

# IOT and Communication Applications for Rural Development

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**Abstract** - This paper looks at many ongoing initiatives aimed at providing IT and communication services to Indian rural communities. Such ventures are characterized by the commercial sustainability target, which promotes scalability and, therefore, wider benefits. The study highlights the rising building blocks required to implement effectively and the relative strengths and limitations of various approaches. How will information and communication technology (IT) contribute to rural development? What are the mechanisms by which impacts can be achieved, and what are the realistic ways of achieving future benefits? We moved through the old age or weak technology to the new age of satellite technology after Independence. The world was undergoing an Information Technology revolution. Now - a-days, in all those places that are in the way of growth and development, adequate knowledge is needed. In India, villages and rural areas are home with a population of over 68 per cent. Both these people need the right knowledge about agriculture and the related sector to raise their quality of living and it is only possible through information technology.

**Keywords:** — India, Information Technology, Web, rural growth, Internet of Thing.

## Introduction

Now - a-days, there is effective use of information technology in human life, in every region. The information technology plays a significant role in the progressive growth of humans in modern society, such as education, health, agriculture, rural development, medicine, engineering, industry etc. The information technology has changed everyday life in this way. This has entered an important position in industry and commerce. A new economy in the form of e-commerce has emerged in the age of economic magnanimous, in what way, globalization to the entire world.

It may seem paradoxical that modern information technology (IT), connected to developed world markets and capital-intensive manufacturing methods in our minds, has some relevance to a nation where many millions are still missing basic needs. Nevertheless, several attempts in India and other developing countries are underway to demonstrate the tangible benefits of IT to rural communities, and to do so in a way that makes economic sense.

The Indian economy is a developing country, where nearly 68 per cent of the village population lives. Rural sector plays an important role in the Indian economy, as most of the industrial sector's raw materials, as well as the agricultural and food grain products, come from the rural sector. This is

also known as the Indian Economy back bone. Consequently, the supposition of rural growth is not unacceptable. Where, until now, services and routine improvements have not been comprehensive. In this way, the rural economy that affects the Indian economy and the value of IT increases more in the rural development perspective.

Information technology is itself a basic mechanism, since it is not possible for any kind of advancement to be made without developing information technology. Whether it is an Indian economy or it is growing in particular form in rural areas. Digital technology has been an important revenue stream for the Indian economy.

So, it is evident that the information technology and Internet of Think plays an important role in India's growth. It affects every sector, advancement and expansion of rural growth, whether in the sector of agriculture or industry or in the field of service; all forms of advancing paying an important role will increase the nation's income. In this way information technology not only purpose of progress in the field of economy, it gets progressing. In which income of the nation and G.D.P increases

## 2. Importance of Information Technology AND IOT in Rural Sector

IT can be used to exchange information about one person to another in many ways. It not only provides facilities for knowledge sharing but also provides efficient contact to expert groups, not only providing basic knowledge but also helping to evaluate marketing statistics, trends, better strategies for increasing agricultural production as well as information on crop management. Some methods for information and collaboration are as follows:

### *Kisan Vikas Kendras*

It is the foundation of distribution of knowledge and technology in India. There are currently about 630 KVKs in service while many new ones are being built. By demonstrating new technology at district level, these KVKs act as a bridge between the scientific community and the Indian farmers. In their job, the current government has asked KVKs to use more and more ICT resources to meet the farmer in the region. There is ample support for that.

### *e-Nam:*

It is a major portal of the electronic market for agricultural products. It includes the deliveries & prices of goods, the purchasing & selling of trade offers, the provision to respond to trade offers, among other services. Initially in

regulated markets it offers information on sale transactions and price discovery.



Fig.1 e-Nam

**e-Governance:**

This is also known as e-government. It's an application of information and communications technology to share government information with our people. With this aid, the government services or administration will be made accessible in a convenient and clear manner to the people.

**e-Choupal:**

E-Choupal is an initiative of ITC Limited, an Indian company, to link directly to rural farmers via the Internet for the procurement of agricultural produce. This addresses the challenges faced by Indian agriculture, which is characterized by fractured farmland, poor infrastructure and intermediary involvement. In rural areas of India, the program installs computers with Internet connectivity to give farmers up-to-date.

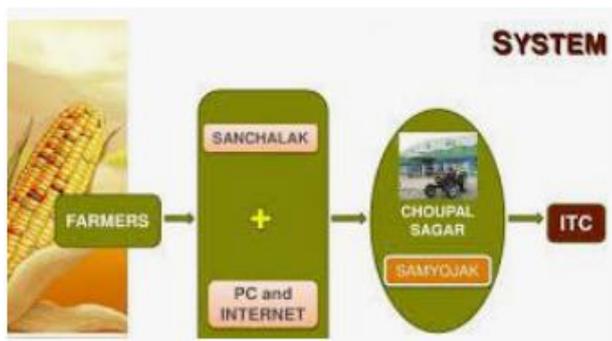


Fig.2 e-Choupal

**I. Development Communication in India**

Tracing its history, we need to go back to communities that in the 1940s listened to rural radio broadcasts, the Indian school of communication about growth. One distinctive feature of those early initiatives was their emphasis Regarding the use of native languages – Marathi, Gujarati and Kannada. India's first coordinated technology communication studies were conducted in the 1960s, funded by India's universities and other educational institutions, and

the Bretton Woods colleges. Including the University of Poona, the Centre for the Study of Emerging Societies, Delhi University, the Christian Institute for the Study of Religion and Society and the University of Kerala, educational institutions that played an important role in this initiative.

India is a developing nation with many successes in all modern-day life areas including science & technology, agriculture, and industry. Now technology communication is such a medium of growth that a developing nation like us is very much in need of it. Accordingly, it has increasingly been acknowledged that active involvement by people is an integral component of sustainable development. Every initiative aimed at bringing about a genuine and lasting change in people's living standards is doomed to failure unless the intended beneficiaries are actively involved in the phase. If individuals are active at all phases of development, from problem detection to analysis and solution implementation, the probability of sustainable progress is low. Communication on growth is at the very heart of this challenge: it is the mechanism by which people become leading actors in their own growth. Communication helps people to go from being beneficiaries of external development initiatives to their own growth engines.

The 20th century has experienced the tremendous impact of communication technology, ranging from the proliferation of sound recording, motion pictures and radio as worldwide phenomena to the advent of television as a dominant force in almost every organization, to the Internet boom at the turn of the new century. The digital revolution is far from done, as new technologies constantly question ideas that were developed only yesterday. For communication academics, this is an exciting and critically important moment to contribute to understanding and shaping the boundaries of our changing technical and academic climate. Communication helps people to go from being beneficiaries of external development initiatives to their own growth engines.

Since it is communication with a social conscience, the communication of development is strongly focused towards man, that is to say towards the human aspects of development. While primarily linked to rural growth, it is also concerned with urban problems, especially suburban ones. It plays two roles which are different. The first is a transformative position through which it seeks systemic transformation towards a higher quality of life and social justice. The second is a function of socialization in which it seeks preserve some of the society's developed values in keeping with growth. Development communication creates an enhancing atmosphere in playing these roles for the exchange of ideas which produces a happy balance in social and economic advancement between physical production and human relations.

**II. RURAL COMMUNICATION**

Rural development is an action process which has an economic, political, cultural and social dimension. Agricultural production is, to put it differently, a mechanism by which farmers have modern knowledge and details. For rural growth, it is imperative that the farmers have and embrace the requisite technology, inventions and knowledge.

Communication thus plays an important part in the rural development cycle. The bridges of communication developed between public institutions, rural organizations and citizens create opportunities to ensure that the expertise and skills required for rural development are shared.

Advancement in agriculture can only be accomplished by training the farmers to learn new ideas and techniques and their firm adoption. Having farmers accept technologies in rural areas, and enabling them to firmly implement them across communication channels. There are four main networks for conveying knowledge from universities (or academics in the respective fields) to the farmer: peers and neighbours (informal communication), sellers and wholesalers (commercial communication), public institutions and university units specialized in agriculture (public communication, mass media). Through these platforms, farmers become aware of developments and grow interest in learning and implementing them.

Besides these, the media ensure that rural issues are reported and popularized in the general public. It promotes the programs of education and awareness; it actually helps promote the technical knowledge. The communication networks built in the rural areas promote access to the service and information by the local people. Communication plays a remarkable role in rural growth, therefore, is clear. Radio, TV, newspaper, computer, internet, other information systems, videos, films, theatres, conferences, meetings, committees, and seminars are commonly used in rural communications activities in different parts of the world. Face-to-face contact is a widely used tool in rural areas where conventional relationships predominate.

In rural development coordination roles include the following:

- Promoting the exchange of views and information between farmers and rural organizations
- Contributing to the implementation and coordination of rural development initiatives,
- Ensuring that technologies are adopted and disseminated in rural areas
- Raising awareness of involvement in rural areas
- Supporting education and awareness programs
- Ensuring co-operation

### III. Review of Literature

Rao T.R, (2004) Recent developments to rural e-Governance have shown the important role that information and communication technologies (ICT) play in rural development. Many e-governance initiatives have sought to expand scope, expand the foundation, decrease the cost of production, increase accountability and reduce cycle times. This paper provides a brief overview of the technologies, rural ICT initiatives and concerns related to the use of ICT for applications for rural e-governance.

Sharma, P (2011), studied that an attempt to propose a solution to fill the gap in knowledge by leveraging

developments in IT. We are proposing a concept of a cost-effective program of agricultural information dissemination (AgrIDS) to disseminate expert knowledge of agriculture to the farming community to increase crop productivity.

The assessments of many ongoing initiatives aimed at providing IT-based services to Indian rural communities. Such ventures are characterized by the commercial sustainability target, which promotes scalability and, therefore, wider benefits. Why will IT affect rural economy and rural Indian life to rural development? Which are the mechanisms by which impacts can be achieved, and what are the realistic ways of achieving potential benefits? We can not make India's economy better unless we recognize the economic value and power of the rural sector.

Boateng, M.S. (2012) has stated, In the fields of agriculture, hygiene, micro and small enterprises (MSEs), and education, Ghana's Information and Communication Technologies (ICTs) hold tremendous potential for rural growth. This paper looks more closely at the Ghana ICT scene from 2000 to 2011 using the theoretical sampling approach, with a focus on the role of ICTs in rural development. The paper also draws attention to the attempts made by Ghana's past and present governments to address Ghana's main ICT growth challenges. Research from the study showed that ICTs play a major role in rural socio-economic growth in Ghana, with tremendous potential for rapid development in those rural areas.

Patel, S and Sayyed, I.U. (2014), Several ways in which information technology can be used to share information, such as information kiosks that not only provide basic services such as email, education, health care, agriculture and irrigation, online shopping, community services, etc., expert systems that help to recognize marketing alternatives and optimum producers strategies, Information technology helps to predict the outcomes precisely plant physiology relevant to the agriculture. The study of leaf protein is an important research that helps in solving protein deficiency and malnutrition. The current study deals with IT's role in Agriculture.

Information technology is nowadays the hottest technology and allows to share information at the right time quickly and easily. IT takes the lead in all a nation's agricultural activities and has turned the entire planet into a global village with a global economy. Information technology has played an important role in improving the quality of life in rural areas and has helped an average Indian farmer get relevant information about agro-inputs, market support, and farm, company, Argo finance, crop production technologies, and agro processing management.

India is a developing nation with many successes in all modern- life areas including science & technology, agriculture, and industry.

### IV. TOOLS OF RURAL COMMUNICATION

#### A. Media

We may suggest two strategies for a brief review of the rural-media relationships. First, the media's focus and attention on

rural areas; and second, media's significance as a resource for rural socialization. Press devote a great deal of resources to rural areas in certain parts of the country, including the agricultural sector. Nevertheless, the fact that poverty and hunger remain the biggest global problems shows that it is difficult to ignore the importance of the rural areas and the agricultural sector. Sadly, the Turkish media does not pay attention to rural areas where half of Turkey's population depends on agricultural production. This state of ignorance is largely due to the fact that journalism is predominantly an urban occupation and that rural life is not appealing to many journal lists.

In our country's rural areas, TV attracts publicity and attraction. For many parts it's much more popular than the radio. Television transmissions reach even the remotest areas of Turkey. TV thus acts as an important method of socialization and as a remarkable instrument for rural development. Local papers may also be used in rural communication, in addition to television, radio. Regional papers, radios, and TVs play significant roles in raising farmers' awareness, training, and encouragement in developing countries.

### B. Information Communication Technologies (ICT):

The rural people's knowledge needs are becoming more complex and growing. Rapid developments in technology bring new approaches and resources for information and knowledge creation and sharing. Awareness is one of the most critical tools and strategies for establishing conditions of equal opportunity to tackle the spread of poverty in the rural areas. For areas where knowledge is ignored, the success of the agricultural policies and strategies is almost zero. The effect on economic growth of the changes in the technical and informative structures cannot be overlooked. Nonetheless, criticism is being made of the claim that pure technical focus and interest in improving the information systems would ensure modernization by speeding the development process. Of this reason, the technical deterministic approach that economic growth can be achieved by autonomous technology independent of the economic system does not serve as a remedy for the underdeveloped countries' problems; most academics argue that explaining socio-social transition and technological advances would be short-lived.

The Ninth Development Plan calls for the dissemination and promotion of ICT in rural areas. The aforementioned program reads as follows: "Electronic communication must become more competitive; infrastructure and services, access to information through efficient, fast, reliable and reasonably priced rates will be made possible. In the field of software and services, the information technology sector will be given priority in being a major player in the region and in the world. Popular use of information and communication technology in business organizations would be made possible to improve productivity in the economy. The foundation for visual and audio broadcasting widely used to access information will be further strengthened ([www.bilgitoplumu.gov.tr](http://www.bilgitoplumu.gov.tr))"

It is obvious that the farmer's exposure to the information in the electronic world and his or her communication capacity would ensure economic, social and cultural revival in rural areas. The Internet will help farmers publicize their concerns and concerns and report them to the authorities concerned by ensuring that they share their experiences and problems with each other. Farmers may have access to different Internet databases and get information about recent developments that can impact their particular conditions in their regions. They can also rely on the Internet to benefit from remote education, and use e-mail to create contact with the outside world.

### C. Face-To-Face Communication:

The message is conveyed orally in this form of communication; And in most situation, The feedback is immediate (Though fairly limited)[3]. A conventional form of Contact, FACE-TO-FACE contact is still very common in Rural area where there is a prevalence and impact of old habits. FACE-TO-FACE Methods of Communication are commonly used in the countryside of Latin America as Further examples given below indicate the individuals who serve as Colleagues, friends, Relatives or opinion leaders are key to FACE-TO-FACE contact. The views of such reference groups that become determinative and definitive in the specific attitude decided in certain fixed circumstances. For the reason, we agree that FACE-TO FACE contact in rural development and rural contact is very relevant.

### V. CONCLUSIONS

Development is a cycle of action, organization and communication that is multidimensional and includes economic, political, social and cultural factors. It plays a crucial role in the growth of rural sections in many countries, as some of the examples from different parts of the world have illustrated. Rural connectivity is one of the most important tools for addressing poverty effectively. Communication between farmers, agricultural institutions and public institutions is made possible through the sharing of knowledge and experience, as well as through the efficient use of communication technologies and tools. Communication devices make it possible to make sure people's voices are heard in the countryside. Worldwide examples of rural communication demonstrate that the Internet is still an important communication tool along with local TV and radios. To this end, the role of communication in developing countries such as Turkey in rural and agricultural development should not be ignored, and should be regarded as a significant opportunity.

The study shows that the information technology's priority need is important for our basic growth and development for all rural people. This research does not only concentrate on rural economic growth but also on self-development. Actually, with the advent of IoT software, information technology has become a part of every person's day life today. It can increase the standard of living in society. The government is also implementing several schemes and

programs for growth, development in the rural sector and may concentrate on improving the basic infrastructure needs for connectivity to information technology in rural areas.

Today, in the agricultural sector, country needs skilled manpower to modernize and develop technical inputs. Many rural people in the villages are aware in the study about the benefits of information technology, its function and its effect on both agriculture and rural development, but are unable to use it properly due to lack of awareness about how to use it properly. Coaching and such type of training centre should be opened by the government, which will further disseminate information technology and technical equipment knowledge in the rural sector.

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