



Bridging the Digital Divide: The Role of Information and Communication Technology (ICT)

Pratikshya Mishra¹, Jeebanjyoti Behera², Bhagya Laxmi Sahu³ and Gali Krishna Chaithanya⁴

¹M.Sc. student, Dept. of Fruit Science and Horticulture Technology, OUAT, Bhubaneswar- 751003

²Assistant Professor, Dept. of Extension Education, OUAT, Bhubaneswar- 751003

³Ph.D. Scholar, Dept. of Extension Education, OUAT, Bhubaneswar- 751003

⁴Ph.D. Scholar, Dept. of Agricultural Economics, SKUAST-K, Srinagar, Jammu & Kashmir- 190025

Open Access

Introduction

Agriculture is one of the most important sectors in India, and could benefit tremendously with the applications of ICTs especially in bringing changes to socio-economic conditions of farmers. Farmers in rural areas have to deal with crops failures and animal illness frequently and due to limited communication facilities, solutions to their problems remain out of reach. Despite large, well-educated, well-trained, and well-organized Agricultural extension manpower, around 60% of farmers in the country still remain unreached, not served by any extension agency or functionary. Of the 40%, who have some access to Agricultural Information, the major sources of this information are Radio and Television. Internet supporting Information-Kiosks are also serving the farming community, in many parts of the country. The service role of ICTs can enhance rural communities' opportunities by improving their access to market information and lower transaction costs for poor farmers and traders.

Though India has a strong and fast-growing IT industry, access to ICTs remains very low, particularly in rural areas. The present indicators of IT penetration in Indian society are far from satisfactory. User friendly systems, particularly with content in local languages, can generate interest in the farmers and others working at the grassroots. It is to be noted that a change which a farmers does not possess before ICT application in Agriculture may take place in the farmers after his ICT Application in Agriculture.

ICT Application in Agriculture Information communication technologies (ICT) provide new approaches and ways of communicating, transferring and enhancing the knowledge and information among different communities. Information and communication technologies (ICTs) are crucial in improving access to health and education services and creating new sources of income and employment for the poor section of society. The term ICT used to include a radio, television, mobile phone, internet, telephone, video voice information

system, fax and computer etc. ICT use can increase the efficiency and effectiveness of government, the benefits of IT will be more widely spread, partly reducing “digital divide” concerns. Private

providers may therefore have also a role in delivering IT – based information services that are complementary to government services.



ICTs and Farmers’ Advisory Services

The most widely used and available tools of farmers’ advisory services are- telephone based Tele Advisory Services, the mobile based Agri Advisory services, television and radio-based mass media programmes, web based online Agri Advisory services, video-conferencing, Online Agri video Channel, besides traditional media like, printed literature, newspapers, and farmer’s exhibition/fair etc. The Government of India initiative of providing on-line phone based expert advice service, Kisan Call Centres (KCC), has made a milestone in answering farmer’s queries on a telephone call in 22 local languages across India. The mobile based Agri Advisory services offer text, voice and video content based Agri information services through mobile phones. Mobile phones are becoming an essential device for all types of

users irrespective of the age group. In India mobile technology has been spreading like a web to cover each and every corner of the country. Television and radio have created awareness and knowledge among farmers about use of technologies in farming and produce such kind of programs which create interest



among masses. Community radio is one of the important tools of ICT that offer farmers and the people a voice and help development of the community. Community radio is owned and operated by a community or members of a community.

ICTs in Animal Disease Management

Since the arrival of computers, the use of ICT in animal husbandry and hospital management has shown a paradigms shift. Recent concepts like Internet, Geographical Information System (GIS), Global Positioning System (GPS), Database Management, Computer Aided Design (CAD), computer Networking, Artificial Intelligence adds strength and efficiency to the ICT in animal disease management. Most of the ICT tools currently used are in Herd Health management. Geographic Information System (GIS), Remote Sensing (RS) and Global Positioning



System(GPS) are used in convergence for animal disease management.

ICTs in Rural Development

The agricultural sector is in pressure due to the ever-increasing population in a situation of decreasing availability of natural resources with a major challenge of growing food demands. However, the growing demand, including for higher quality products, also offers opportunities for improving the livelihoods of rural communities. Rural development is the absolute and urgent necessity in India. ICTs can play a significant role in combating rural and urban poverty and fostering sustainable development through creating information rich societies and supporting livelihoods.

ICTs for Empowerment of Women

Women face enormous challenges to use ICT for their own socio-economic empowerment. Using and benefiting from ICT requires education, training, affordable access to the technology, information relevant to the user and a great amount of support. For making women self-reliant and self-dependent ICT should be accessible to them so that they can get valuable information related to family management, nutrition and health etc.

ICTs for Market Information

The lack of need based and timely market information in the agriculture sector to the door steps of farmers remains a key constraint to the development of agriculture in India. Endless efforts are being made by public and private institutions to implement market information services using advanced information and

communication technology (ICT) tools. With rapidly increasing access to cell phones and computer centres, even the more remote areas of the continent are benefiting from the information pertaining to markets price trends, supply of high-quality inputs and also better price of their produce. Farmers are now able to get complete knowledge of price prevailing in their nearby markets and getting fair price of their produce.

Some Successful ICT initiatives in India:

In India ICT applications/projects such as Warana wired project, e-Chaupal, e-Seva, Bhoomi project, e-Mitra, Gyandoot, Tarahaat, FRIENDS, CARD, Akashaya, Honeybee, Praja are quite successful in achieving their objectives. Some of these have been dealt in detail below:

e-Extension (e- Soil Health card Program)

It is one of the ambitious programmes which aims to analyse the soil of all the villages of the state & proposes to provide online guidance to farmers on their soil health condition, fertilizer usage and alternative cropping pattern.

AGRISNET

An infrastructure network up to block level agricultural officers facilitating agricultural extension services and agribusiness activities to user in rural area.

AGMARKNET

It is a comprehensive database which links together all the important agricultural produce markets in the country.

**Kisan call centres**

Kisan call centres have been established across the country to deliver extension services to the farming community. The sole objective is to make agriculture knowledge available at free of cost to the farmers as and when desired. Queries related to agri. And allied sectors are being addressed through the kisan call centres, instantly, in the local language by the experts of State departments, SAUs, ICAR institutions

e-choupal

It is a corporate project launched in June 2000 in which village internet kiosks managed by farmers - called *sanchalaks* - themselves, enable the agricultural community access ready information in their local language on the weather & market prices, disseminate knowledge on scientific farm practices & risk management, facilitate the sale of farm inputs and purchase farm produce from the farmers' doorsteps.

e-Sagu

ICT based personalized agro-advisory system is being developed since 2004. It aims to improve farm productivity by delivering high quality personalized (farm-specific) agro-expert advice in a timely manner to each farm at the farmers door-steps without farmer asking a question. The advice is provided on a regular basis (typically once a week) from sowing to harvesting which reduces the cost of cultivation and increases the farm productivity as well as quality of agri-commodities.

Decision support systems

Decision support system enhance the user's capability of making timely and knowledgeable planning, management, and analytical decision. These applications automate decision making activities or organise collective information in a more meaningful manner. Expert systems provide advice to field users or organizing different activities. The potential for using this software in rural development encompasses primary health care, crop pollution extension, various agricultural applications etc. Software has been developed for crop and livestock.

Conclusion

ICT can play a major role in facilitating the process of transformation of farmers and to remove the fast-growing digital divides. The rapid changes in the field of information technology make it possible to develop and disseminate required electronic services to rural India. Although Indian Govt. have made a remarkable achievements especially in the area of agriculture by giving various facilities to the farmers in which the ICT services is one which is helping the farmers to understand the modern cultivation methods, availability of agriculture inputs, irrigational sources, availability of pesticide and fertilizers for increasing the production and productivity of crops but still there is knowledge gap among farmers ,buyers and extension services most of the farmers need ICT trainings, facilities and skills to enhance their product in future.

There is need to establish new technologies centres and media houses for dissemination the



agriculture information among farmers in rural areas. Government also should take initiatives for the development of agriculture and provide trainings and latest information by using the communication technologies tools in their countries. Most of developing countries farmers education level is also low therefore government of these countries should start technical and educational programs for farmers in their countries and enhance the capacity building of farmers by using information communication technologies that farmers can also get good benefit from these technologies and increase their income and improve their standard of life.

References★

- Ragnedda, M., & Rui, M. L. (2020). Bridging digital divides: A literature review and research agenda. *Information Systems Frontiers*, 22(3), 701–708.
- Turin, M., & Valero, D. (2024). Dimensions and barriers for digital (in)equity and digital divide: A systematic review. *Digital Transformation and Society*, 1(2), 45–67.
- Heeks, R. (2021). From digital divide to digital justice in the global South: Conceptualising adverse digital incorporation. *Journal of Information Technology for Development*, 27(4), 1–20.
- Dang, S., Zhang, C., Shihada, B., & Alouini, M.-S. (2021). Big communications: Connect the unconnected. *IEEE*

Communications Magazine, 59(6), 14–20.