



ROLE OF INFORMATION AND COMMUNICATION TECHNOLOGY IN ANIMAL HUSBANDRY EXTENSION

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ABSTRACT

Information and Communication Technology (ICT) is basically an umbrella term that encompasses all communication technologies such as internet, wireless networks, cell phones, satellite communications, digital television *etc.* Information Communication Technology (ICT) ordinarily refers to computer-based technology and telecommunication. It has great potential to bring in the desired social transformation by enhancing access to people, services, information and other technologies (Dutton *et al.*, 2004). ICT based livestock advisory services for knowledge dissemination to the farming communities for better and informed decision making at the farm level (Gulati *et al.*, 2007). Development of new information and communication technology and educational infrastructure to create large pool of technical man power in ICT, wide range of ICT option are becoming available even to remote and difficult areas. Appropriate choice and adaptation of new ICT in different rural areas to communication and education millions of farm families (Patil, 2009). Different Project Conducted like Bhoomi Project, Gyandoot Project, Warana Wired Village Project, IKISAN Project, FRIENDS, e-VET *etc.* in rural area. The project aims at using Information Communication Technology (ICT) to provide doorstep veterinary services to livestock rearers in rural areas and the availability of health care services for livestock at minimum time and affordable cost, and at the doorsteps of livestock rearers, improved reporting and disease surveillance, timely information on the prices of livestock and livestock products leading to increased incomes and better livelihood opportunities. Finally, it can be concluded that adaptation of new ICT in different areas of livestock farming, help the millions of farmers to communicate and educate regarding recent trends in animal husbandry.

KEYWORDS: Information Communication Technology (ICT), Information kiosks, Cyber Extension.

INTRODUCTION

Information Communication Technology (ICT) ordinarily refers to computer-based technology and telecommunication. These are the technologies where the information is accessed and used in electronic format through the use of computers. It has great potential to bring in the desired social transformation by enhancing access to people, services, information and other technologies (Dutton *et al.*, 2004). ICT facilitate the processing and transfer of information, i.e. communication by electronic means. It generally link Information processing devices like computers with telecommunication technologies like telephones, wired or wireless networks. They provide faster and newer ways of delivering and accessing information. The range of technologies is increasing all the time and there is a convergence between the new technologies and conventional media (Ray, 2011). IT in the present scenario of IT revolution, agriculture and animal husbandry has also been influenced, although the share of IT in agriculture is only 1.3 per cent (Chargotra, 2006). ICT based livestock advisory services for knowledge dissemination to the farming communities for better and informed decision making at the farm level (Gulati *et al.*, 2007).

The people working in the livestock sector are least equipped with proper tools to deal with rapidly changing livestock production scenario and international

competitive environment. At present, the ratio of the farmers to the extension workers is 1000:1 (Kumar, 2005), also the existing transfer of technology mechanisms and extension programmes run by the government departments are slow and in many cases ineffective in view of the vast gaps between the research and farmers linkages. This is partly due to inadequate use of new areas of information dissemination in various development programmes. The introduction of ICT helps in upgrading the information at least cost.

In a fast changing global environment, livestock production has to be more dynamic so as to harness the latest technologies and emerging opportunities due to globalization. The emergence of Rural Knowledge Centers and information kiosk in our country, promoted by NGOs and corporate sector, have demonstrated that the local panchayats and self-help groups can take advantage of appropriate information and communication technologies and with this facility, they can easily access the scientific and technical knowledge they need, to solve the problems with greater precision (Ram Kumar *et al.*, 2003). Keeping the enormous contribution of livestock to the GDP and the scope of livestock sector in employment generation and improving the living standards of the farmers as well as irreplaceable role of Information and Communication technology tools in livestock sector, the stake holders have paved the way to utilize ICT tools in livestock sector.

APPLICATION OF INFORMATION AND COMMUNICATION TECHNOLOGY

The application of information and communication technology may be classified into several categories these are:

i. Decision support to public administrators

Decision support systems for public administrators focus on improving planning and monitoring of development programmes. These include the use of geographical information systems to plan the location of rural facilities or to identify disaster prone area (Bhatnagar, 2000). Provision of personal computers in the rural district agencies was primarily intended to improve the monitoring of the integrated rural development programme. Information technology could enable field level workers to better plan their activities and for their supervisors to more effectively monitor their performance.

ii. Improving services to the people

The focus is on automating the process of delivering services to the people and in the process brings in transparency. These reduce waiting time in receiving payments and obtaining receipts and documents. Computerization of land records, adoption of information technology at milk collections centre, to mention a few, have made thing easy for the peoples. (Bhatnagar, 2000).

iii. Empowering people to access information and knowledge

Access to information about market is crucial for rural producers of all varieties of goods and services. Use of IT can provide current information of market to producers, thus increasing their bargaining power. In spite of many development programmes, the people are often unaware of free and priced services that institutions are expected to offer to them. They are also not aware of the expenditures that different agencies are expected to incur in the village/region and therefore have no way of auditing the performance of development department. IT may be use to deliver such information through kiosks located in rural areas (Ram Kumar *et al.*, 2003).

Rural community can also be help through access to knowledge that will improve productivity in their work, health practice and enable them to learn about their environment. A large no. of innovation in farm practices, tool designs and use of indigenous medication do not diffuse beyond local boundaries because of the isolation of rural communities. IT and wave technology could make such information/knowledge visible to large cross sections of rural communities.

iv. Support to training

An array of electronics and multimedia device are available to trainers, for displaying information and for recording sessions, also for copying materials and accessing materials stored elsewhere. Possibilities of distance learning have multiplied as they offer great promise for massive programming of training and retraining (Hassan and Sushama, 2004).

NEED OF INFORMATION AND COMMUNICATION TECHNOLOGY IN ANIMAL HUSBANDRY EXTENSION

In the present scenario of animal husbandry, the public extension possibly cannot provide additional qualified manpower to adequately address the complex demand of the farmer by reaching the millions of farmers .the growth and spread of new information and communication technology in rural India in recent years provide viable alternative to overcome the physical barriers of face to face interpersonal communication. Development of new information and communication technology and educational infrastructure to create large pool of technical man power in ICT, wide range of ICT option are becoming available even to remote and difficult areas. Appropriate choice and adaptation of new ICT in different rural areas to communication and education millions of farm families (Patil, 2009).

Farmers need varieties of information other than technology alone from the research, public and private institutions. They need information about animal husbandry as a business, about the systems and systems including administration, initiatives of other farmers, market information and other unlimited partners known and unknown affecting the production systems.

PROJECTS UNDER ICT OR E-GOVERNMENT PROJECTS

i. GYANDOOT PROJECT

The Gyandoot project is a government-to-citizen, intranet-based service portal, was started on January 1, 2000, at Dhar district of Madhya Pradesh, which covers five lakh people of 311 gram Panchayats, 600 villages and 26 Soochnalaya. The project was designed to extend the benefits of information technology to people in rural areas by directly linking the government and villagers through information kiosks (Telecommunication and Networks, 2002). The Gyandoot project has been instrumental in providing timely and easy information access to villagers living in many remote and isolated rural areas of the district of Dhar. Updated information regarding the public food distribution system, lists of families below the poverty line, beneficiaries of rural development schemes, information regarding government grants given to village committees.

Soochnalayas are nothing but information centers at the village level set up by the Government of India in collaboration with local bodies. This center is operated by unemployed rural youth (soochaks), who is there after trained. A committee called Gyandoot samiti manages it. The district collector is the president of this soochnalayas, and the sarpanch of district panchayat acts as the secretary of the committee. The service covers to provide information about the agricultural produce, copies of land records, on-line registration of applications. Minimum user fees are charged by the information centers to provide information.

ii. BHOOMI PROJECT

Bhoomi Project launched in 2001 at Karnataka. This project is sponsored jointly by Ministry of Rural Development, Government of India and State Government of Karnataka. This project includes the computerized land records throughout the state. For the same, a farmer can now walk into any of the taluk offices and ask for a

printout of his computerized land record for fees of Rs. 15 from the land records booth. (Bhatnagar and Chawla, 2005). This computerized land record facilitates the farmers in obtaining, so-called technically, the Rights, Tenancy and Cultivation (RTCs) certificates. RTCs are important as they ensure land ownership, and help farmers in getting bank loans, for which most banks seek some security.

Benefits of Bhoomi

Ease of maintenance and updation of land records documents.

Quick and easy access to Land records.

Quick and easy access to Land records for analysis purpose.

Ease of monitoring Government Lands.

iii. WARANA WIRED VILLAGE PROJECT

Warana Wired Village project, launched in 1998 at Maharashtra. Warana Nagar has an electronic telephone exchange, which has permitted dial-up connections from village kiosks to the servers, located at Warana Nagar. There are many infrastructure facilities in and around Warana Nagar. The project was initiated with six business centres, six IT centres and 70 village booths (kiosks). The project aimed to provide the following services (Ray, 2011).

Employment, agriculture schemes, government procedures, crop information, medical facilities.

- a. In the Warana Wired Village Project covering 70 villages in Maharashtra, the existing cooperative structure has been used with state-of-the-art infrastructure to provide Internet access to cooperative societies. The aim is to provide information to the villagers by establishing networked booths in the villages (Sharma, 2000).
- b. The Information Villages Project of M.S Swaminathan Research Foundation is aimed at bringing the benefits of modern ICTs to rural families in Pondichery.
- c. A value addition center, which is the hub of the information network, has been established in Villianur village and four information shops have been established in different villages to deliver a basket of services (Birthal *et al.*, 2002).

iv. IKISAN PROJECT

IKISAN is the ICT initiative of the Nagarjuna group of companies, the largest private entity supplying farmers' agricultural needs. IKISAN was set up with two components, the iKisan.com website, to provide agricultural information online, and technical centres at village level. The project operates in Andhra Pradesh and Tamil Nadu. However, it really proved popular in Andhra Pradesh where nine technical centres (kiosks) were established in different districts. Farmers are able to become members by paying Rs. 100 per year or Rs. 20 per month. Project services are available only to member farmers. The operators of the IKISAN technical centres are agricultural graduates who act as the interface between the computer networks and the farmers. They are provided both on- and off-line information services. They collect online information from the iKisan.com website, and pass it on to the farmers. In addition, they assist farmers to access information from the CDRM, comprising a vast

database, with which each centre is provided. The operators, being agricultural graduates, are able to diagnose, analyse and advise about diseases and pests. With their knowledge of both agriculture and ICT, they probably constitute the best part of this project.

The major objective of IKISAN is to provide need based wholly agricultural expertise at village level, to increase the productivity of selected crops in selected regions. Another service is called online chat among farmers or between farmers and experts. There were four modules in this – chat, expert chat, bulletin and Ask Us. Market information with respect to the products and services of the companies in the Nagarjuna group is available online, as are weather forecasting and current events.

The offline services provided by IKISAN are concerned with:

- Crop diagnostics, disease and pest management
- Information about agricultural equipment and other inputs and their availability;
- Market information;
- Crop insurance information;
- Poultry- and animal husbandry-related information

v. FRIENDS

A FRIEND (Fast, Reliable, Instant, Efficient Network for the Disbursement of Services) is the IT based projects working in all the 14 districts of Kerala. A FRIEND is a "Single Window Mechanism". The salient feature of the project is the effective integration of IT and logistics for citizen services. The project was launched in Thiruvananthapuram in June 2000 and was replicated in other district headquarters during 2001/2002. The centers work from 9.00 AM to 7.00 PM on all days including Sundays, except national holidays. FRIENDS counters handle 1,000 types of payment bills originating out of various Department. The payments that citizens can make include utility payments for electricity and water, revenue taxes, license fees, motor vehicle taxes, university fees, *etc.*

vi. e-VET CONNECT (KERALA)

The Kerala Veterinary and Animal Sciences University (KVASU) is preparing to execute an innovative project, 'e-Vet connect,' for the farming community in the State. The project providing 24x7-hour veterinary service to the farming community across the State at just a phone call. In the first phase, the project will be launched in the Kalpetta, Ollur, and the Thrissur in 20 October 2014. They also discussed management of veterinary hospitals, diagnostic centres, artificial insemination cell and advisory call centre; disease information system; knowledge management; and fodder research management.

The project has six components – Vet-connect software for KVASU hospitals; e-Vet connect centres in different parts of the State; mobile veterinary services with mobile tracking system; advisory call centres; e-Vet connect knowledge portal Vetipedia, a Web-based single knowledge platform; disease information system. The e-Vet connect will provide 24-hour services for livestock owners, pet owners, and other stakeholders.

Employment avenues

Moreover, it will open up employment avenues for veterinary graduates and diploma holders.

Clinical services

The University provides clinical services to farmers and imparts clinical teaching to undergraduates through its four veterinary hospitals in Thrissur and Wayanad districts. Services are also provided by veterinary hospitals attached to the Animal Husbandry Department during working hours.

vii. e- VET

The Department of Animal Husbandry, Government of Madhya Pradesh, recently launched an eVet project, initially focused in selected villages in 15 blocks in the districts of Sehore and Betul. Approved by the agriculture cabinet, the initial pilot in the two selected districts is jointly funded by the Rashtriya Krishi Vikas Yojana (RKVY) Following piloting in these two districts, the project will be extended to other areas of the state which lack access to veterinary services

The e-VET project aims at using Information Communication Technology (ICT) to provide doorstep veterinary services to livestock rearers in rural areas. Services include on-line consultation and referral for

livestock ailments and diseases, information on the prices of livestock and livestock products at different markets. The state currently has 18,000 trained Gau-sevaks in addition to 2,000-2,500 AVFOs who are posted at district and block level veterinary hospitals and dispensaries. The launch of the e-VET programme aims at further strengthening the cadre of Gau-sevaks. Under the eVet project, Gau-sevaks and AVFOs will be trained in the use of equipment and software programmes. The approximate project cost for the pilot run in two districts is Rs 1.45 crores and the budget for up-scaling the intervention across the state is over Rs 35 crores. Expected outcomes of the e-VET project are the availability of health care services for livestock at minimum time and affordable cost, and at the doorsteps of livestock rearers, improved reporting and disease surveillance, timely information on the prices of livestock and livestock products leading to increased incomes and better livelihood opportunities.

ICT TOOLS

i. KISAN CALL CENTERS (KCCS)



KCCs were launched on January 21, 2004 by the Department of Agricultural and Co-operation. The main technologies involved in Kisan call centers are:

Desktop computer system with Internet connectivity. High bandwidth telephone line (preferably 128 kbps ISDN line). Telephones with headphones and teleconferencing facility (if required). The main aim 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, and the graduates provide the initial enquiry. If the queries handled by the graduates are not satisfactory to the farmers or the farmers want more information, the call is forwarded to call center executives. Thus, KCCs are the important information gateway for farmers. The cost to the farmers is almost zero, and they

get the response in their local languages. If needed, the scientists also visit the field to resolve any further queries.

ii. VILLAGE KNOWLEDGE CENTRES (VKCS)

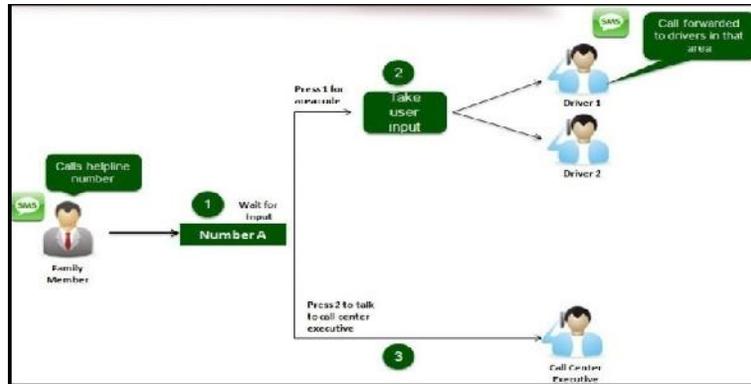
Village knowledge centers of M S Swaminathan research foundation were launched in 1998 in Pondichery. The main aim behind the establishment of VKCs was to provide sustainable food security in rural areas of Pondicherry. To fulfil this aim, it provides technical information related to agricultural and livestock inputs. It helps in procuring quality seeds, in providing information about the daily market priced from the government as well as private bodies, and advices farmers on rotation of crops as well as about the use of fertilizers and pesticides.



VKCs receive information by voice mail, and disseminate it through any public address system. It has also identified 13 districts in Pondicherry, where there is a huge potential for agriculture and livestock business and where the government will invest Rs. 170 cr.

iii. AGMARKNET

AGMARKNET, (Agricultural Marketing Information Network), is a joint venture of the Directorate of Marketing and Inspection (DMI) and the National Informatics Center (NIC). DMI and NIC are the sponsoring agency of AGMARKNET.



It has increased the efficiency in marketing activities by establishing a nation-wide information network, which provides details about market functionaries, sold and unsold stocks, as well as the sources of supply and destination. These timely information data are helpful to producers, traders and consumers

iv. e-CHOUPAL

e-CHOUPAL launched in June 2000, and became the largest private sector initiative among all Internet-based interventions in rural India. e- Choupal services today reach out to more than 40 lakh farmers in over 40,000 villages through 6500 kiosks across 8 states [M.P., Karanataka, A.P., Maharastra, Rajjastan, Uttarakhand and Tamil Nadu]. It has future plans to cover 100,000 villages or one sixth of rural India, within a decade.



e-Choupal is a Hindi word which means “village meeting place”. Market is meeting place where sellers/ customers come together to do the transactions. This is a virtual market place where farmers can do the transaction,

facilitated by an internet linked computer, directly with a purchaser and can realize better price for their produce. The farmers use the e-choupal free of cost.

v. e-VILLAGE

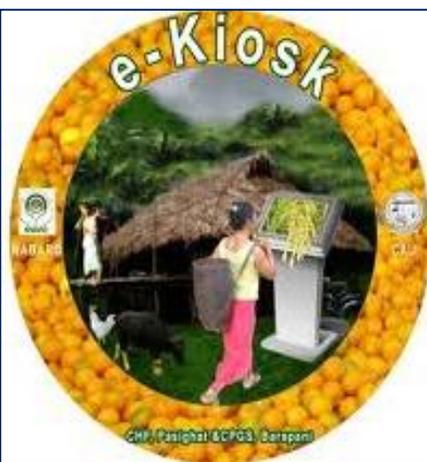


1. The model e-village project is currently being implemented in selected 10 tribal village of east Siang district of Arunachal Pradesh, north east India, from July 2008.
2. The main aim of this project was creating computer infrastructure in remote tribal village to provide e-awareness and e-literacy to the tribal community developing on integrated sustainable model for ICT based services for north eastern state with special focus on Animal husbandry and agriculture and allied areas.
3. Regular computer training classes are going to be conducted to the children, village youth and others.



vi. INFORMATION KIOSK

The proposed touch screen kiosk provides the flexibility in providing information on various modes of animal husbandry and farming practices. The Rajiv Gandhi college of veterinary and animal sciences has developed Touch screen based Information kiosk which has 17 inch Touch screen monitor and installed learning modules on dairy and goat farming made up of text, pictures, graphics and audio files. The learning modules can be accessed from kiosk through user-friendly interface.



These touch screen based information kiosks was installed in various livestock related service centres (dispensaries, insemination centres and milk cooperative societies).The touch screen kiosk will be designed with the static and dynamic information, the content of touch screen kiosk will be controlled by server from the institution.

ICT METHODS

i. Cyber Extension

Cyber Extension thus can be defined as the "Extension over Cyber Space". As the word Extension is subject-neutral, so is Cyber Extension. Cyber Extension means, "using the power of online networks, computer communications and digital interactive multimedia to facilitate dissemination of technology". Cyber Extension includes effective use of Information and Communication technology, national and international information Networks, Internet, Expert Systems, Multimedia Learning Systems and Computer based training systems to improve information access to the Farmers, Extension Workers, Research Scientists and Extension Managers.

Cyber space is the imaginary or virtual space of computers connected with each other on networks, across the globe. Thus computers can access information in the form of text, graphic, audio, video and animation files. Software tools on networks provide facilities to interactively access the information from connected servers (Sharma, 2000). Extension is the central mechanism in the livestock development process, both in

terms of technology transfer and human resource development (Samanta, 1993). Extension always having certain unique features of communications in cyber space i.e. in cyber extension. They are

- i. Access to the stored information in cyber space free.
- ii. The information is available instaneously round the year and twenty four hours a day.
- iii. Communication can also be interactive through e-mail, discussion groups, and new groups.
- iv. We can Access the available information from any point on the globe. The communication through cyber extension is dynamic and ever growing.

ii. Interactive video

It is a rapidly emerging communication mode, which represents the fusion of a computer, Video and laser technologies. In interactive video, the user can control which part of a program to view, or interact with certain parts of the program. It allows a viewer to participate in a simulated conversation on the screen. This is one of the most widely used mediums for the last one and half decade in the advanced countries.

iii. Tele conferencing

In the 1960, the American Telephone and Telegraph Company first introduced the teleconferencing system "picture phone" in USA. It is a new form of video-based communication via telephone lines or satellite broadcast. It is a substitute for face to face meeting. It can bring people together who are geographically isolated, to express their viewpoints and share their experiences.

iv. Audio conferencing



It is the verbal communication through telephone. It is a satisfactory communication tool in many situations. In multi site, multi participant meetings it facilitates dialogue, question and answers and immediate response from the participants.

v. Computer conferencing

Computer based meeting involving exchange of voice and pictures between two individuals or groups. It is based on electronic mail only, in addition to person-to-person messaging group communication is also facilitated.

vi. Multimedia

Multimedia refers to a synthesis of text, data, graphics, animation, optical storage image processing and sound. Computer multimedia will offer learners more complete and individual control over their learning.

vii. Video Conferencing

It is the process of conducting a conference between two or more people at different locations by using computer networks to transmit audio and video data. Videoconference can be a point to point or point to multipoint operation.



viii. Databases

May contain information's such as traits of animals' breeds, plant and animal diseases, and possible control methods, data and formulae to be used to calculate a feeding ration, weather forecasts, library catalogues and documentations' systems.

ix. Tele Text

It is a system somewhat like view data in which printed information is telecast through television rather than transmitted through a telephone line. It has no interactive capacity and it has a very much smaller database.

x. Very Small Aperture Terminal Technology (VSAT) Service

This service provides satellite-based network for business communication using the cost effective VSAT technology. All it does is to link head office of company or a corporate house to its various locations like factories, service units

and other offices particularly those located in remote areas, using satellite network.

xi. Fax

It is a device used for transmission of a written document, photograph, map or any other graphic material electronically. It is one of the variants of E-mail. For transmission, the original documents placed in the facsimile or fax machine which scans the document and converts the written or graphic information into electronic signals and establishes a link up with a similar receiving fax machine at the receiving end.

USES OF ICT IN ANIMAL HUSBANDRY EXTENSION

i. Social change: Communication today is the key element in the development and implementation of policies and programmes aimed at the well being and welfare of people everywhere. The role of communication is particularly

important in relation to such social changes occurring in the modern world as socio-economic, environmental and developments in active components of society like family, women and young people.

ii. Economic prosperity: ICT for economic prosperity indicates using it in an effective way to stream line administration, improve productivity in industry which in the long run will influence the performance of the economy.

iii. Rural Development and food security: Information and knowledge play a key role in ensuring food security and are essential for facilitating rural development and bringing out social and economic change. The least expensive input for rural development is knowledge. Rural communities require information on supply of inputs, new technologies, early warning systems (droughts, Pests and diseases), Credit, Market prices and their competitors. New ICTs have the potential for getting vast amounts of information to rural population in a more timely, comprehensive and cost effective manner and could be used together with traditional media and the greater tasks like rural development and food security will be achieved in the long run.

iv. IT and poverty alleviation: IT provides citizens with information about market prices and social services, such as health, knowledge, education, jobs and investment opportunities and reduction in poverty level. Example- the farmer who benefits from technology to get daily market prices and can subsequently buy at 20 per cent less and sell produce for 20 per cent more by eliminating the middleman.

v. Empowering rural communities: ICTs can empower rural communities and give them a voice that permits them to contribute to the development process. With new ICTs, rural communities can acquire the capacity to improve their living conditions and become motivated through training and dialogue with others at a level where they make decisions for their own development Giving a voice means giving them seat at the table to express their views and opinions and become part of the decision making process. The approach should be participatory and could lead to improved policy formulation and execution.

vi. Creating employment: Through the establishment of rural information centres, ICTs can create employment opportunities in rural areas by engaging as tele centre managers, subject matter specialists, information managers, translators and information technology technicians. Such centres help to bridge the gap between urban and rural communities and reduce the rural - urban migration problem. The centres can also provide training and those trained may become small scale entrepreneurs.

vii. ICTs for improving linkages: Weak linkages between researchers, front line workers and farmers have been a major constraint that has resulted in research findings not being applied by poor rural farmers. ICTs can improve and strengthen these linkages can ensure knowledge and information, which are essential for an effective TOT.

viii. ICT for planning: The National Natural Resource Management System (NNRMS) has been drawn up by the nodal agency of the Government's Department of space in cooperation with several other agencies and organizations.

The NNRMS scheme is now being linked with the natural Resource Data Management System (NRDMS) to help districts in formulating district plans.

ix. ICT for national development: ICT should be designed to serve the community to improve its productive capacity and its overall quality of life, which would mean progress. The need for identification of different categories of users, their information seeking behaviour patterns, capability of assimilation of information and application to different tasks are important.

x. Expert system for various fields: Expert system can be defined as a man-machine system designed to collect technical knowledge related to specified areas and accumulate it in a knowledge base after changing it into a structured form and ultimately, to solve problems in the specified areas using various inference systems in addition to the technical knowledge.

USE OF ICT IN VETERINARY SCIENCES

- i. Animal disease monitoring and surveillance** ex- by GIS
- ii. Disease diagnosis** ex- by ultrasound, computerized topography (CT), Magnetic resonance imaging (MRI) etc.
- iii. Veterinary hospital management-** various commercially available veterinary practice management software is available in developed countries, especially for small animal practice. ex- QVet, veterinary Gate Advanced, Intra Vet etc. most of these cost \$ 250-700 and do not provide technical support in India.
- iv. Telemedicine-** Telemedicine is a rapidly developing application of clinical medicine where in medical information is transferred via telephone, the internet or other network for the purpose of consulting. Telemedicine may be as simple as two health professionals discussing a case over the telephone, video-conferencing to conduct a real-time consultation between medical specialists in two different countries.
- v. Herd Management-** In most developed countries, livestock management software is an integral part of the farm, without which it would be almost impossible to manage the large number of animals efficiently. Many commercial livestock management software packages like cattle manager, cattle works, cattle max are available in developed countries, they are very expensive with prices ranging from Rs.50, 000 to a few lakhs, and they do not provide technical support in India. In India, efforts have been initiated to design herd management software at the CIRB, Hissar and at TANUVAS, Chennai.

PROBLEMS OF ICT

- i. Capital cost of technologies, and cost of ongoing access and support, can be high.
- ii. Inherent need for capacity-building.
- iii. Can lead to technological dependence.
- iv. Lack of accessible telecommunications infrastructure in many rural and remote areas severely limits available choices of new ICTs.
- v. Many ICT projects are characterised by poor and non-participatory planning
- vi. ICT projects often lack attempts to integrate with existing media, local communications methods and traditions

CONCLUSION

Information and Communication Technology (ICT) is basically an umbrella term that encompasses all communication technologies such as internet, wireless networks, cell phones, satellite communications, digital television etc. that provide access to information. ICT enable one to overcome the limitations of physical distance and time lag in communication. Rapid improvements in information technology have reduced their cost, enhanced speed and storage capacity and increased connectivity among people, media and organization and sharing of information and knowledge between people using multiple devices and multiple media. In rural areas of India people were not much aware about the use of ICT. Thus, awareness campaigns can be arranged to inform farmers regarding the potential benefits of ICT and use of internet which will positively enhance agriculture and dairy production. Suitable steps may be taken to strengthen the ICT infrastructure for overcoming the limitations of physical distance and time lag in communication and mobile phone, computer/ laptops, internet facility may be made available to people in rural areas at affordable prices. As a result the people can make full use of new technologies for commercial and economic development and make people aware about the utilization of ICTs for increasing their livestock production and thus improving their socio-economic status.

The e-government projects are very important for disseminating latest technology to farmers doorsteps, save their time and they are easy to access. They provide faster and newer ways of delivering and accessing information. Finally, it can be concluded that adaptation of new ICT in different areas of livestock farming, help the millions of farmers to communicate and educate regarding recent trends in animal husbandry.

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