

**SEMESTER-IV**

**PAPER-EC 1 : RURAL AND ENVIRONMENTAL JOURNALISM**

***UNIT-V***

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## Introduction

Information and Communication Technology abbreviated as ICT consist of Information technology, enterprise software, audio-visual system, middleware using which user can access, store, transmit and modify information as required. Exponential growth of internet user, invention of modern communication devices, significant development in cloud and grid computing etc. have helped ICT to flourish as an rapid developed technological field in the last decade. Mass use of information and communication technology with proper guidance helps a nation to create information rich society and helps in supporting livelihoods .

According to world bank report about 46.147 % of world population are from rural area and for developing countries like India, China, South Africa, Bangladesh, Indonesia the percentage is 67, 44, 35, 66 and 46 respectively. Rural development is a systematic ongoing process of improving the quality of life by socioeconomic well being of the people living in rural areas. In this work we have mainly concentrated on the improvement of education, agricultural process, health care facility, disaster management, tourism (if exist) etc. with the help of Information and communication system and thus contributing towards economical growth and changing quality of life.

Information and Communication Technologies (ICTs) play a key role in development & Economic growth of Rural India. Political, Cultural, Socio-economic Developmental & Behavioral decisions today rests on the ability to access, gather, analyze and utilize Information and Knowledge. ICT is the conduits that transmit information and knowledge to individual to widen their choices for Economic and social empowerment. In near future people will be carrying a handheld computer connected to the Web to get the information about the World at their fingertips. Government of India is having an ambitious objective of transforming the citizen-government interaction at all levels to by the electronic mode (e-Governance) by 2020.

A successful ICT application in e-Governance giving one-stop solutions for rural community is the need of the hour. ICT is crafted to enable the Electronic Governance through wireless communication, thus it's integrally interlinked and knitted.

India is a country of villages and to improve and sustain the overall prosperity, growth and development in the global competitive regime, National E-governance plan (NEGP) seeks to lay the foundation with various projects, starting from the grass-root levels, and provide impetus for long-term e-governance within the country. In this direction rural e-Governance applications implemented in the recent few years have been demonstrating the importance of Information and Communication

Technologies (ICT) in the concerned areas of rural development. Indeed, some of the schemes introduced in rural India have improved the government services immensely.

Instances like Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA), Warana Project in Maharashtra, Online Income Tax, Online Central Excise, Unique ID and E-office has accelerated growth of respective areas and contributing to country's economic development.

Similarly, at state level the various rural E-governance projects such as SETU Project in Maharashtra etc, projects that have been providing excellent services and saving time and money of people as well as of government and are contributing their might to the socio-economic development of rural India.

Being ICT a significant instrument in E-Governance and Rural Development, appropriate infrastructure/design is mandatory for proper functioning as follows:-

- As designed of citizen centric services, and dependable service delivery mechanisms.
- Selection of appropriate (dependable, maintainable, cost effective) technologies for rural connectivity, and information processing solutions.
- As designed of cost effective delivery stations (kiosks) to build new services.
- Demonstration of transparency and efficiency to remove distrust and build confidence among the citizens on functioning of service delivery mechanisms.
- Invite private participation to reduce the burden on the central servicing agency, bring in the expertise, enhance the speed of implementation, and offer better value proposition to the citizens.

## **1.E-governance :**

The term e-governance focuses on the use of new ICTs by governments as applied to the full range of government functions. Thus e-governance is the application of information and communication technology for delivering government services, exchange of information, communication, transactions, integration, various stand-alone systems, and services between government and citizens, government and business as well as back office processes and interactions within the entire government frame work. The government being the service provider it is important to motivate the employees for delivering the services through ICT. E-governance seek to achieve Efficiency, Transparency, and Citizen's Participation. Enabling E-governance through ICT contributes to Good Governance, Trust and Accountability, Citizen's Awareness, and empowerment, Citizen's Welfare, Democracy, Nation's Economic growth. ICT is the biggest enabler of change and process reforms fade in face of what ICT has achieved in few years.

E-governance services through ICT refer to transactional services that involve local, state or national government. ICTs acts in speeding up the flow of information and knowledge between government and citizens and transforming the way in which governments and citizens interact. According to the United Nations Development Program (UNDP) the challenge for all countries is to create and develop a system of governance that promotes supports and sustains human development. Governments in many parts of the world have made huge ICT investments aimed at improving governance processes.

In the present century, the advancements in Information and Communication Technologies (ICTs) are changing the various components of human life. The changes in the ICTs have brought a positive impact in the process of public service delivery and socio-economic structure of communities.

In India, e-Governance applications in the recent past have demonstrated their positive impact in minimizing the processing costs, increase transparency and support economic development by income generating ventures, increase in agricultural production, and improvements in health and education sectors, all of which promote the overall quality of life of rural people. ICT contributes in providing the transactional services for the rural people with the benefit of time and cost savings in obtaining the public services with efficiency and effectiveness and it also examines changes in agricultural productivity and improved quality of life due to the ICT services. In addition to the above AEPS, GPS etc. are pivotal in ICT services.

The rural ICT applications attempt to offer the services of central agencies (like district administration, cooperative union, and state and central government departments) to the citizens at their village door steps. These applications utilize the ICT in offering improved and affordable connectivity and processing solutions. Several Government-Citizen (G-C) e-Government pilot projects have attempted to adopt these technologies to improve the reach, enhance the base, minimize the processing costs, increase transparency, and reduce the cycle times to half.

A large number of rural E-Government applications, developed as pilot projects, were aimed at offering easy access to citizen services and improved processing of government-to-citizen transactions. The idea that the primary and the sheer object of ICT in e-governance and rural development is individual's motivation to collective mobilization for an integrated rural development.

## **2. Infrastructure for ICT**

To provide quality service using ICT a strong infrastructure backbone is required. Infrastructure backbone includes workstation, high speed network, Projection/Display technology, interactive devices, video conferencing equipments, printer etc. For mobile workstation devices like laptop, tablets, notebooks are essential. In hill area or island where setting up wire network is costly, there wireless network infrastructure is the best choice.

The workstations must have a focused coverage and publicly access. It aims to provide free service or service at low cost. Those must be set up in some convenient locations, accessible in walking distance. Selection of proper application software and graphical user interface (GUI) are important for smooth operation using ICT. Now a days Cloud computing are becoming popular to provide support to a large number of users without buying individual software copy. The services provided by cloud computing may be thought as 'whenever and whatever needed'. It reduces the implementation and maintenance cost.

Software as a service, Platform as a service and infrastructure as a service are various cloud computing models as per the user requirement. Technical support is also a part of the infrastructure to keep the backbone in proper health. Knowledgeable technicians in the field of IT community must be staffed to provide the technical support. They can be grouped into problem solver and problem preventer. Technical Support acts as a liaison with vendors on technical matters.

## **3. ICT in Education**

Education is the backbone of the nation. In many developing countries bringing a large percentage of students to education system is a great challenge. The reasons may be the geographical location, socio-economic condition etc. As example the north east states of India many villages are scattered in impassable hill regions, West-indies and Filipinos are mainly scattered islands. Poor transport facility discourages the rural students to come to school regularly. Scarcity of efficient teacher in the rural schools and a large student teacher ratio to the student side is also a reason for dropout of a large percentage of students in the midway of their education.

Thus a great mismatch of education quality is observed when comparison is made with rural and urban students. Adoption of ICT in education can minimize the gap. Role of a teacher is shifted from leader to facilitator in ICT based education system. Adoption of ICT in teaching system enable and support the move from traditional 'teacher-centric' teaching styles to more 'learner-centric' methods. A diverse group of students can learn simultaneously even in the absence of teacher. An online repository must me maintained for accessing the study materials 247. There must be facility for teleconferencing, video conferencing with experts and for this a certain pre defined time span must be broadcasted to the target learners.

A pre assigned interactive session may provide the opportunity to the geographically diverse learners to interact with each other. Internet and World Wide Web open the door of the wealth of learning materials in variety of subjects- thus can be thought as an any time anywhere library.

Achieving higher education from rural areas is a great challenge. Most of the male has to contribute to their family income in their pre-youth and the girls are got married. ICT based distance learning facility can help a lot in providing higher education to the rural students. Not only in primary or higher education, anytime anywhere feature of ICT helps to provide adult education in the rural area. Online vocation training in engineering fields like civil, electrical, computer, mechanical etc. prepares experts in rural areas who can easily handle the rural needs in peoples' daily life activities.

#### **4. ICT in Healthcare**

The medical facility is the mostly neglected section in connection to the rural people. In the perspective of developing countries there is no health center, even not a degree holder doctor available in each village. In many rural hospital there is no full time doctor. Even the doctors do not want to stay in rural areas due to lack of facility, opportunity, poor communication facility etc. For this reason the rural people depend on the quackish even on ojha for health issues. This gives an alarming figure of child death and mother death in rural areas.

ICT has a great role to play in health section in rural areas. Adoption of telemedicine in some rural areas of India has given an encouraging result for its accessibility, affordability and availability. With this ICT based facility a small E health kiosk with a trained person can provide medical facility to a large number of people. When a patient is brought to the health kiosk, he enters the health details and problems of the patient to a central server. The server communicates with some doctor in district or urban hospital.

The person at the kiosk communicates with the doctor to the other side and performs check up and gives medicines according to the instructions of the doctor. By video conferencing doctor sited at some urban health center can face to face talk with the patient. Facility of pathological center is inadequate in rural areas. Even in some health centers the pathological instruments are kept unused. Recruitment of some trained persons (Not pathologist or radiologist) can operate the instruments and the captured images or results from some patients are sent to some radiologist/ pathologist for analysis using ICT facility. For any major problem a patient can take appointment of any doctor or clinical center located in urban area using ICT. The health centers can also help the serious patients to get appointment of a doctor of any district or major government hospitals with the help of ICT.

#### **5. ICT in Agriculture**

Rural economy is mostly depends on agriculture. Agriculture provides a square meal for filling the stomachs of the growing population of a country, and this has made it critical for global stability and development. Even with a noticeable growth in industrialization, agriculture still accounts a major part in GDP of developing countries. But till in many rural areas the farmers are cultivating same crops years after years, while in the mean time the weather, soil condition of the land are changed, the pest have acquired immunity against the known pesticides -resulting a declined production graph. ICT can transform the common agriculture process to a smart one.

With the help of ICT based service a farmer can directly seek advice in his own language from some agricultural expert.

He can apply online for soil test and get suggestion from experts regarding the type of crop which will give best production to that type of land. In developed countries ground sensors set up in agricultural field are used for crop protection. The sensors provides information to the farmer regarding the necessity of irrigation, deficit of mineral (To select appropriate amount of fertilizer), increase of pest etc. Adoption of this technology can provide a better production in developing nations. Use of satellites and remote sensors provides accurate weather forecast even a month ago.

This gives farmer a long time for crop selection for a season.

He can seek for improved seed, best market price for his production, government's credit program etc. from internet. Bulk purchasing policy of some multinational companies directly from the farmer has eliminated the role of middleman as well as providing beneficiary to the cultivators. Different state governments in India have adopted the facility of bringing fresh vegetables directly to urban kitchen from farmers' field. ICT has given wings to these initiatives.

## **6. ICT in Disaster Management**

Natural calamities or Disaster is unpredictable and can occur at any place irrespective of the developed, developing or underdeveloped country. Severe natural disaster leads to massive destruction of properties and even loss of human lives- effect of which remains as a scar for a long time. It is experienced that a large scale natural calamity impacts more severely to the developing or least developed countries than the developed one.

Devastation of 2004 Tsunami at Indian coastal regions or 2015 Nepal earthquake are some of the examples which tremble the world. It is observed that rural areas are mostly affected than urban areas in natural disaster mainly due to poor transportation and communication facility. In relation to natural disaster for some cases like cyclone, flood, tsunami, volcanic eruption etc. an early warning system can be setup using remote sensing technology. An earlier forecast helps people for preparedness and to take safe shelter.

This may save a lot of lives and properties from destruction. As examples tsunami warning facility in Japan, Indonesia; cyclone warning facility of Cuba, Mexico, USA have brought life loss figure to single digit even zero. Proper use of ICT tools help to build knowledge warehouses and data warehousing techniques.

Those can facilitate planning and policy decisions for preparedness in right time, quick response and recovery at all levels.

Communication system is largely affected by natural disaster which makes the situation worse. GIS based system is governed by satellite and can easily identify the location of any person having the system(May be mobile phone) and stuck in the disaster.

GIS with GPS have been found useful in 2013 sudden flood in Uttarakhand, 2014 flood in Kashmir and even in 2015 Nepal earthquake. Ham radio is an ICT component for emergency communication in disaster affected areas.



Remote sensing technique and satellite data may be useful for measuring the ground water situation, which provides a early warning of draught situation. Plan and strategies for relief work for the inhabitants and farmers like well-digging, setting up submersible pump, choosing crop which can grow in less irrigation etc. can be started. Setting up of earthquake sensor can provide a warning for volcanic eruption.

### **Conclusion :**

The impact of ICT in the rural development of the developing nations are discussed in this paper. The authors have mainly focused on the role of ICT in education, agriculture, healthcare and disaster management of rural area. ICT is an examined key for development of the geographically scattered rural people in developed nation and it is getting its popularity in the developing nations. The primary cost for establishment and set up of ICT infrastructure may be a barrier for developing nation but its enormous usefulness for the rural people can not be denied. Though education, agriculture, healthcare etc. are common to all rural regions, but there are several other sections like tourism, banking and finance etc. in which ICT also has a great role to play.