Information and Communication Technology in Agriculture: A Kashmir Perspective

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ABSTRACT

Agriculture is the mainstay of our economy as about 70% of the population directly or indirectly is associated with agriculture and allied activities. However, agriculture in Kashmir is continuously facing tremendous constraints in the form of poor institutional arrangements, inefficient extension services, geographical constraints and also the vagaries of the nature. However, in the present era wherein the economy of the farmer is the prime concern, it is the moral duty of all respected parties who are engaged in research, extension and development activities to come forward and work for increasing the net returns of the farmers on sustainable basis. Under prevailing situation, it is quite difficult for the extension workers to cover most of the farmers in face to face mechanism for information of technological interventions and thereby adoption of these technologies. Hence, there seems to be no immediate solution but to go for ICT. This paper focusses on various issues, constraints and prospects of ICT with respect to agriculture and allied sectors particularly in the context of J&K state.

Keywords: ICT; technological interventions; net returns.
1. INTRODUCTION

In the present scenario of India agriculture, the public extension possibly cannot provide additional qualified manpower to adequately address the complex demands of farmers by reaching out to millions of farmers. The growth and spread of new information and communication technology provides a viable alternative to overcome the physical barriers of face-to-face interpersonal communication. Appropriate choice and adoption of new information communication technologies in different rural areas to communicate and educate millions of farm families will make all the difference in addressing challenges of agriculture in this millennium [1].

Agriculture is an important sector with the majority of the rural population in developing countries depending on it. The sector faces major challenges of enhancing production in a situation of dwindling natural resources necessary for production. The growing demand for agricultural products, however, also offers opportunities for producers to sustain and improve their livelihoods. Information and communication technologies (ICT) play an important role in addressing these challenges and uplifting the livelihoods of the rural poor. This article explores the potential contribution of ICT to the livelihoods of small-scale farmers and the efficiency of the agricultural sector in developing countries.

The agricultural sector is confronted with the major challenge of increasing production to feed a growing and increasingly prosperous population in a situation of decreasing availability of natural resources. Factors of particular concern are water shortages, declining soil fertility, effects of climate change and rapid decrease of fertile agricultural lands due to urbanisation. However, the growing demand, including for higher quality products, also offers opportunities for improving the livelihoods of rural communities. Realising these opportunities requires compliance with more stringent quality standards and regulations for the production and handling of agricultural produce. New approaches and technical innovations are required to cope with these challenges and to enhance the livelihoods of the rural population. The role of ICT to enhance food security and support rural livelihoods is increasingly recognised and was officially endorsed at the World Summit on the Information Society (WSIS) 2003-2005. This includes the use of computers, internet, geographical information systems, mobile phones, as well as traditional media such as radio or TV. Although it is a relatively new phenomenon, evidence of the contribution of ICT to agricultural development and poverty alleviation is becoming increasingly available. Since 1998, International Institution on Communication Development (IICD) has been involved in projects and policy trajectories and consistently monitors the progress and impact of the use of ICT. As far as our valley of Kashmir is concerned, we are lagging behind. We do not have sufficient financial strength and requisite institutional support to facilitate the effective installation and smooth functioning of the ICT in our valley which otherwise could help in bypassing the obstructive physical barriers in the dissemination of agricultural technology. Information communication technology (ICT) assists all elements of the value chain in bringing about a more efficient exchange of goods and services. For example;

In the Valley of Kashmir, ICT could possibly be the most potent tool to overcome the issues which are posing a great challenge to the Conventional face-to-face system of extension. Some of the factors which are continuously pushing for ICT in Kashmir valley are the remoteness of pockets /Villages, Hilly terrains, Poor extension - farmer ratio, poor institutional arrangements between Scientists, line departments and farmers.

2. ICT: CHALLENGES IN KASHMIR

Resource poor farmers: As majority of the farmers of our valley are resource poor, they cannot afford to invest more on ICT technologies. Ninety percent of the farmers are either marginal or small: As the major chunk of the farmers belong to small or marginal class as far as the land holding is concerned. This turns out to be one of the most limiting factors that determine ICT adoption. Erratic power supply with high tariff charges, uneven ban on SMS services, Lack of institutional support and Natural calamities like untimely Snowfall, floods, windstorm etc. are proving to be the major hurdles in way of ICT installation as well as adoption.

3. INFORMATION GAP AND BRIDGING THE GAP

The adopters of new communication technologies tend to be highly educated and of
higher socio-economic status. This widens the information gap between the information-rich and the information-poor, at least in the initial stages of computer diffusion. Once public access to computers becomes more widespread through cyber cafes, Internet Community Centers, and public schools, the digital divide will eventually be crossed [2].

Information technology can significantly alter this situation by forging better linkages between farmers, rural institutions, voluntary organizations, agricultural research centres, marketing organizations, private firms, and governmental agencies. In doing so, ICT can provide new opportunities for the rural poor to have input into decision-making. ICT use by development agencies can facilitate information gathering from the rural population, and application of that input into the design and implement of project activities. ICT also provides new means for helping the rural poor (and their advocates) bypass obstructing agents and go directly to the source of information they need [3].

4. ICT INNOVATIONS

Village Knowledge Centre (VKC): Village Knowledge Centre (VKC) serves as information dissemination centre providing instant access to farmers to latest information/ knowledge available in the field of agriculture, starting from crop production to marketing. A "VKC In-charge" who looks after the operations of the VKC mans every VKC.

4.1 Radio

Radio is an electronic audio- medium for broadcasting programmes to the audiences. This medium is cosmopolite in approach and is suitable for communication to millions of people widely dispersed and situated in remote areas. Availability of low cost transistor sets has helped radio to penetrate deep into the rural life. According to [4] the vast changes that have taken place in the countryside, particularly the ‘green revolution’ could not have come about so quickly, without the use of radio. The educational and developmental role of radio has been now here more evident than in its programmes for the rural listeners. The All India Radio (Akashvani) has played a significant role in bringing the new technology in agriculture to the door of farmers. The Farm and Home units of akasvani were started in 1996 to support the Intensive Agricultural District Programme and the coming of the new ‘wonder’ seeds-the high yielding varieties.

4.2 Television

India was one of the first countries among the developing world to test the use of television for education in 1959 and in use of satellites and television for agricultural extension in rural areas in 1975-1976. Television is an electronic audio-visual medium which provides pictures with synchronized sound. This medium is cosmopolite in approach and can be used to create instant mass awareness. Television is multimedia equipment as it can include motion picture, recording, slide, photograph, drawing, poster, etc. television can show recorded as well as live programme. Both recording and playback equipments are transportable, allowing flexibility of useful staff. A new television atmosphere has been created by satellite and cable technology. Television programmes may be broadly classified as commercial and non-commercial. Commercial or general telecasts are revenue earning and include music, dance, drama, serials, cinema and also news, current affairs etc. Non-commercial or educative programmes are aimed at education and development rather than entertainment. According to [5], the satellite based interactive system is useful for education/ training in remote rural areas. The development of low cost talk/ terminal, enabling a return voice link from the class room to the teaching-end, is of the considerable importance in view of the vast potential of such interactive applications.

4.3 DD Kisan

DD Kisan is an Indian agriculture 24-hour television channel, which is owned by Doordarshan and was launched on 26 May 2015. The channel has been dedicated to agriculture and related sectors, which disseminates real-time inputs to farmers on new farming techniques, water conservation and organic farming among other information [6].

4.4 Kiosk

Kiosks are the internet based computer terminals which offer interactive knowledge dissemination via video conferencing, interactive learning and live phone-in conversation between the experts
and the beneficiaries. The services offered by Kiosks are given as:

- Agriculture produce auction center rates.
- Copies of land records.
- Online registration of applications.
- Village auction sites.
- Transparency in government.

4.5 Web

The web is the largest and richest agricultural information system in the world. Its massive holdings, covering all aspects of world agricultural, natural resources, and food systems, enable farmers to locate needed information to improve yields, plan for weather contingencies, access research, calculate treatments and runoff, simulate the growing season, visualize precision data, manage finances, buy inputs and sell outputs, and monitor prices in local as well as world markets. The web is surely the most promising way of extension services to reach more farmers with better services [7,1].

4.6 Kisan Call Centre (KCC)

The Ministry of Agriculture, government of India has initiated a programme called, Kisan call centres in which farmers from remote places in the country can call over telephone to the subject matter specialists (SMS) in the district headquarters (at agricultural departments, agricultural colleges, agricultural technology information centres etc.) and pose problems about their farming to get suitable solutions at various levels. Besides, agricultural information kiosks and other service centres opened by agri-business companies and NGOs also provide the needed information to the farmers through electronic media [8].

4.7 Cell Phones

Cell phones serve as an important source of knowledge dissemination. It can be accomplished via SMSs. Cell phones may be used for instant communication; to discuss certain issues; to get market information; to obtain supply and service; and arrange buying or selling etc.

4.8 E-Chaupal: Farmer Friendly Networking Technology

ITC has promoted a network of e-chaupals to provide farmers access to infrastructure improved physical logistics and virtual e-network. The e-chaupal provides relevant and real-time information on weather, prices and news, customizing information in terms of knowledge. In addition, the e-chaupal provides a direct marketing channel for farm produce. The yields are better due to better information. The farmer also gains from improved quality and reduced transaction charges. It is a partnership model where the ITC, the farmers and the e-chaupal operators work on a win-win situation. To overcome the power shortage in rural areas, ITC has put up solar panels, batteries and UPS (uninterrupted power supply) for back up supply. The farmers use the e-chaupal free of cost. The government does not subsidize it. The e-chaupal pays for itself, by eliminating latent inefficiencies in the supply chain. The value unlocked by the reduction of inefficiencies is utilized for the creation of infrastructure. Within the e-chaupal, all selling takes place at one farm gate. By avoiding losses like multiple legs of loading and unloading, wastage, quality differentials and time loss, the e-chaupal attains a net saving of about 3 percent of costs. While 0.5 percent goes to the
sanchalak, 0.5 percent goes to the sanyojak. The ITC gains the remaining 2 percent, utilizing a fraction of it for infrastructure creation.

4.9 Bhoomi Project, Karnataka

A computerized land record Kiosk (Bhoomi centre) has been set up in all the 177 taluks in Karnataka. At these taluk offices a farmer can obtain a copy of an RTC (Record of rights, Tenancy and crops) online by paying a nominal fee. Improving the land record delivery system has a significant social and economic impact in rural areas.

Departments such as forestry, animal husbandry, sericulture and cottage industry could create content in their own domain for delivery to rural areas.

An evaluation showed that:

1. Bhoomi kiosks were easy to use. Most users of Bhoomi system found the system to be very simple, and were able to utilize it with no help.
2. Less complex procedures. Most users of Bhoomi Kiosks did so without having to meet any official except the counter staff.
3. Error-free documents. Users indicated that the Bhoomi Kiosks provided error-free documents to more users.
4. Rectifying errors. Users had the confidence to complain and get timely rectification of errors.
5. Nominal cost of service. One could get a hard copy of the RTC at a nominal fee and receive a receipt for the same.
6. Low hidden costs. The hidden costs of time and effort to secure the certificates were very low as most users got the RTC at one visit.
7. Reduction of corruption. Paying of bribes to obtain the documents were greatly reduced
8. Staff behavior. Users perceived staff behavior at the Bhoomi Kiosks as good.

Bhoomi empowers the small rural farmers in many ways. Armed with genuine certificates, farmers can raise loans for a variety of purpose and cannot be easily harassed by the officials. Now the records are in the public domain and can be easily verified by anyone.

The system generates various types of reports on land ownership by size, type of soil, crops, owner’s sex etc. which could be useful for planning poverty alleviation programmes, supplying agricultural inputs and credit etc.

4.9.1 E- sagu

Sagu means cultivation in Telugu language. E-Sagu provides a quality personalized agro-advice to the farmers starting from pre-sowing operations to post-harvest precautions. Founded in March 2004, the operation of eSagu involves a team of agriculture experts who work at the main eSagu centre, normally located in a city, supported by agricultural information system. One eSagu local centre comprising few computers and one computer operator is set up for a group of about ten villages. A coordinator, who is an educated and experienced farmer, is stationed in the village and is in touch with agricultural experts daily.

Depending on the crop, each coordinator is assigned with a fixed number of farms. The coordinator collects the registration details of the farms under him including soil data, water resources, and capital availability and sends the information to the main e-Sagu system. Every day, the coordinator visits a fixed number of farms and takes four to five photographs for each farm. A CD is then prepared containing the photographs and other information and sent to the main system by a regular courier service, which the agricultural scientist uses to suggest the next course of action for the farmers.

India’s position in ICT

- India is the second biggest software exporter globally.
- Highest number of ICT projects implementation across the country.
- Forty five percent of the world ICT projects implemented in India.
- India is a country is full of natural resources, knowledge and wisdom.

5. ICT: REQUIREMENTS IN KASHMIR

Heavy investment, Infrastructure development, Technical support and Institutional support are the basic pre requisites that need to be pressed for as early as possible so that the farmers make best use of the ICT technologies related to agriculture. Development of community radio stations, farmers’ portal and many other web portals in Kashmir valley in line with the national ICT standards would require a heavy initial investment but would be quite fruitful in
connecting the farmers to the rest of the world via cyber technology. Training programmes for the farmers in operating the computer terminals and web portals will help in their skill development and sound handling of the internet-based ICT projects. Institutions like agricultural universities, farm science centres and the state agricultural departments need to come forward in assuring the full support to the farmers with regard to the information technology.

6. CONCLUSION

Information communication technology is a backbone to any agricultural community so far as the limited extension staff is concerned. The valley of Kashmir has the huge potential to gear up its agricultural economy if all the necessary requirements with regard to ICT establishment and development are put in place by the state government and the state agricultural university. ICT could well be the potential tool to overcome the challenges posed by the hilly terrain, remoteness of villages and the limited extension staff availability in the valley of Kashmir.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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