

## **CYBER EXTENSION: A CONVERGENCE OF ICT AND AGRICULTURAL DEVELOPMENT**

**Vivek Ahuja**

Senior Lecturer

Amity School of Business, Amity University Uttar Pradesh,  
Noida, Uttar Pradesh

Email: [vahuja@amity.edu](mailto:vahuja@amity.edu)

Webpage: [amity.academia.edu/VivekAhuja](http://amity.academia.edu/VivekAhuja)

***Abstract:** There has been a global shift from traditionally manufacturing based economies to economies that are largely knowledge based today. This shift has put forth a pressing need to develop a platform capable of transporting different forms of information to all the members of the society. In this new era of knowledge, India, our great nation which is a vast pool of knowledge workers is competing in the global economic playfield. A large share of our national income comes from agriculture and that is why, India is still known as an agrarian economy. Indian agriculture is now in a post-green revolution era and a larger pie of developmental efforts is being constructed particularly for those who are in the rural areas. Developing the capacity of agro-based rural communities through cyber extension with the use of ICT will create opportunities of growth and prosperity and give a chance to Indian Agricultural markets for creating a more efficient information and knowledge network. This paper showcases the utilization of ICT for building capacities of agricultural markets through cyber extension.*

***Key words:** Cyber Extension, Agricultural Development, Agricultural Markets, Information and Communication Technologies, Gyandoot*

### **A Changing Mindset**

It is indeed highly inspiring to see that in India, people are gradually getting aware of the multiple roles of Information Technology in the overall growth of the country. The bureaucrats and policy makers have equally emphasized the significance of exploring and exploiting the benefits of IT. Moreover, the governance has also realized that with availability of vital

infrastructure Information and Communication Technologies can be used to improve the lives of the rural and underprivileged section of the Indian society, especially the ones living below the poverty line (BPL). Nonetheless, the Government will have to play the role of a catalyst in this huge integration project.

A strategic framework including actors from Central & State Governments and Civil Society Organizations to capture the benefits of ICT and make it reach the countryside can do wonders in this regard.

### **Identifying Stakeholders: Action parties**

There are various stakeholders in the ICT projects- The Governments at the Centre and in States, the civil society organizations and the corporate sector. The projects sponsored and funded by the government are essentially based on e-governance model. Whereas the projects initiated by society groups and the corporate sector fall under the categories of social work or philanthropy or Corporate Social Responsibility. There are numerous successful projects that have been implemented in India and many of them are on the road to success.

### **Information and communication technologies (ICT)**

Information and communication technologies facilitate the processing and transfer of information, i.e. communication by electronic means. ICT generally link Information processing devices like computers with telecommunication technologies like telephones, wired or wireless networks. ICTs are a range of electronic technologies which when converged in new configurations are flexible, adaptable, enabling and capable of transforming organizations and redefining social relations'. The range of technologies is increasing all the time and 'there is a convergence between the new technologies and conventional media' (Michiels and Van Crowder, 2001).

The sphere of ICT has advanced so much that today they are defined as a booming congregation of technologies that are utilized for collection, storage and sharing of information & knowledge between people using multiple devices and multiple media.

### **ICT and Agriculture**

ICT can act as an accelerating force behind the productivity of Indian agricultural markets. Knowledge is a useful resource and backed by adequate technological infrastructure and appropriate strategies, it can become a transformational factor for overall development of agricultural markets. According to Jones (1997), agricultural extension is an essential mechanism for delivery of knowledge and advice as an input for modern farming. The need is of a shift of focus from delivery of technology to delivery of knowledge and information. This is possible with the use of Information and communication technologies which can make agricultural

extension a more diversified, knowledge driven system for meeting on demand farmers' information needs. ICT can continuously introduce newer sets of information services to agricultural markets where farmers can have a better control. Access to such new information sources is a crucial requirement for the sustainable development of the farming systems.

### **Information Needs of Farmers**

The main focus of ICT in agriculture is meeting the farmers' needs for information. The following are some vital needs of farmers that seem to be imperative for the growth and development of agriculture -

#### Market information

Market information including price updates of agricultural commodities of surrounding districts on a daily basis. For farmers, the price updates of markets outside their villages have a higher priority so that they can compare the prices and choose to sell at the appropriate place.

#### Information on latest techniques and technologies

Continuous advancement in technology brings up gradation to agricultural machinery and techniques too. Up to date information regarding latest technologies in agriculture and animal husbandry is of immense importance for growth.

#### Information about rural development programs and subsidies

Provision of detailed information on Government initiatives for rural development for those the programs are addressed. The areas that suffer from droughts, floods or other natural disasters frequently receive grants and subsidies from the Government. Information related to these programs is particularly important to small and marginal farmers.

#### Weather forecasting

Updated information on weather such as temperature, humidity, forecasts on rains.

#### Latest (best) packages of practices

Information on 'best practices' of cultivation is important need of the farmers. Information regarding drought resistant varieties of certain crops can be important for farmers to withstand longstanding droughts in some areas.

#### Post-harvest technology

Education on post-harvest technology and storage is as vital as pre-harvest. Farmers are getting aware of the value addition of food processing.

#### General agricultural news

General news and information related to various agricultural events in villages and districts.

Information on insurance / claim processing

Detailed information on crop insurance schemes, the type of damage covered and compensation offered premiums to be paid, etc.

Input prices and availability

Information relating to the availability of agricultural inputs like seeds, fertilizers, manures, etc. and prices.

Early warning and management of diseases and pests

In the areas of continuous droughts, pests and diseases do not generally pose a major threat. However, in other areas this information is useful. Also, early warning in case of some crops like sugarcane is important.

Soil testing and soil sampling information

Information related to testing of quality or nature of soil is very important for farmers as the soil directly relates to productivity of crops. If this information is easily available to the farmers, it prepares farmers to get the best produce given the resources.

### **Convergence of ICT with sustainable agricultural development: ‘Cyber Extension’**

A few areas where ICT can play a transformational role are agricultural research and extension, location specific modules of research and extension, market extension, sustainable agriculture, participatory research, etc. Information Technology can help in collecting, storing, retrieving, processing and disseminating a broad range of information needed by the farmers. A mix of strategic planning with knowledge management can give results to least-cost inputs, better storage facilities, improved transportation links and collective negotiations with buyers.

ICT also plays an important role in documenting both traditional and organic cultivation practices thus acting as a bridge between traditional and modern knowledge systems.

### **Cyber Extension**

Cyber extension is extension of agricultural development with the help of Information and Communication Technologies over cyber space. Cyber space is an imaginary space behind networked computers through telecom means. This kind of a strong information sharing network is made possible through power of networks, computer communications and interactive multimedia.

Tools of Cyber Extension

As Cyber Extension means ‘Extension over cyber space’, all the internet tools for developing and accessing Agricultural Information constitute the tools of Cyber Extension –

1. Email
2. Expert systems providing information on pests and diseases
3. Internet browsing for extension information
4. Video conferencing
5. Call centers and Satellite communication networks
6. News and Discussion groups

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

There are many ICT projects supporting agricultural extension in India. A partial list of some famous ones is given below -

Project Name	Location
Gyandoot project	Madhya Pradesh
Warana Wired Village project	Maharashtra
Information Village project of the M S Swaminathan Research Foundation (MSSRF)	Pondicherry
iKisan	Andhra Pradesh
Automated Milk Collection Centres of Amul dairy cooperatives	Gujarat
Land Record Computerisation (Bhoomi)	Karnataka
Knowledge Network for Grass Root Innovations – Society for Research and Initiatives (SRISTI)	Gujarat

*Table 1 – List of ICT projects for agriculture*

It can be an interesting thing to note that these projects and similar kind were started by governmental organizations, NGOs, cooperatives and corporate sector and not agricultural departments. This apathy of agricultural departments towards integrating ICT with their activities can be another interesting topic to explore.

The project *Gyandoot in Madhya Pradesh* has been discussed briefly as a live case in this paper to understand the extent to which these projects have utilized ICT to cater to information needs of farmers and helped holistically in creation of an extended agricultural market through cyber extension.

### **Case Study: Project GYANDOOT, Location – Dhar, Madhya Pradesh**

Dhar is a tribal dominated and a drought prone district of Madhya Pradesh. More than half of the population of the district is tribal and around two-fifth are living below poverty line. Gyandoot is a low cost rural intranet project based on e-governance started in the year 2000. The main aim of Gyandoot is to harness Information and Communication Technologies to improve governance at village, block and district levels. The project has linked around 35 kiosks in the district with the district headquarters of the local government. The kiosks include a networked computer and printer. This set up has been enabled by the State government. Software working in Hindi language and touch screen applications has been designed to encourage maximum utilization and access by poor rural farmers.

The project has a broader target of overall development of the rural setup rather than just focusing on agricultural extension. Gyandoot provides many information services to the farmers like best practices related to agriculture, prices of agricultural produce in different markets, online registration and provision of land records, rural email facility, information regarding government (rural development) programs, Ask the Expert, Avedan Patra (application formats for rural development schemes).

Gyandoot also has a provision of a database that stores information regarding the best practices for crop cultivation. Additionally, the online portal makes available prevailing prices of prominent crops (wheat, gram, soybean, etc., giving varieties) at local and other auction centers of the country. Other value addition services are the provision of online registration of land and Khasra certificates for the farmers.

The facility for auction site gives the farmers a new way of selling their lands, agricultural machinery, bullocks and equipments. Usually, in this kind of buying in selling, middlemen are involved. The online facility eliminates the possibility of the middlemen and their commission and dictated prices. 'Ask the expert' facility answers the queries of the farmers regarding agriculture, animal husbandry, health, etc.

## **Conclusion**

The cyber extension is a vital machinery to support the extension functionaries. Availability of information over internet assists the process of agricultural extension and makes it speedy and more effective. The important components of Agricultural extension systems are agricultural research, marketing and farmers. Cyber extension bridges the communication gap between these components. The enhanced and smooth communication among these components of the system results in the overall development of the agriculture system of the country.

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