ICT AND E-AGRICULTURE

Radhe Shyam

Extension, Assistant Professor (CSE), Govt. College for women, Hisar ,Haryana, (India)

ABSTRACT

Agriculture is considered to be a main occupation for a most segment of population. The agricultural field plays a major role in the India's development. There is a large gap between rural areas and information residing in agricultural knowledge center. The agriculture sector has been on under development for past few years due to lack of environment changes and Agriculture knowledge. E-agriculture is a rising field focusing on the improvement of agriculture and rural development through communication processes and advanced information and Technology. In this paper, some important issues discussed with ICT and E-agriculture. This review paper presents a some review of the rural ICT and the issues associated with the use of ICT for rural e-Agriculture application.

Keywords: ICT, e-Governance, e-Agriculture, Agriculture websites

I. INTRODUCTION

ICTs or Information and Communication Technologies are important tool for the development of rural and agriculture sector. Agriculture is a main sector with the majority of the rural population in developing countries depending on it. This sector faces large major challenges of enhancing production in a situation of dwindling natural resources necessary for production. The large increasing demand for agricultural products, however, also offers some opportunities for producers to sustain and uplifting their living style. Information and communication technologies (ICT) play an important role in solving these challenges and improve the livelihoods of the rural poor people. This review paper explores the potential contribution of ICT to the livelihoods of small-scale farmers and the efficiency of the agricultural sector in developing countries. The agricultural sector plays an important role in the India's development.

II. ICT

The full form of ICT is "Information and Communication Technologies."Information and Communication Technology(ICT)means technologies that provide access to information through broadcast media and telecommunication. It is similar and equal to Information Technology (IT), but primarily focuses on communication technologies. This includes the telephone, cell phones, wireless networks, Internet and other communication mediums.In the past few years, information and communication technologies have provided society with a very large number of new communication abilities. People can communicate with each other in different countries using technologies such as voice over IP (VoIP), video-conferencing and instant messaging. Social networking website likes LinkedIn, Facebook, Twitter allow own all users from all over the world to remain in contact and communicate on a regular basis.Modern information and communication technologies (ICT) have created a "Global small city," in which people can communicate with each other across

the world as if they were living next door. For this basis, ICT is often studied in the context of how modern communication technologies affect agriculture sector and society.

III. E-AGRICULTURE

E-agriculture is improving agriculture development opportunities, and aiding the practice of agri-business. Theincreased use of E-Agriculture and e-agriculture technologies has empowered farmers and translated into a higher standard of living for farming communitiesworldwide. E-agriculture is a rapidly emerging field which involves increasing access to internet-based farming and crop growing information related to local natural resources, market information, businessopportunities, emerging farming technologies, and new farming techniques, credit and financial services, monitoring of resources, accounting, weather forecasts, and pest alerts. Agriculture has really changed. People are using satellite photos to determine needs for water, fertilizer and pesticides, then connecting wirelessly to the application equipment so that as the equipment moves through a field its application rates change. A variety of sensing equipment can feed into the network. The idea is to apply exactly the right material to exactly the right spot at exactly the right time using networked equipment.E-Agriculture Community is made up offarmers,policy makers, development practitioners, individual stakeholders such as information and communication specialists, students, researchers, business people and others.Farmers can get the desired information at any time from any part of world and they can also get the help from experts viewing their problem immediately by without moving anywhere. E-agriculture is a relatively new term in the area of agriculture and rural development.In short e-Agriculture will connect all related persons starting from farmers to researchers together.E-agriculture conveys the information related agricultural details to farmers in SMS via SMS gateway. The details such asseasonal alert, daily alert, and other additional details can be sent to farmers. The seasonal or daily alert can be sent to all farmers in the database.

IV. NEED OF ICT IN AGRICULTURE

E-agriculture helps in dissemination of gathered information to the farmers, mostly lived in rural areas, to use in their routine work. These services are provided through the Internet and related technologies. This ensures the effective and efficient use of information and communication technologies for designing, implementing, and analyzing innovative and existing applications to help the agricultural sector. The information disseminated by e-Agriculture can be divided into several major fields or areas, which is called as services of e-Agriculture. These are:

- Weather Information
- Price Information
- Health andEducations Information
- Production Techniques
- Non-government andGovernment Facilities
- Current Stock andDemands Information

There are several models of ICTs may be used in agriculture of India, which have made a significant many difference operation. The main technologies involved in Farmer's call centers are:

• Desktop and Laptop computer system with Internet connectivity

• Teleconferencing and telephones with headphones

• High bandwidth telephone line

The main purpose is to deliver the extension services to the farming community in the local languages. The farmer dials the help line, a toll free number, 1551 (symbolic), and the agricultural graduates provide the initial important enquiry. The information cost to the farmers is almost zero, and they also get the response in their own local languages. If needed extra knowledge and information then some time, the agricultural scientists also visit the field to resolve any further queries.

V. ROLE OF ICT IN E –AGRICULTURE

Information and Communication Technology is a term that includes any communication device or application, television, radio, mobile andcomputer, network hardware, fixed phones andsatellite systems and softwareso on, necessary for the delivery of information in the form ofdata, image, audio, video, etc. from Point P to Point Q. ICT exist of all technical means used to handle information and aid communication.The spread of information to farmers has become increasingly integrated into ICTs. Many of the organizations likeprivate, cooperatives, government and public have also attempted to facilitate technology transfer in the agricultural sector. A new concept about Agricultural informatics that has proceededquick development in information and communication technologies and of the internet. Rural telecentres provide information onagricultural,education andhealthissues and equip rural citizens with skills on how to use computers and provide basic literacy. Information and Communication Technologies are crucial in facilitating communication and access to information forrural development and agricultural. Also TV programand Radio provided agricultural information. Information and communication technologies are making big impact on the rural economy due to its appeal andwide application. It may seem paradoxical that modem lets associated with developed country markets and capital intensive methods of production, has any relevance for country like India where many millions of people lack in basic needs. Nevertheless, there are many efforts in India and other developing countries to demonstrate the concrete benefits of ICT for rural population and to carry out the same in a manner that makes economic sense.

Some Application of ICT is following.

Some Application of ICT

VI. ADVANTAGES OF ICT IN E-AGRICULTURE

Advantages of ICT in E-agriculture are following.

1) Improved productivity and profitability of farmers through ICT and E-Agricultural facility.

2) Efficient utilization and management of resources

3) Rain and other important information timely available in to the farmer.

4)It can support policy and decision-making information and evaluation on optimal farm production, agro-environmental resource management etc. using tools such as GIS.

5) It can also provide new agricultural and rural business such as,rural tourism, real estate business for satellite offices, e-commerce and virtual corporation of small-scale farms.

6) It canprovide more comfortable andsafe rural life with equivalent services to those in the urban location, such as provision oftelemedicine, distance education, remote public services,remote entertainment, etc.

7) Development of Decision Support, Knowledge Management, and Advisory Systems to strengthen Extension services and also used for Farmers Redressed system

8).It can improve farm management and farming technologies by efficient farm management, risk management,knowledge transfer or effective information etc., realizing competitive and supportable farmingwith safe products. In this help farmer has to make critical decisions such as what to plant? When to plant? how to manage blighter?, while considering off-farm factors such asmarket access, environmental impacts, and industry standards. Information Technology-based decision support system can surely help their decisions.

9). It can provide systems and tools to secure foodreliability and traceability that has been an emerging issue concerning farm products since serious contamination such as chicken flu was detected.

VII. ICT AND ITS CHALLENGE IN AGRICULTURE

It is very important that the application of ICT in agriculture is increasing. E-Agriculture helps in dissemination of gathered information to the farmers, mostly lived in rural place, to use in their routine work.Any system applied for getting knowledge and information for making decisions in any industry should delivercomplete, accurate, concise information in time or on time. These services are provided and enhanced through the Internet and related technologies. The information provided by the system must be in easy to access,cost-effective,user-friendly form and well protected from unauthorized accesses.This ensures the effective and efficient use of

information and communication technologies for analyzing,implementing existing and designing and innovative applications to help the agricultural sector. Those who are involved with agricultural industry also need information and knowledge to manage their occupation efficiently. An important role could be played by ICT in maintaining the above mentioned properties of information. An authentic agricultural database based onclimate condition and soil, crop cultivation history, demand of raw material,farmers interest, pest and disease management technologies,marketing system, storage facilities, etc. have to be developed with the help of ICT and Geographic Information System.

The major challenges to "Agriculture Sector in India" are following:

1) Insufficient use of ICT for agricultural purposes, etc.,

2) Lack of "Common Platforms" for the farmers in India,

3) Agricultural content up-gradations and its development.

4)Insufficient agriculturalsupport facilities and infrastructure.

5) Ownership issues of the public and government generated data,

6) Inadequate use of Public-Private Partnerships in India,

7)Shortage of awareness regarding suitable agricultural methods among the farmers

8) Absence of an "Agricultural Think-Tank" in India,

9).Insufficient institutional capacity to deliver farmers specific services,

VIII. FUTURE OUTLOOK IN ICT FOR AGRICULTURAL

For sustainable development of agriculture and national economy to emphasis on ICT and its use in agriculture very important. T

he following issues are very important for ICT management in sustainable agriculture.

1.Farmer information system

2. Marketinginformation system

3.Research management information system

4.Water andIrrigation management information system

5.Production forecasting system

6. Climate change scenarios

7. Stock information systems

8.Agricultural technology database

9. Agricultural product Price Information system

10.Availability of updated bio-physical database

11. Crop zoning map

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