

## Review Article

# Information Communication Technologies as Potential System of Knowledge Dissemination in Rural Agricultural Development

### Abstract

The primary purpose of this research is to look at the potential of technology norms and practices in a variety of agricultural resource management systems. By identifying creative IT application implementation, the research also gives an overview of how to overcome rising hurdles in adopting information and communication technology. This article emphasizes some of the noteworthy findings of a study conducted on most farmers, which revealed that most farmers use ICT devices such as multi-SIM mobile phones, smart phones, and tablets. Cell phones and smart phones are the most generally accepted and utilized ICTs, having helped farmers become more socially engaged. Many agriculture-friendly mobile apps are as well assisting farmers in appreciating the relevance of technology. They can contact middlemen for marketing purposes and immediately contact field specialists in real time for guidance on preserving the quality of inputs/outputs, controlling insect/pest, and managing crop diseases, among others. The antagonism toward technology and the hesitancy to adopt new things and their possible impacts on the reorganization of extension services are essential obstacles to actively integrating ICT.

**Keywords:** Agricultural development, communication technologies, information system.

### 1. Introduction:

Information technology is a collection of multifarious heterogeneous technological tools, enhanced support systems, and portable resources meant to facilitate communications, to store information for simple retrieval, to comprehend complicated structures, and to manage multidimensional data. Now-a-days, many devices, including Personal Computers, laptops, smart phones, tablets, and a range of hardware and software connected via the Internet, may be supported thanks to technological advancements [1]. The current communication infrastructure supports permanent technologies such as live television, radio and television broadcasts, as well as free telephone lines [2]. It has a number of features, including internet portals, email, webinars, live recordings, and video conferencing, among others.

The primitive technology used television and radio as the primary means of reaching out to rural communities. However, internet-based mobile communication channels are already effecting all aspects of agriculture [3]. Social networking, computerized knowledge archives, digital video, and photography have all benefited from Information Technology. Farmers confront common issues and challenges, such as sustainability, scalability, and availability of

relevant knowledge, despite all of the chances and opportunities offered by IT. These opportunities have been readily used by some farmers while others suffer the causes of digital divide. The substantial reason of this digital divide is low literacy, less income, geographical restrictions, digital illiteracy, lack of motivation to adopt new technology or lack of resources to access the technology [4], [5]. The lack of digital skills is a serious problem as it compels to depend upon primitive information technologies like TV. These gaps can be bridged by providing fundamental facilities by various governmental initiatives like agricultural policies and awareness programs.

## **2. Role of E-government in ICT**

E-governance must be used as a means of removing unofficial barriers to public service access. The use of the Internet and the World Wide Web (WWW) to offer online public products and guidance inside this system could assist a number of farmers in ensuring the standards of their essential services by rendering them faster, more durable, available in real-time, and even more demand oriented [6], [7]. The introduction of mobile phones, fast short messaging system (SMS), and multi-media message system (MMS) has minimized waiting periods for key decisions in remote rural areas where exchange of information would ordinarily take weeks or months. Modern information and communication technologies (ICT) such as the electronic mail, 4G smart phones, and famous social media sites such as YouTube, Twitter, and Facebook have augmented communication horizons in the twenty-first century, trying to reach previously underserved communities [8]. Developing countries have been able to "out maneuver" agriculture and rural development with breakthrough technologies of modern ICT. As an outcome, more attention is being paid to the role of information and communication technology (ICT) in enhancing market access, which is vital for agricultural commercialization, food security, and poverty reduction [9], [10].

## **3. ICT models in new age**

Many new information exchange models have emerged as a result of the rapid rise of the IT era, representing the spontaneous evolution of immediate quality [11]. The various agricultural information technologies are now classified as follows:

1. Online Web Portal: A collection of websites and web links presented on a single platform for users.
2. Voice-centric service: Provides a two-way voice service to farmers over the phone. Terminals are often located at Krishi Vigyan Kendra, where farmers can apply for assistance. In fact, it does information exchange over the phone. i.e. Business Process Outsourcing services, Knowledge Process Outsourcing services and others [12].
3. VoIP: Voice over Internet Protocol (VoIP) allows farmers to communicate over a Unified Access Platform (UFP). This protocol can ensure equal dissemination of information through phone calls and high-speed data services [13], [14]. The development of voice calling services facilitates farmers to use instant real-time chat, voice and video chat, and various other multimedia communication platforms.
4. SMS/MMS Services: This type of information delivery comprises text/media messaging. The reach out to the farmer community can be easily made by collaboration of the agriculture industry and telecommunications companies [15].

5. **Building a Support Community** - This section includes free and paid online forum-based support systems where farmers could connect, ask questions, and receive professional guidance in their preferred format. This service-oriented framework creates an agricultural community where farmers may register their truthful information to obtain assistance from other community members [16]. Other farmers, government officials, agricultural experts, technicians, and small company owners may be active community members could use their mobile smart phone to talk utilizing the internet chat software.
6. **Videoconferencing**- This is a dedicated satellite system that connects various sites, such as KVK numbers and other rural locations, with the capacity to speak with remote resources. Farmers do not have to be there at the time of the talk, but they may interact face-to-face and comprehend practical tips and methods at home, thanks to this technology. Similarly, they might show an expert sitting across from them a sample of a damaged crop along with their symptoms, and the professional would know how to treat that crop [17].
7. **Smart Internet Services**: Any smart gadget farmers use to disseminate information falls under this category. Smart phones are the most common devices applied for marketing agricultural product online, comparing quality, monitoring daily online pricing, and updating news.

#### **4. Technological Shift in Agricultural Norms**

Technology can play an important role today in increasing production by 70% more food by 2050 to satisfy the rising needs of society. The provision of robotics in agriculture and use of robots in all agricultural activities can support in reaching this goal. The agricultural projects need use of modern technologies like drones equipped with firmware to capture high resolution farm pictures to analyze crop health and generate précised prescriptions for farming decisions and more such technologies [18].

The conventional communication structure of ICT has allowed the IT industry to step in with cutting edge technology with interventions of online advisory services for various local and global agri-businesses. Farmers can monitor farm conditions using yield management systems, make insightful decision using decision support systems and expert systems. The use of smart systems in farming can make production efficient and less wasteful future farms [19], [20]. Technology is not just ameliorating the current agricultural field situation but it is also empowering farmers with capabilities to achieve that was not achievable with conventional sources.

#### **5. Conclusion:**

The use of information technology is extremely beneficial for knowledge transmission. The technologies that help in growth of agriculture cannot be overlooked in the development of agricultural countries like India. Information technology studies how data could be utilized, processed and shared with others. In the current environment of employing information technology for quality and mass production, it is necessary to acknowledge the agricultural side of information technology as a great potential for farmers to comprehend. The creation of technology-friendly institutions to serve as knowledge centers for farmers might also contribute in disseminating information through ICT in rural regions.

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