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Use of information and communication technology in agriculture development

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Abstract

Information and Communication Technology (ICT) has connected the world globally and is now changing the life style and social consciousness dynamically. ICT has emerged as a best tool for information sharing and mutual communication. None of the walks of life have been left untouched to the ICT sector. Agriculture has also been greatly influenced by ICT in the present era though the share of ICT in agriculture is increasing considerably especially after GATT (General Agreement on Tariffs and Trade). ICT is important sector in improving the agriculture through sustainable management of resources. The use of computers, smartphone applications and apps and internet has brought awareness on the potential of ICT in agriculture and agri-business. Rural communication and information management in ICT have important role in spreading information about successful farmers' innovations and getting access to fresh knowledge knowledge.

Keywords: ICT, agriculture, internet, smartphone apps, start-ups

Introduction

Information and communication technology refers to a broad term - computing technology. Computer, hardware, software, smartphones and internet are keys to these systems that are designed, developed and managed by ICT professionals with following objectives.

1. To put information close to the managers, scientists, teachers, extension workers and farmers.
2. To improve the capacity of researchers, teachers and extension specialists to organize, store, retrieve and exchange the information.
3. To evolve mechanism of information sharing.
4. To strengthen national libraries and library network through electronic access.
5. To develop database for easy access and data-based decision making.
6. To communicate information among the farmers.
7. To provide impetus to agri-based start-ups, ultimately providing employment to rural youth.
8. To harness the use smartphone apps in agri-business for benefit of farmers.

Key players for utilization of ICT in agriculture

1. The farmers: The actual person who can directly bring about an improvement in efficiency and productivity in agriculture
2. Various industries that provide inputs to agriculture Institutions, organizations and NGOs working for the benefit of farmers such as agricultural universities and central and state governments.
3. Entrepreneurs; which can easily reach directly to the farmers with the use of modern ICT consequently increasing the income of the farmers by direct trading.

Scope of ICT in agriculture

1. To sustain self-sufficiently in food; ICT Is essential that the its advancement must be extended to farming community.
2. Information services; to the farmers can be improved through the creative use of ICT.
3. Farmers use information on weather, markets, agricultural developments and practices

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4. The internet and smartphone are emerging as the potential means to contribute to agricultural development. Websites and rural portals in regional languages can be developed and hosted on the world wide web through Internet. This provides information in the form of graphics, animation, audio, video, clippings etc.
5. Information and communication management for sustainable agriculture is considered today's crucial requirements and ICT has great scope to make enormous strides in the ICT (information and communication technologies) sector.
6. Advances in agriculture also provides opportunities for agricultural graduates to establish computer aided and Internet connected rural knowledge centre. A virtual university linking such village knowledge centres to agricultural universities and research institutions, can be established to get Up To Date authentic technical advice.

Information technology tools in agriculture

A range of communication technologies, viz. rural radio, participatory video etc. have been developed and are being modified appropriately to meet the needs of rural population of India. However, application of such ICT is constrained by lack of complementary inputs (equipment, power etc.), appropriate organizational and institutional infra-structures, information management, skilled human resources, opportunities for technology transfer etc. Availability of computer network and databases have been essential to take up major development programmes. The various ICT tools are now considered as paramount factors for uplift and progress of masses, and also to agricultural extension. The most commonly available ICT tools in Indian context are:

1. Radio and Interactive radio
2. Television (TV)
3. Internet
4. Multimedia
5. Video conferencing
6. Smartphone apps

Radio and Television

Radio and television are communication media which have great potential for influencing farmers to stimulate agricultural development. The review work was carried out to explore the researches on the role of radio and television in agricultural development. This review work was conducted to assess how radio and television are contributing to the growth of agriculture sector. All information was collected from secondary sources. A number of researches were conducted by several researchers which reflected that radio and television were used by the farmers in different countries to different extent. It was observed in several researches that both the radio and television were perceived as effective by the farmers. In several researches it was observed that radio had an effective role in improving awareness and increasing level of knowledge of farmers. Higher level of adoption of agricultural technologies due to radio agricultural programmes were also observed in several researches. The farmers were benefitted with increased income and increased marketing opportunities by accessing marketing information from radio programmes. In several researches it was revealed that television had a significant role in

increasing agricultural knowledge of the farmers. A research carried out to assess the role of television channels on agricultural development in Pakistan showed that television was moderately effective in increasing their agricultural income. Another study carried out in Bangladesh revealed that farmers obtained high production utilizing the agricultural information obtained from television channels. In another study it was found that television was the most effective mass media channel for influencing knowledge increase of the farmers. Some problems were faced by the farmers in using radio and television in a study. In several studies, it was revealed that radio and television both had significant role in agricultural development.

Internet and multimedia

Enormous benefits await rural communities and agricultural organizations when communication improves between the non-governmental organizations, government services, private sector entities and educational institutes that support rural and agricultural development. By sharing information about their activities in the fields of agriculture, rural development, forestry, fisheries, health, nutrition, and education, these agencies can better serve rural people and farmers. They can make use of "lessons learned," determine and use "best practices," and coordinate information about particular regions or successful development approaches. At the same time, rural communities and agricultural organizations can benefit equally from improved vertical channels of communication that enable rural stakeholders and farmers to communicate with decision-makers and others concerned with development.

An integrated approach to the expansion of Internet services will promote the necessary (but often neglected) horizontal communication between agencies linked to rural and agricultural development. At the same time, an integrated approach will provide the tools to enable rural people and farmers to enter directly into new vertical communication relationships with external agencies. Improving horizontal communication can improve the quality and relevance of information resources and physical resources available to rural people. Improving vertical communication between rural people, farmers and decision-makers can improve the quality of decisions that affect rural communities and agricultural organizations. An integrated approach provides for vertical communication by establishing rural Internet access sites, and by enhancing horizontal communication between such entities as agricultural colleges, agricultural input and equipment suppliers, government extension services, rural development organizations, health care agencies, and agricultural research and documentation centres.

Video conferencing

Video conferencing is important because it joins people who would not normally be able to form a face-to-face connection. In businesses, it can increase productivity amongst employees as well as provide an improved way of communicating and interacting with colleagues, partners and customers. For businesses, the tangible benefits of video conferencing include lower travel costs especially for employee training and shortened project times as a result of improved communications among team members. The intangible benefits of video conferencing include more efficient meetings with the exchange of non-verbal

communications and a stronger sense of community among business contacts, both within and between companies, as well as with customers. On a personal level, the face-to-face connection adds non-verbal communication to the exchange and allows participants to develop a stronger sense of familiarity with individuals they may never actually meet in person. Other benefits of video conferencing are no need of travel, bind your mobile workers, it aids tell the community, organize meeting independent time, humanize your conversation, show things, learn and teach online. By video conferencing farmers were get the knowledge about agriculture and farming.

Smartphone apps

These agriculture apps are very useful for Indian farmers and agriculture community which update the latest information and technology of agriculture. These apps provide help to Indian farmers and fill the information gap between the rural people and government with rural development. These are Android apps for Indian farmers used for agriculture which provides the latest market rates, weather forecasting, Govt policies and schemes for farmers, latest technology videos, news related to agriculture etc. Farmers can directly ask the question and query to the Agriculture experts using these apps to solve their query instantly also they can watch their videos related to new technology, successful farmers, machinery, ect.

Conclusion

At present, the use of information technology in agriculture is limited due to lack of complementary inputs, infrastructure, skilled personnel and information management etc. ICT will gear up by the advance of efficient and effective technology innovations. The new information technology tools and techniques can play a great role to improve communication and co-ordination among extension workers and farmers. This technological change will definitely accelerate developments in the field of agricultural extension and ultimately, farmers will be able to harvest the benefits to the desired level. Thus, information technology is one of the best tools for prospering of Indian Agriculture.

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