

## THE ICT IN AGRICULTURE: BRIDGING BHARAT WITH INDIA

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**Abstract:** *Development Communication is relatively new in the study of mass communication, but the reach is much wider than its parent. In the end years of World War II, Development Communication emerged as a field as a combination of political and economic factors in Asia, Africa and South America namely the third world.*

*From the '70s, however, development concept was refined and broadened through the addition of ecological dimensions and technology transfer. With the advent of globalization in 1990s, Development Communication has gone through a sea change; the effect was naturally felt in India, especially in the rural belt and more importantly in the agricultural sector.*

*Never-seen-before initiatives were taken by governments, private players and in form of Public-Private Partnership to implement ICT model in interior areas. Sometimes, it is e-governance, sometimes e-commerce and sometimes e-education. Information and Communication Technology has played a significant role in developing the communication channels in the rural areas.*

*Development Communication and its evolution in form of ICT have a positive impact on India. In my paper, I tend to focus on the state of rural development through ICT by way of examining ITC e-Choupal initiative, Kissan Kerala, Gyandoot and agropedia. How these initiatives transformed the agricultural scenario in the rural belt and what could be the way forward for ICT in giving shape to a new India would be discussed upon.*

**Key Words:** *ICT, Alternative paradigm, agriculture, Indian village, development communication*

### Introduction

The contemporary period has come to be labelled variously as the ‘information age’, the ‘communication age’ and most recently, the ‘networking/cyber age’. So in a nutshell, 21<sup>st</sup> century is the age of Information and Communication Technology.

Based on the human relationship, communication theorists have developed various models like, Webel’s Hypodermic Needle Theory or Transmission Belt Theory, which is more commonly known as Magic Bullet Theory. There are certain other theories like Psychological or Individual Difference Theory and Personal Influence Theory.

What is Development Communication? Development as a whole is an integral value-added cultural process. It encompasses the natural environment, social relations, education, production, consumption and well-being. Development communication is mainly concerned with the role of information and communication in social and economic development of an individual, society and nation. According to Norah Quebral, “development communication is the art and science of human communication applied to the speedy transformation of a country and the mass of its people from poverty to the dynamic state of economic growth that makes possible greater social equality and larger fulfilment of human potential.

The first predominant approach to the development communication was Dominant Paradigm, though it did not yield desired results. The failure of this approach gave birth to the participatory approach of development communication, known as Alternative Paradigm, which is the crux of the theory of ICT. In this new paradigm, the shift is towards the labour-intensive technology, decentralization and planning, which includes consideration of the endogenous factors of development.

Some of the salient features of this Alternative Paradigm are:-

- Popular participation in decision-making by centralization, which suggests participation in the local level.
- The emphasis is on Bottom-up Approach (self-reliance, self-development, self-management) in place of Top-down strategy.
- Society-specific models of development communication, as there can’t be any universal model of communication.
- Villages and urban poor should be the priority of the development programmes.

ICT (information and communications technology - or technologies) is an umbrella term that includes any communication device or application, encompassing radio, television, cellular phones, computer and network hardware and software, satellite systems and so on, as well as the various services and applications associated with them, such as videoconferencing and distance learning. ICTs are often spoken of in a particular context, such as ICTs in education, health care, or libraries. The term is somewhat more common outside of the United States.

According to the European Commission, the importance of ICTs lies less in the technology itself than in its ability to create greater access to information and communication in underserved

populations. Many countries around the world have established organizations for the promotion of ICTs, because it is feared that unless less technologically advanced areas have a chance to catch up, the increasing technological advances in developed nations will only serve to exacerbate the already-existing economic gap between technological "have" and "have not" areas. Internationally, the United Nations actively promotes ICTs for Development (ICT4D) as a means of bridging the digital divide. (<http://searchcio-midmarket.techtarget.com/definition/ICT>) (*This was last updated in September 2003*)

ICT in agriculture is an emerging field focusing on the enhancement of agricultural and rural development in India. It involves application of innovative ways to use ICT in the rural domain. It can provide with accurate information necessary for the farmers which facilitates better agricultural output.

Though Public-Private Partnership, private initiative and government programmes are there, but it is still in nascent stage in India and evolving as an emerging trend. The benefit of ICT is yet to reach all the farmers, many farmers, especially those who are marginal or sharecroppers are not getting this service or it's better to say they are not availing this due to poor economic condition and social constraint. Other factors are illiteracy, language barrier, and unwillingness to adopt the new technologies.

'Untouchability' is a curse to human civilization and India is still struggling to come out of that. In most cases, the 'Mukhia' or the 'Sarpanch' of the village gets the responsibility of delivering the message to the farmers, but the farmers maintain a conscious distance as the Mukhia is from the higher caste and the farmers are from the lower caste, so the benefit of ICT doesn't reach them.

One critical aspect in the usage of ICT's for farmers and their groups, is the engagement of human interface in the last phase, thus it is crucial to know as to how far in actuality ICT is paying the dividend to the farmers.

A new paradigm of agricultural development is fast emerging in both developing and developed countries. The overall development of rural sector is also taking a new direction while growing; at the one hand, old ways of delivering important services to citizens are being challenged and on the other, traditional societies are being transformed into knowledge societies all across the world. E-connectivity is the key word in the new social order.

The report of the 'Task Force on India as Knowledge Superpower' (GOI, 2001) emphasised 'the necessity of developing the capacity to generate, absorb, disseminate and protect knowledge and exploit it as a powerful tool to derive societal transformation.'

ICT is seen as an important means of achieving such a transformation. When used as an extensive device for providing local farming communities with scientific knowledge, ICT initiates the formation of knowledge societies in the rural areas of the developing world. However, this can only be realised when knowledge and information are effectively harvested

for overall agricultural and rural development. The development of precision farming in Northern countries harps on knowledge-intensity; thus, the agricultural archetype in the developing world will have to be redesigned to take advantage of knowledge availability to achieve multiple goals like income, food, jobs, etc. ICT has a significant role to perform in developing such a paradigm, as was evident from the 'Interdisciplinary Dialogue on IT: Reaching the Unreached' (Swaminathan, 1993).

### **ICT in the revival of social organizations**

ICT can give a fillip to the social organisations and productive activity of agriculture which, if reared effectively, could become changing agents. The 'knowledge' itself will become a technology for overall agricultural development. Agricultural extension, in this rapidly changing world, has been recognised as an essential mechanism for delivering knowledge (information) and advice as an input for modern farming (Jones, 1997). However, it has to escape from the narrow mindset of transferring technology packages to transferring knowledge or information packages. If this can be achieved, with the help of ICT, extension will become more diversified, knowledge-intensive and demand driven, and thus, more effective in meeting farmers' information needs. ICT has many potential applications in agricultural extension (Zijp, 1994). It can bring new information services to rural areas where farmers, as users, will have much greater control than before over current information channels. Access to such new information sources is a crucial requirement for the sustainable development of the farming systems.

### **Convergence of ICT with agricultural development**

Agricultural Extension, which has been evolving and developing for past more than a 100-year, can be traced back to 1867. Though, there is no widely accepted definition of agricultural extension. Sometimes, it is described as 'the central task of extension is to help rural families help themselves by applying science, whether physical or social, to the daily routines of farming, homemaking, and family and community living.'

The birth of the modern extension service has been traced back to Ireland in the years 1845-51. The Irish potato crop was destroyed by fungal diseases and as a result, Great Irish Famine happened. The British Government arranged for "practical instructors" to travel to rural areas and teach small farmer how to cultivate alternative crops. Soon after Britain, Germany was the first country to adopt this agricultural initiative. By the end of the 19th century, Denmark, Netherlands, Italy, and France too had started this practice. Though, it is not known where or when the first extension activities took place. However, Chinese officials were creating agricultural policies, documenting practical knowledge, and disseminating advice to farmers at least 2,000 years ago.

The term "university extension" was first used by the Universities of Cambridge and Oxford in 1867 to describe teaching activities that extended the work of the institution beyond the campus. In the beginning of the 20th century, colleges of United States started conducting demonstrations

at agricultural shows and giving lectures to farmers' clubs, that the term "extension service" was applied to the type of work that we now recognize by that name.

Agricultural extension was earlier known as the application of scientific research and knowledge through farmer education. Now it spreads across the sectors like health & rural business studies along with agriculture and agricultural marketing. These methods are taught by professionals from various disciplines.

How it evolves in last fifty years, let's have a look.

- 1965: Agricultural extension has been described as a system of out-of-school education for rural people. Saville, A.H. (1965) *Extension in Rural Communities: A Manual for Agricultural and Home Extension technician Workers*.
- 1966: Extension personnel have the task of bringing scientific knowledge to farm families in the farms and homes. The object of the task is to improve the efficiency of agriculture. [Bradfield, D.J. (1966) *Guide to Extension Training* (1st Edition), FAO]
- 1973: Extension is a service or system which assists farm people, through educational procedures, in improving farming methods and techniques, increasing production efficiency and income, bettering their levels of living and lifting social and educational standards. [Maunder, A. (1973) *Agricultural Extension: A Reference Manual* (1st Edition), FAO]
- 1974: Extension involves the conscious use of communication of information to help people form sound opinions and make good decisions. [van den Ban, A. (1974) *Inleiding tot de Voorlichtingskunde* ([http:// edepot. wur. nl/ 119874](http://edepot.wur.nl/119874)), (Dutch edition first published by Boom, later quoted in English editions: 1988, van den Ban and Hawkins, and 2004, Leeuwis and van den Ban)]
- 1982: *Agricultural Extension: Assistance to farmers to help them identify and analyse their production problems and become aware of the opportunities for improvement*. [Adams, M. (1982) *Agricultural Extension in Developing Countries*, Longman]
- 1988: Extension is a professional communication intervention deployed by an institution to induce change in voluntary behaviours with a presumed public or collective utility. [Roling, N. (1988) *Extension Science: Information Systems in Agricultural Development*, Cambridge University Press]
- 1997: Extension [is] the organized exchange of information and the purposive transfer of skills. [Nagel, U. J. (1997) *Alternative Approaches to Organizing Extension*, in Swanson, B. "Improving Agricultural Extension: A Reference Manual" (3rd Edition)" FAO]
- 1999: The essence of agricultural extension is to facilitate interplay and nurture synergies within a total information system involving agricultural research, agricultural education and a

vast complex of information-providing businesses.[Neuchatel Group,(1999) Common Framework on Agricultural Extension]

• 2004: Extension [is] a series of embedded communicative interventions that are meant, among others, to develop and/or induce innovations which supposedly help to resolve (usually multi-actor) problematic situations. [Leeuwis, C. and van den Ban, A. Communication for Rural Innovation: Rethinking Agricultural Extension (3rd Edition), Blackwell Publishing]

#### **Four “generations” of agricultural extension in Asia**

There are four “generations” of agricultural extension in Asia.

Colonial agriculture: ‘Drain of wealth’ was the normal practice by the colonialists. The primary focus was on the export from the colonies and derived maximum profit in home country. Rubber, cotton, tea, sugar etc. was exported. Some technical advice and support were provided to the plantation managers and landlords, but assistance to small and marginal farmers were almost nil.

Diverse top-down extension: Post independence, the scenario changed a lot. Agriculture and its development became the prime focus of the 5-year plan. Different schemes were implemented for the betterment of the agricultural community, especially the small farmers. Some foreign donors provide money from this development programmes.

Unified top-down extension: In the decades of 1970s and ‘80s, World Bank introduced the Training and Visit system. Small organisations were merged into a single entity. Farmers used to get regular message on agricultural techniques.

Diverse bottom-up extension: Training & Visit system collapsed as soon as World Bank funding stopped. New techniques & support programmes for the farmers came up after that. The focus shifted towards the sustainability and equity which resulted in replacement of top-down approaches.

In an extension system, communication takes place in broadly in two ways:-

- 1) Paternalism versus participation
- 2) Persuasion versus education

In the first communication model, transmission of messages takes place from ‘sender’ to ‘receiver’. Senders are firmly in control of the communication process. ‘Senders’ are the government officials, extension workers, researchers and advisors and the ‘receivers’ are farmers. Feedback system is ineffective, though the model has provision for that. This model is known as ‘paternalistic’ where it is thought that the extension workers are the carriers between the senders and the receivers.

There is no single definition for the ‘participatory’ model. But the widely accepted idea is extension activities take place within a knowledge system comprising of many actors who play

different roles at various point of times. The model is more of a negotiation than transmission. What takes place is a dialogue, where actors collaborate to exchange information.

The second model is persuasion versus education. It has two primary divisions.

- Systems of communication that aim to change the behaviour of rural people
- Systems of communication that aim to change the knowledge of rural people [Directly taken from the ‘Collection’]

Close connection between knowledge and behaviour can’t be denied. Knowledge often decides what should be the right behaviour. If it’s a top-down approach, where policy makers are calling the shots and communication is one way, and then it aims at changing the behaviour. This approach to extension sometimes have been referred as directive extension, sometimes social marketing, even propaganda.

If the farmers use the facility of ICTs for their own need, then it is definitely aimed at changing the knowledge. This knowledge helps them in taking key decisions regarding the agricultural practices. This approach cannot be described without taking into account non-formal education and conscientization.

Based on these two models, there are four paradigms of agricultural extension.

- Technology Transfer (persuasive+paternalistic). This paradigm was prevalent in colonial times, and reappeared in the 1970s and 1980s when the Training and Visit system was established across Asia. Technology transfer involves a top-down approach that delivers specific recommendations to farmers about the practices they should adopt.
- Advisory work (persuasive+participatory). This paradigm can be seen today where government organisations or private consulting companies respond to farmers enquiries with technical prescriptions. It also takes the form of projects managed by donor agencies and NGOs that use participatory approaches to promote pre-determined packages of technology.
- Human Resource Development (educational+paternalistic). This paradigm dominated the earliest days of extension in Europe and North America, when universities gave training to rural people who were too poor to attend full-time courses. It continues today in the outreach activities of colleges around the world. Top-down teaching methods are employed, but students are expected to make their own decisions about how to use the knowledge they acquire.
- Facilitation for empowerment (educational+participatory). This paradigm involves methods such as experiential learning and farmer-to-farmer exchanges. Knowledge is gained through interactive processes and the participants are encouraged to make their own decisions. The best know examples in Asia are projects that use Farmer Field Schools (FFS) or participatory technology development (PTD). [Directly taken from the ‘Collection’]

ICT can play a decisive role in broad basing agricultural extension activities; development and extension of cultivation system, location-specific modules of research and extension and promoting market extension, sustainable agricultural development, participatory research, etc. Findings from numerous research studies (on extension organisations) stressed on the fact that the delivery of goods is effective when the grass roots extension worker covers a small area with multiple purposes (broad basing). The current system of large areas, each with a narrow range of activities, is less effective. However, primary requirement for broad basing is that the base level workers must be well versed with cutting edge of extension and at the same time he needs to be a ‘master of all trades’ which in practice is not really possible.

Here, through IT intervention, extension workers can collect, store, retrieve and disseminate information needed by the farmers, and getting them transformed into ‘knowledge workers.’ This new breed of workers will result in the realisation of the much discussed notion of bottom-up, demand driven technology generation, assessment, refinement and transfer. Much of the extension information has been found to be out of date, irrelevant and not applicable to small farmers’ needs, leaving such farmers with very little information or resources to improve their productivity. ICT helps the extension system in re-orienting itself towards the overall agricultural development of small production systems. With the appropriate knowledge, small-scale producers can even have a competitive edge over larger operations.

ICT can also play in documenting the traditional agricultural practices. Developing countries by creating Traditional Knowledge Digital Libraries (TKDL) can collect and categorise various types of local knowledge so that it can be shared more widely.

### **Areas of IT convergence**

Applications of IT in support of agricultural and rural development fall into five main areas, as outlined by Don Richardson (FAO, 1996). These are:

- Economic development of agricultural producers;
- Community development;
- Research and education;
- Small and medium enterprises development; and
- Media networks.

Some agricultural development services that can be provided in the developing world, using ICT, are:

- Online services for information, education and training, monitoring and consultation, diagnosis and monitoring, and transaction and processing;
- E-commerce for direct linkages between local producers, traders, retailers and suppliers;
- The facilitation of interaction among researchers, extension (knowledge) workers, and farmers;



- Question-and-answer services where experts respond to queries on specialised subjects ICT services to block- and district-level developmental officials for greater efficiency in delivering services for overall agricultural development;
- Up-to-date information, supplied to farmers as early as possible, about subjects such as packages of practices, market information, weather forecasting, input supplies, credit availability, etc.;
- Creation of databases with details of the resources of local villages and villagers, site-specific Information systems, expert systems, etc.;
- Provision of early warning systems about disease/ pest problems, information regarding rural development programmes and crop insurances, postharvest technology, etc.;
- Facilitation of land records and online registration services; • improved marketing of milk and milk products;
- Services providing information to farmers regarding farm business and management;
- increased efficiency and productivity of cooperative societies through the computer communication network and the latest database technology;
- Tele-education for farmers;
- Websites established by agricultural research institutes, making the latest information available to extension (knowledge) workers and obtaining their feedback.

### **ICT initiatives for agricultural development in India**

- Gyandoot project (Madhya Pradesh);
- Warana Wired Village project (Maharashtra);
- Information Village project of the M S Swaminathan Research Foundation (MSSRF) (Pondicherry);
- iKisan project of the Nagarjuna group of companies (Andhra Pradesh);
- Automated Milk Collection Centres of Amul dairy cooperatives (Gujarat);
- Land Record Computerisation (Bhoomi) (Karnataka);
- Computer-Aided Online Registration Department (Andhra Pradesh);
- Online Marketing and CAD in Northern Karnataka (Karnataka);
- Knowledge Network for Grass Root Innovations – Society for Research and Initiatives (SRISTI) (Gujarat);
- Application of Satellite Communication for Training Field Extension Workers in Rural Areas (Indian Space Research Organisation);

In addition to the above, a few non-governmental organisations (NGOs) have initiated ICT projects such as:

- Tarahaat.com by Development Alternatives (Uttar Pradesh and Punjab);
- Mahitiz-samuha (Karnataka);
- VOICES – Madhyam Communications (Karnataka);
- Centre for Alternative Agriculture Media (CAAM);

Some exclusive agricultural portals are also available, such as:

- Haritgyan.com
- KrishiworlD.net
- TOEHOLDINDIA.com
- Agriwatch.com
- ITC's Soyachoupal.com
- Acquachoupal.com
- Plantersnet.com, etc.

[Taken from Shaik. N. Meera, Jhamtani, Anita and Rao, D.U.M (Network Paper No.135, January 2004, AgRen) INFORMATION AND COMMUNICATION TECHNOLOGY IN AGRICULTURAL DEVELOPMENT: A COMPARATIVE ANALYSIS OF THREE PROJECTS FROM INDIA: Accept on 15<sup>th</sup> September, 2011]

ICT for agricultural development has a huge potential, yet India is a slow starter and very few projects have been undertaken. NGOs, private organisations, corporate bodies and governmental organisations have generally taken the initiatives. This exposes the sheer indifference of agricultural development departments towards incorporating ICT into their day-to-day activities. Learning from the ongoing projects should be taken into account while formulating the strategy or action-plan for future for overall development of agriculture.

## **Some programmes of ICT in agricultural belt**

### **Case Studies**

#### Agropedia

Agropedia is a peer-group tool for interaction among the farmers. This is a comprehensive, integrated model for digitalized content of agricultural domain. This e-initiative intends to bring together a community through ICT enabled knowledge creating and organising platform with an attempt to leverage the current agricultural extension system.

IIT Kanpur (agropedia platform), IIT Bombay and IITM Kerala (multi-model delivery) are the three key partner organizations who are in charge of different projects and responsibilities along with ICRISAT- Hyderabad, NAARM- Hyderabad, GBPUAT- Pantnagar, UAS- Raichur under the aegis of the 'National Agricultural Innovation Project (NAIP). ICRISAT is the consortium leader, which is responsible for the outputs and deliverables.

#### Unique Model

Agropedia has been labelled as one stop solution for the Indian agro-sphere. Defining and developing the Knowledge-Model for understanding of the crop has been done first time ever in the world in order to accumulate codified and approved information about the crops with the support of Food and Agriculture Organisation (FAO), Rome. These models are essentially the

structural representation by using symbols for tagging a particular piece of information and relationships between them. Following this, Chickpea, Pigeon pea, Sorghum and Groundnut Knowledge-Models are developed at ICRISAT, Wheat, Sugarcane, Litchi and Vegetable pea are developed at GBPUAT and Rice is developed at IITK.

## E Choupal

e- Choupal is an initiative from ITC's Agri Business Division to face the challenges of India's agricultural uncertainty. Indian agriculture is characterised by fragmented farms, weak infrastructure and the involvement of numerous intermediaries.

'e-Choupal' aims at bringing out the Indian farmers from vicious circle of low risk taking ability - low investment - low productivity - weak market orientation - low value addition - low margin. For this, Indian farmers keep struggling despite abundant resources. To increase the competitiveness of the Indian agricultural sector and enhance productivity, ITC has developed this market-led business model. It is assumed and expected that a growth in rural incomes will also result in the overall growth of Indian economy.

### The Model in action

e-Choupal operates in three layers. This three-layered infrastructure allows ITC to provide a complete end-to-end solution to suit the needs of both the farmers and consumers at village as well as in global level.

The first layer consists of ICT kiosks (Village Level) with internet access, managed by an ITC trained local farmer called the Sancaalak. The second layer is known as hubs managed by the traditional intermediary who has local knowledge /skills called Samyojak . The final layer is a network of companies (consumers of farmers' products and providers of products and services to the farmers) orchestrated by ITC is known as Choupal Sagar, which has a pan-Indian presence.

Indicators	Traditional	E-Choupal
Price Discovery	Mandi	Village
Quality Inspection	Visual	Scientific
Weighing	Manual	Automatic
Choice	None	Two
Price	Unpredictable	Fixed Price
Sell-to-cash	1-2 days	3-4hours
Distance travelled to sell	Same	Same
Labour & Handling	More	Less

With this model, ITC is able to deliver the same benefits as vertical integration does in matured agricultural economies like USA.

'e-Choupal' is the largest initiative among all Internet-based programmes in rural India. It reaches to over 4 million farmers of more than 400000 villages through 6500 kiosks. It operates across ten states, namely Madhya Pradesh, Haryana, Uttarakhand, Karnataka, Andhra Pradesh, Uttar Pradesh, Rajasthan, Maharashtra, Kerala and Tamil Nadu in the cultivation of soybeans, coffee, wheat, rice, pulses, and shrimp.

## **KISSAN KERALA**

Kissan Kerala is an 'Agriculture Information Services' system to provide information and advisory to the farmers of Kerala. This is accessible by all concerned anytime in the day and from any parts of the state. The objective of this programme is to empower the farmers by providing them useful information and required knowledge; this would lead the farmers to take better decision.

To disseminate the message and to answer farmers' queries, various channels are used like Television, Internet, Telephone, and Mobile. The farmers are free to choose any medium of their choice. The quintessential feature of this ICT enabled service delivery model is to ensure that the farmers' get the expert's assistance on time and agricultural organisations provide necessary help to the farmers. This has helped the cultivators to better the crop production, enhanced crop protection, value addition to the existing practices, opening up new avenues and improves the overall life of the farming community. Children, Youth, women, men and seniors are the target group of this programme, who are somewhat related to the agricultural activities.

Kissan Kerala focuses on five broad areas.

Online Agri advisory service : Portal based online Advisory services for the farmers  
([www.kissankerala.net](http://www.kissankerala.net))

Kissan Krishideepam : Agriculture based weekly Television program in vernacular language  
Online Agri video Channel : In collaboration with the You Tube, online agricultural video channel was brought in the country

Tele Advisory Services : Farmers are just a call away from getting solutions to their problems.  
AQ dedicated phone number is there to address their need

The mobile based Agri Advisory services: Through text, voice or video message, farmers can get their answers on mobile phones

The project has made certain positive impacts, such as 'Kissan Kerala' has improved the extension and communication competence among the Departmental officers. Timely assistance by the 'Kissan Kerala' programme, agricultural production has increased, thus, attracted the youth and women for agricultural sector. It has also helped in improving the knowledge-sharing

among the peer groups and has provided better opportunity to the farmers for marketing their products.

These are some of the few examples of ICT enabled services for Indian farmers. With the advent of the new technology more and more companies are coming ahead to strengthen the Indian farmers' condition. Southern states are far ahead in adopting the new technologies and implementing the same in their day-to-day life. With words of mouth more and more people are getting interested in this. This is because in southern states especially in Kerala and Andhra Pradesh, farmers get the access in their own language whereas in other states language is a problem. So many a times, even if the farmers are willing, they cannot totally switch over to the new technology.

Bridging Bharat with India is one of the objectives of ICT programmes in Agriculture. It's a slow mover; it didn't achieve what was possible for Egypt. The RAD CON example would be very relevant in this context.

RADCON operates on Participatory Rural Communication Appraisals (PR CA) for the formulation of communication strategies at community level, to expand the use of multi-media and new ICTs by rural mass.

This integrated approach is comprised of two main components that are closely inter-connected:

- An online agricultural and rural development information and communication system.
- A wide network of focal groups and village facilitators, in seven governorates of Egypt.

ICT to a great extent is the result of neo liberal economy. India has gone through a sea change since macro economic reforms of 1991. The usage of new technology transformed the nature of Indian village economy gradually into a 'modern' one. The traditional 'Asiatic mode of production' discourse is no more relevant at this juncture. Though 'self sufficient' village economy is still a truth in Indian context, but convergence from traditional to modern (ICT) is dictating the term nowadays. Not only governments, but also the private players are coming forward to aid the Indian farmers in the broader spectrum of Corporate Social Responsibility.

Proposals for agro sector in 2011-12 budget.

- \* Agriculture growth key to development: Green Revolution waiting to happen in eastern region.
- \*To raise target of credit flow to agriculture sector to 4.75 trillion rupees
- \*Gives 3 percent interest subsidy to farmers in 2011-12
- \*Cold storage chains to be given infrastructure status

- \* Capitalisation of National Bank for Agriculture and Rural Development (NABARD) of 30 billion rupees in a phased manner
- \* Actively considering new fertiliser policy for urea
- \* Food storage capacity to be augmented - 15 more mega food parks to be set up in 2011-12; of 30 sanctioned in previous fiscal, 15 set up.
- \* Comprehensive policy on further developing PPP (public-private-partnership) model.
- \* Farmers need access to affordable credit.
- \* Moving to improve nutritional security.
- \* Necessary to accelerate production of fodder.

<http://timesofindia.indiatimes.com/home/union-budget-2011/Highlights-of-Union-Budget-2011-2012/articleshow/7592642.cms> (Accept on 28<sup>th</sup> September, 2011)

As it is quite evident from the examples of agricultural e-services and e-societies, India wants to transform its traditional production system by engaging all concerned of the huge agricultural sector. Roughly, more than 74% people still live in the rural India and almost 52% of them are somehow related to agriculture (Census Report, 2011). Finance Minister Pranab Mukherjee in his budget speech of 2011-12 said, to facilitate the credit facility for the small and marginal farmers, banks are being instructed to help them in lending. Moreover, credit target for the agriculture sector has been increased by one lakh crore. Special interest schemes for the farmers too have been formulated. In 2009-10, agricultural sector contributed to approximately 14.6 per cent of India's GDP, though it is 1% lesser than previous financial year. 11<sup>th</sup> five year plan keeps the target of 4% of agricultural growth, but in first three years the average growth was of 2.03%.

## **Inference**

I believe, in Development Communication, the most significant phase is 'Information and Communication Technology' which has redefined the Alternative Paradigm. ICT cannot be seen in isolation, it has socio-economic and political implications. Information is basically the raw material of the paradigm- "these are the technologies to act on the information, not just information to act on the technology."

This reflects the immense importance of ICT in agricultural activities. Though, the current five-year plan does not address directly the necessity of the same in the rural sector, but it does talk about the private initiatives and engagement of the NGOs in betterment of the sector. India is 2<sup>nd</sup> in farm output. In spite of sharp decline of its share in the GDP, still this is the largest pie of the economic sector and has a decisive factor in socio-economic development of India. Since 1960s government has formulated and implemented several policies for agricultural development in

order to alleviate poverty. But in most cases, the policies didn't yield desired results due to lack of proper implementation. Like SFDA (Small Farmers' Development Agency), IRDP (Integrated Rural Development Programme) didn't achieve what they aimed at.

As government is thinking and formulating the policy for the betterment of the agricultural community with special focus on marginal and small farmers, ICT has to be the key for that. It should be embedded in the agricultural activities. With the advent of new technologies, agricultural output has increased, but it is not enough. Through ICT, modernisation of the agricultural is the need of the hour. The concept of ICT is still in nascent stage, but gradually the scenario is changing. It is increasingly becoming important. There are several shortcomings in implementing the ICTs. Like, e-choupal is not used by the marginal farmers; they are sceptic about its benefit and result. Social constraints, casteism etc. are holding them back from adapting the technology.

On senders' part too (i.e. government bodies,, organisations, policy makers) , there are certain bottlenecks. The concerned organisations and departments of agricultural development need to be faster in delivering the message to the farmers. Before that, they must realise the potential of ICT, that understanding is not always present.

To make it a success, educating the farmers, (especially the small and the marginal) is need of the hour. Proper training has to be imparted to make them understand how to use the techniques of ICTs. This is the onus of the government to formulate a policy on the same in order to optimise the benefit of the ICT. Public Private Partnership would be very effective in this scheme. Top-Down and Bottom-Up Approach needs to run simultaneously. Participation of the receivers are still very less and it is basically runs on Top-Down mode.

Arguably, ICT is the future of Indian Agro economy too; if it needs to be all round success more & more initiatives need to be taken and have to make it work in grass root level. With the spreading of ICT, adult literacy (for the farmers, by spreading non-formal education) should be the focus.

As of now, ICT is moving towards in bridging the gap between Bharat and India.

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