of India.

#### **THE ROLE OF INFORMATION AND COMMUNICATION TECHNOLOGY IN RURAL DEVELOPMENT OF INDIA:**

Information and communication technology has the potential to tremendously empower people and facilitate development. This technological revolution can affect the development potential of any society to a great extent. Their applications for agriculture and rural development are very wide and widespread. From telecommunication technology, computer, and information processing technology, data and image transfer technology, and interactive technology, information, and communication technology have brought about a qualitative change in the way we generate knowledge, transmit and transfer knowledge and promote development. . The convergence of these technologies has not only created new technology and production areas but also created new social and economic realities in rural areas. Increased connectivity and a faster flow of information have opened up new frontiers of knowledge. In rural communities, information and communication technology has developed a learning and new capabilities, which have increased the effectiveness of their efforts to solve problems and improve their lives. Information and communication technology empowers these communities and increases the effectiveness of their development efforts through informed decision-making to achieve the objectives of poverty alleviation, food security, and sustainable development in rural areas. But technology applications are mostly limited to urban areas. Rural areas have not benefited much from them. Information and communication technology should be used judiciously in the development work, so that the problems of rural development can be solved in all areas of rural development, such as agriculture, energy, health and sanitation, rural engineering, housing, and habitat, etc.

Therefore, it is necessary to develop and promote the so-called green technology with a well-organized distribution system, which can ensure economic and ecological sustainability and optimal use of local resources, emphasizing increasing the technological capacity of the rural people. In this endeavor, institutional linkages and active participation of voluntary agencies, science and technology-based field groups, research and development institutions, financial agencies, and people, who are the primary stakeholders, are necessary to improve the quality of life in rural areas and make it can be sustained in the long term.

Technology choice or selection in the above process can have a significant impact on many aspects of rural development, especially the way we choose them, the way we deploy and design them, and the way we deliver them to the masses. Are. Therefore, technology must be selected with care, so

that people can acquire and assimilate knowledge of technologies appropriate to their needs and environment; upgrade their traditional competencies and capabilities; reduce exertion and fatigue; And can bring new change or innovation. Also, information and communication technology should be easily assimilable; create significant and definite added value to existing methods of operation; must utilize local resources, both men and material, and generate employment; Should require less capital investment and result in a lower cost of production of the goods; Must have the potential for replication and adoption; And should be organically integrated with the existing ecosystem, so that there can be a real improvement in the living conditions and self-reliance of the rural people.

At present, the use of geo-information systems and precision agriculture is being cited in agriculture. With the use of these techniques, we have been able to assess the spatial and temporal variations as well as analyse them for judicious use of inputs and resources. Remote Sensing, Geographical Information Systems, Geospheric Spatial Systems, Mechanization Nanotechnology, Analysis of data of variations from high-quality sensors as well as with the help of various models facilitate farmers and other stakeholders to take decision-making capability of crop management. Mechanization and the coordinated use of the above techniques will not only answer the question of when, how much, and how to use inputs but most importantly reduce the requirement of manpower.

Information and communication technology has played an important role in promoting agriculture during the last several decades. These technologies will continue to play an important role in and with new information and communication technologies. The Information and Communication Technology revolution has opened up a new paradigm for agriculture. Beyond databases and information systems, applications of information and communication technology in the agricultural sector are visible everywhere. Information and Communication Technology is transforming extension services through innovative approaches based on multi-media technology, distance education technology, and interactive knowledge development processes. Environmental impact on agriculture and degradation of natural resources can be continuously monitored through remote sensing data. Geographic Information Systems are opening new avenues for regional planning and for the management of natural resources.

In the context of agriculture, there are five main services or functions, which are closely related to information and communication technology. including access to information through various forms of agricultural information systems; Continuous monitoring of the status of natural resources and impacts on the environment (such as environmental degradation), soil erosion, deforestation, etc., from various information processing tools. Education and communication technologies are playing a very important role in creating new directions for learning and knowledge management. Networking, where information and communication technology can contribute to connect people/organizations and facilitate the emergence of virtual communities of stakeholders who produce and exchange information and knowledge among themselves. If well organized, networking is the first step towards developing interactive knowledge processes that can lead to learning networks. Decision support systems, whereby data and information provide relevant knowledge inputs for informed decision-making. These tools play an important role in the transformation of information systems into knowledge systems.

The future of food security in developing countries depends less on resource-intensive agriculture and more on knowledge-intensive ones. In the coming years, it will be necessary to develop agriculture as an effective means of higher income, employment, and food production and this paradigm of sustainable agriculture will be both knowledge- and skill-oriented. Precision agriculture, which emphasizes knowledge-based, is the need of the hour. Precision agriculture is all about accuracy and it means accuracy and precision in all aspects of production. Precision farming is the application of technologies and principles to manage spatial and short-term variability associated with all aspects of agricultural production to improve yield and environmental quality. The supporting technologies of precision agriculture can be placed into four main categories: computers, geographic information systems (GIS), global positioning systems and sensors, and application-oriented. The new agricultural paradigm in India will have to take advantage of the availability of knowledge to achieve the triple goal

of increased income, employment, and food grain. The role of emerging information and communication technology is crucial in developing such a model.

Service delivery is the core component of any government's accountability to its citizens. Today citizens are demanding more efficient and responsive services from the government. Therefore, citizen service delivery has become a focal point in governments around the world. With the advent of information and communication technology, it is now necessary for the government to pay more attention to these mechanisms to provide more efficient and responsive services to the citizens. Governments around the world have initiated major processes of transformation in citizen service delivery through the use of information and communication technology. Information and Communication Technology is facilitating citizen participation and the functioning of government to improve the quality and responsiveness of services to citizens. Citizens can use it as the main resource for the betterment of their lives and strive for socio-economic development. This has also enabled the government to use multiple service delivery channels, such as the Internet, mobile devices, Wireless Application Protocol (WAP), etc., to deliver effective services to the target group.

Traditional channels of citizen service delivery continue and complement electronic channels for transactions, as they cater especially to those who are unfamiliar with technology or electronic activities. Therefore, it is a matter of great importance that the government should make efforts to create awareness among the citizens and educate them on the use of electronic channels. Through proper education, citizens can become aware of the changes in the service delivery methodology. Limited local participation, lack of availability of local resources, fragmented relationships with government agencies, and exogenous social and economic environment are some of the factors that prevent the effective implementation of ICT in rural areas. E-governance is always a passive system of information empowerment. Participatory processes of content creation and knowledge management need to be encouraged. The approach to rural women and men should be one of participation, not protection. In agriculture, 'Farmer Collaborative Knowledge Systems' (FPKS) can be adopted in place of the existing beneficiary and conservation approach of knowledge transmission. The information should meet the demand and be relevant in terms of time and place.

There is a need for more agricultural and non-agricultural employment opportunities in the villages. This will be possible only if there is diversification in agricultural systems and value addition of primary products through advanced technology after harvest. The training should be in the context of market-oriented competencies. Special attention should be given to small-scale industries and Khadi and village industries from the point of view of upgrading both technology and marketing efficiency. There is also a need for synergy between the private sector and the government and cooperative sectors to promote skilled jobs in villages.

The utility of computer-aided knowledge centers in villages will be relative to the social, ecological, and economic importance of static and dynamic information. Therefore, it will be necessary to develop a consortium of content providers for each agroecological sector. Major industries can actively participate in such knowledge and skill empowerment revolution by adopting specific villages where they can provide marketing and management know-how apart from financial support.

## CONCLUSION:

The Indian economy can rightly be called a rural economy, as 60 percent of the country's population lives in villages and is dependent on agriculture. Therefore, the socio-economic transformation of rural areas is an indicator of the economic development of the nation. To build technical, managerial, and design capacity in ICT adoption for rural communities, create and maintain secure ICT infrastructure and assess rural ICT initiatives or actions based on depth and breadth dimensions. Will ensure that rural development reaches the poor and the underprivileged in the villages. Technology should be used in this effort as strategic innovation, not strategic automation. Indian agriculture has now taken the form of a profitable business beyond farming done only for earning a living. This change in agriculture has been made possible by the coordinated use of many techniques. But considering the share of agriculture in the environmental pollution in the global

scenario, emphasis is being laid on the precise use of the inputs used. Considering the diversity of land and weather and the scarcity of water and fertilizers, there is a great need that the spatial assessment of the outbreak of insect diseases in crops should be done at the right time. For their timely assessment, analysis, and management, the use of new techniques such as geographic information systems, remote sensing, geographic localization system, and collectors is the demand of the present time.

## REFERENCE:

- Dhameja, Alka, (Ed.), 2003, *Contemporary Debates in Public Administration*, Prentice- Hall of India Private Ltd, New Delhi.
- Vayunandan, E., and Dolly Mathew, (Ed.), 2003, *Good Governance Initiatives in India*, Prentice- Hall of India Private Ltd, New Delhi.
- Karim, Muhmmad, Raisabdul, *Technology and Improved Service Delivery: Learning Points from the Malaysian Experience*, *International Review of Administrative Sciences*, Vol. 69, Number 2, SAGE Publication, June, 2003.
- Agarwal, Sunil, *Technology Development and Transfer at Grassroots Level*, *Kurukshetra*, Vol. 50, No.5, March 2002.
- Ghosh, Souvik, *Information and Communication Technologies in Rural Development*, *Kurukshetra*, November 2001.
- Charru Malhotra, V. M. Chariar, L.K. Das, and P. V. Ilavarasan , *ICT for Rural Development: An Inclusive Framework for e-Governance*(2006), Indian Institute of Technology Delhi, New-Delhi, India.
- Prof. T.P. Rama Rao , *Center for Electronic Governance, ICT and e-Governance for Rural Development*, Institute of Rural Management, Anand, Gujarat, December, 2004.
- Nayak, S. K.; Throat, S. B. and Kalyankar, N. V. (2010), *Reaching the unreached: A Role of ICT in sustainable Rural development*, *International Journal of Computer Science and Information Security*, Vol. 7, No. 1, pp. 220-224.
- Angelica Valeria Ospina & Richard Heeks (2010), *Linking ICTs and Climate Change Adaptation: A Conceptual Framework for eResilience and eAdaptation*, Centre for Development Informatics, Institute for Development Policy and Management, SED, University of Manchester, UK
- [https://www.researchgate.net/publication/267426003\\_Information\\_and\\_Communication\\_Technology\\_for\\_Rural\\_Development](https://www.researchgate.net/publication/267426003_Information_and_Communication_Technology_for_Rural_Development)
- [https://www.researchgate.net/publication/237047450\\_Role\\_of ICTs\\_in\\_Rural\\_Development\\_with\\_Reference\\_to\\_Changing\\_Climatic\\_Conditions](https://www.researchgate.net/publication/237047450_Role_of ICTs_in_Rural_Development_with_Reference_to_Changing_Climatic_Conditions)
- <https://egyankosh.ac.in/bitstream/123456789/25875/1/Unit-6.pdf>
- <https://www.jetir.org/papers/JETIR1406016.pdf>
- <https://www.ijcmas.com/special/11/Insha%20Javeed,%20et%20al.pdf>
- <https://citeseerx.ist.psu.edu/document?repid=rep1&type=pdf&doi=c82b8c00b3342802f73cf54993f73fcc8e2f2228>
- <https://idl-bnc-idrc.dspacedirect.org/bitstream/handle/10625/29846/121660.pdf?sequence=1>
- [http://www.ijsrcsams.com/images/stories/Past\\_Issue\\_Docs/ijsrcsamsv7i5p19.pdf](http://www.ijsrcsams.com/images/stories/Past_Issue_Docs/ijsrcsamsv7i5p19.pdf)
- <http://data.conferenceworld.in/IETES/17.pdf>
- <https://www.westeastinstitute.com/wp-content/uploads/2014/07/Mukesh-Ranga.pdf>
- [http://www.aelsindia.com/rjcesfeb2017/2b%20\(1\).pdf](http://www.aelsindia.com/rjcesfeb2017/2b%20(1).pdf)
- [https://www.ripublication.com/irph/ijict17/ijictv7n1\\_02.pdf](https://www.ripublication.com/irph/ijict17/ijictv7n1_02.pdf)
- <https://www.drishtiias.com/images/pdf/Kurukshetra%20December%202018.pdf>
- [https://ijariie.com/AdminUploadPdf/A\\_study\\_on\\_significant\\_usage\\_of\\_technology\\_in\\_rural\\_development\\_with\\_specific\\_reference\\_to\\_Indian\\_context\\_ijariie15049.pdf](https://ijariie.com/AdminUploadPdf/A_study_on_significant_usage_of_technology_in_rural_development_with_specific_reference_to_Indian_context_ijariie15049.pdf)
- <http://vvvcjournal.in/assets/journalsnew/september2017/2017article25.pdf>
- <https://www.arcjournals.org/pdfs/ijps/v4-i4/5.pdf>
- <https://www.iosrjournals.org/iosr-jce/papers/Vol3-issue2/F0323235.pdf>