

Extension, ICTs and Knowledge Management: The 10 difficult questions



ICT enabled extension offers new opportunities for bridging the knowledge gap in Indian agriculture. But several critical challenges still remain. Instead of asking “what ICTs can do for extension”, it is time to ask how “how extension can harness ICTs in existing contexts, argues Dr Shaik N Meera.

Agricultural Extension Services do play an important role in delivering information, knowledge and advice to farmers. However to remain relevant in these changing times, it has to specialise in “effectively managing and transferring knowledge or information packages”. Information and Communication Technologies (ICTs) can play an important role in supporting extension in this regard. Over the past two decades, Governments all around the world have invested heavily in strengthening the national ICT infrastructure. ICT applications (Box 1) are supposed to bring new information services to rural areas on which, farmers, as users, will have much greater control than ever over current information channels.

Box 1: Information and Communications Technology (ICT)

ICT is an umbrella term that includes computer hardware and software; digital broadcast and telecommunications technologies as well as electronic information repositories such as the World Wide Web or those found on CD-ROMs. It represents a broad and continually evolving range of elements that further includes television (TV), radio, mobile phones, and the policies and laws that govern these media and devices. ICTs are often used in plural sense (ICTs) to mean a range of technologies instead of a single technology.

ICTs in Extension Initiatives

In spite of the tremendous potential of ICTs in improving extension delivery, the developing countries have not adapted a sound strategy to utilise the ICT enabled extension effectively. Though several case studies on ICTs in agriculture exist in India, there hasn't been any comprehensive study that tried to analyse ICTs in relation to extension. Very few studies focussed on the impacts of the ICT initiatives on the stakeholder community. Though the available literature on "ICTs for Agricultural Extension" brought out issues related to ICTs, the extension context was less discussed and this remains as a major limitation of these studies.



Workshop on the Rice Knowledge Management Portal organised by the Directorate of Rice Research

As there is no single optimal or best model for providing need specific, purpose-specific and target-specific extension services, there is no one-size best fit approach for ICTs in Extension. The ultimate choice of the ICT enabled agricultural extension approach depends on:

- The ICT policy environment,
- The capacity of ICT service providers,
- The type of stakeholders and the ICT approach adopted, and
- The nature of the local communities, including their ability to access and apply the knowledge and various e-readiness parameters.

ICTs being employed in extension could be broadly classified as follows:

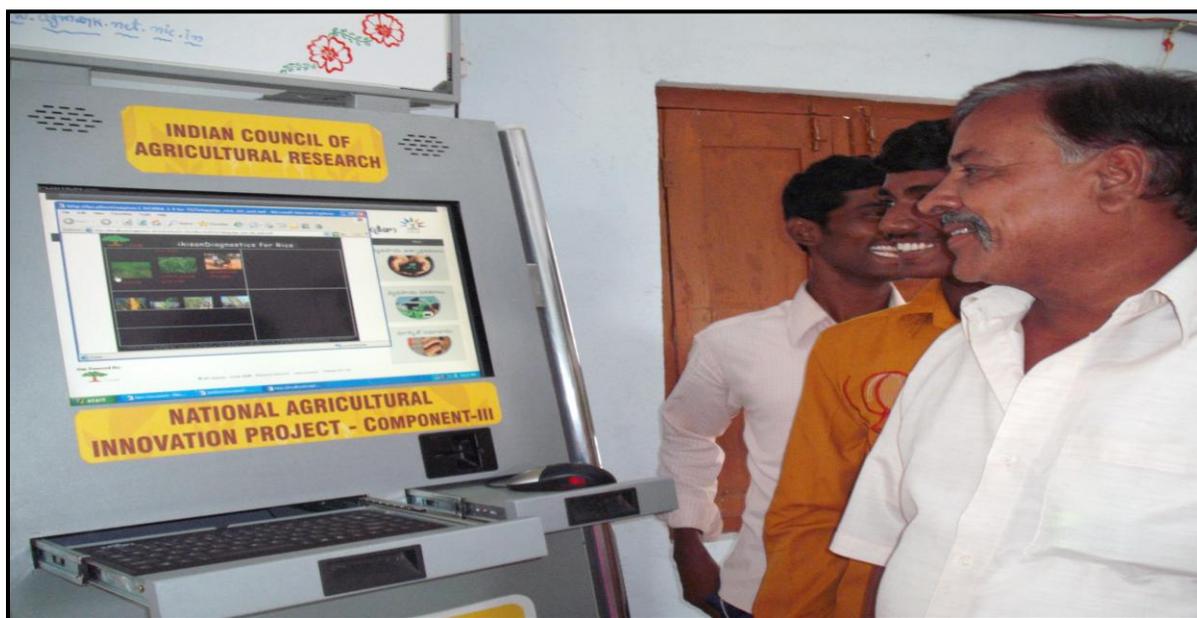
Table 1: Categorisation of ICT extension efforts (based on tools, process and integration)

Category	Types	Examples
ICT in Extension - Tools		Earliest / Popular efforts
	Computer Networks	Gyandoot (Madhya Pradesh), Warana Wired Village Project Information Village Project e-choupal models
	Audio- Video Conferencing	MANAGE’s video conference facility
	Community Radio	Deccan Development Society, Sauras Crane of Kutch (Gujarat based NGO – name translated), UAS- Dharwad, so many SAUs
	Mobile Telephony	IFFCO’s Kisan Sanchar Limited, RML (Reuters Market Light)
	Landline Phones	Kisan Call Centres
	Automated Tools	Automated Milk Collection Centres (tools) of AMUL
	Blended	Agrisnet of State Departments
ICT in	Hub & Spokes Model	e-Sagu of IIIT Hyderabad,

Extension - Processes		Kissan project of IITM, Kerala
	Kiosk Model	Common Information Centres/ Common Service Centres, ATIC
	Knowledge Management Process	Rice Knowledge Management Portal, Agropedia, DigitalGreen
	Open and Distance Learning (ODL) process	TN Agritech Portal, IGNOU
ICT in Extension - Integration	Integrating ICTs into existing extension systems	ICT efforts of KVK`s such as Baramathi
	Optimizing with minimum change in existing extension systems	ICT-ATMA Integration RKMP into existing AICRIP-extension
	Maximizing with maximum change in the extension systems	Yet to be developed (not sure yet about the feasibility)

ICTs in Agricultural Knowledge Management

The mammoth task of driving the knowledge sharing process in agriculture necessitates extension to adapt to ICT mediated Knowledge Management (KM). Of late, organisations in agriculture realised the importance of managing the knowledge (implicit & explicit; internal & external) for effective targeting and dissemination. The new face of `digital divide` is "digital information/ knowledge divide". Knowledge management can play a pivotal role in enhancing agricultural productivity by enabling appropriate knowledge and information to reach knowledge intermediaries and farmers in a timely manner. Agricultural Knowledge Management strategies are built on huge agricultural content (Data-information-Knowledge).



Touch screen kiosks at the Knowledge Share Centres established by the Central Research Institute for Dryland Agriculture (CRIDA)

In most developing countries, agricultural institutions have not moved to a level where new and consistent information services to farmers and other stakeholders are offered based on quality and contexts. For adopting KM strategies in extension, we need to pay more attention to (1) codifying and sharing tacit (i.e. implicit) knowledge, (2) creating new knowledge and (3) having everyone in the organization involved in the process. Only then can the organisation be viewed as a living organism capable of creating continuous innovation in a self-organising manner.”

Box 2: ICAR and Knowledge Management

Explicit knowledge documented in the form of bulletins, text books and other publications will not be sufficient for addressing knowledge needs of various stakeholders. Though agricultural research organisations produce large amounts of scientifically validated knowledge, very little of it is transformed to action to solve real problems in the field. This realisation led ICAR (Indian Council of Agricultural Research) to strengthen its initiatives on knowledge management.

As a first step towards achieving this objective, an exclusive portal on rice viz., Rice Knowledge Management Portal (RKMP) was developed. The RKMP has several global firsts in terms of comprehensiveness and utility (<http://www.rkmp.co.in>). Built on web 2.0 standards, this portal caters to location specific information needs of many stakeholders (policy makers, farmers, extension professionals, researchers, traders, NGOs etc.,) on 24X7 basis. This portal is an example of harnessing the enormous potential of ICT mediated KM strategies into existing ICAR (especially All India Coordinated Rice Improvement Project - AICRIP) set up.

The Ten Difficult Questions?

ICT enabled extension offers new opportunities for bridging the knowledge gap in Indian agriculture. But several critical challenges still remain. Most of the on-going initiatives are work in progress and there is a lot to learn from these.



Success of community radio essentially depends on its ability to generate and transmit locally relevant content

As an extension scientist closely working on ICT initiatives in extension, I would like to raise 10 questions that we need to answer if we are serious in promoting ICT enabled extension.

1. Have we understood the context well?

Agricultural extension, whether public or private, operates in a context that influences the organization, form, and content of transfer activities. The dominant characteristic of that context is change. As the changing context affects all aspects of extension, the context should be examined and understood so that extension can be better managed. The history and recent developments in Asia illustrate that ICT "prescriptions" are doomed to fail if they are not based on `farmers needs`. And it must be driven by learning about what works and what does not and by the nature of local circumstances and context. As extensionists (with a comprehension on functional and structural components of our institutes/ organisations), are we in a position to envision opportunities for ICT interventions?

2. Do we have clarity on what is our role in ICTs / KM enabled extension?

Most of the ICT4D reports end up stating "what ICTs can do for extension". Seldom have they addressed the issue of "how Extension can harness ICTs in existing contexts". What would be the role of extension scientists in addressing such issues? If extension scientists have to take a lead in this, they require to know how farmers and extension workers access knowledge; how communities at the village level perceive the value of ICT enabled services; and how they could be linked to organizational knowledge flows. Of course, there are other well known issues such as availability of relevant content, trust on the source of information the role of infomediaries, sustainability of ICT interventions etc that also needs to be considered. However, I would expect extensionists to focus on the most practical ways of content development (who, how, processes, scale and depth) and developing the capacities of of infomediaries. Can we address relevant issues such as what makes public extension workers to become infomediaries? What about their job chart? Is there a scope for incentives for efficient performance using ICTs? What indicators should be in place before NGOs/ private sectors integrate their work with that of other ICT service providers?

3. Are we practical enough while thinking ICTs strategies?

ICT applications alone will not be readily available, accessible and applicable in farmers' conditions. It requires higher commitments from field extensionists (There is myth that ICT extension experts are not engaged in field extension activities). How to build farmers communities (such as radio rural fora) so that ICT services/ content are applied in the field conditions? Is there a scope for `zooming in zooming out` farmers learning/ experiences using ICTs. [For instance, take the case of "Digital Green". It starts with local communities` practices, their innovations and the words they use in relation to the chosen topic (zooming-in). Key learning needs are defined and videos are produced in close consultation with the end-users. Consequently, while showing the draft videos to more villages (zooming-out), more insights are gathered about the innovations and their socio-cultural context, and further adjustments made.] While doing so what are the validation/ credibility issues? - How to overcome them?



Using a Pico projector to project a video developed by Digital Green on agricultural technology

4. Is 'access' the only issue that makes ICTs relevant?

ICTs are not a panacea for all the problems of extension. How many of the key challenges in extension could be addressed by ICTs? Whether use of ICTs will assure (*ceteris paribus*) efficient and effective extension delivery? For instance, can ICTs address the issue of weak linkages between research & extension? What other enabling factors should we consider? Similarly, considering ICAR as a major "reliable source of research outputs", what constrain its scientists and organisations in sharing information? Can ICTs help in this regard? If storing/ retrieval/ re-writing/ sharing / re-packaging/ uploading are the problems, then what activities have to be planned to strengthening this. As extension scientists, is this a priority area for us?

If SDA (State Department of Agriculture) is a major extension body - then what constraints are there for grass root extension worker in accessing (ICT enabled services/ content)? What enabling factors should we consider? If 'access' alone is the problem - then rural ICT centres can help. But are we sure that 'access' is the real problem or are there other problems which we don't (want to) see.

If we want to bring all Research -Extension organizations onto a common platform, what adjustments need to be made? What is the 'level playing field for each of them'? Whether their mandates allow them to do so? What incentives are required? For instance, researchers would be inclined to publish research articles rather than contributing the content to ICT – extension initiative.

5. Are ICTs only for teaching or are they meant for learning too?

The main focus of reforms in extension currently is towards learning rather than teaching. This learning emphasis would require new methodologies and approaches that are demand-driven and increase the real, interactive participation of all stakeholders at all levels of decision making in an extension delivery network. Can we integrate ICTs for doing this? If yes, how? Looking at ICT initiatives in the past, I see lot of them as 'prescriptive' (teaching) initiatives rather than as 'learning' initiatives. For example, most of the initiatives do not adopt web 2.0 standards (enabling users to contribute their experiences, locally

developed knowledge). Can we convince Agri R&D managers to have platforms that share this kind of initiatives on a problem solving mode? If yes, validation and contextualising the content (making information into knowledge) can be done without much effort.

6. How can ICTs complement other extension approaches?

While focusing ICTs, we tend to completely ignore basic extension work/ methods that an extension worker uses. For example, if field demonstrations are conducted by extension workers - how ICTs would contribute to maximizing its impact. Whether `field days` can be captured in video format and then these videos are shown in neighbouring villages? There are `n` number of basic extension tools that could be blended effectively with ICTs. Can we list out such experiences to formulate a strategy?



On farm demonstrations and trainings are particularly important to promote adoption of new farm practices. However ICTs could be used to promote the impact of these extension approaches.

7. How to make knowledge available, accessible and applicable? Can we move from managing ICTs to managing knowledge/ services using ICTs

"Issue of content/ knowledge" is perhaps the most neglected of all. (Even though we know the importance of it - we seldom know how to do?). We are yet to grow from addressing connectivity divide (establishing 'ICT kiosks') to knowledge divide (Managing the knowledge). Over the years, ICT experts have over simplified the issue of agricultural content/ knowledge - they report when the entire ICT infrastructure is available - within no time `knowledge can be generated/ digitized/ uploaded). It's high time; we focus on this as well. Our recent initiative of Rice Knowledge Management Portal (www.rkmp.co.in) tried to build, validate, and contextualise the rice knowledge (running in more than 14,000 pages with 18 platforms) in a short span of 2.5 years. But for Indian agriculture as a whole, the effort required is huge. In the absence of such validated knowledge on the web, the junk is being fed to agricultural stakeholders. Are we, as extension scientists, willing to lead these ICT mediated knowledge management initiatives?

8. How to enable knowledge with time critical services?

I do not know how feasible to integrate `knowledge` with `time critical services` (the services that are critical for decision making and are required in timely manner) in the whole chain of ICT actors. The "e-choupal" from ITC is a good case for this. The e-choupal links knowledge and technology transfer for

creation of economic and social capacity and provide an end to end solution with the farmers. But when we think of modernising extension in pluralistic environment - what strategies should be in place? The lead extension centres in India are yet to try these possibilities.

9. How do we measure the impact of ICT interventions?

Impact of extension activities has been questioned always because attributing 'change' to extension interventions was never taken seriously by extension researchers. Same is the case with ICT interventions. Benchmarking and establishing causality is a fundamental part of result measurement, as we want to see what impact a particular intervention has on the target population. In other words, is there a causal link between the ICT activity that we undertake, and the result we see?

10. Can we develop our own indicators for ICTs, KM extension interventions?

We should have evidences of use, pattern, purpose, users etc., for ICT / KM activities. Without this evidence, ICT experts will promote over simplified success factors such as number of hits (say from google analytics). For example they derive success for 'online repositories' based on the number of hits directed for every key word on google. But as extension professionals, we know for sure that this doesn't mean anything. Now the question is how to develop and use appropriate methodologies for better impact assessments for 'soft extension interventions' such as knowledge based advisories? Do we have sufficient indicators to establish evidence of use of ICTs in extension such as:

- Access - Relative easiness in access due to ICTs,
- Availability - Quality of knowledge provided through ICTs
- Appropriateness - comprehensiveness (there is a paradox- while focusing on comprehensiveness, we may lose appropriateness to a specific location)
- Complimentary of knowledge with the existing services/ infrastructure of extension organizations
- Presence of pre-requisite conditions and multiple deliveries and opportunity costs
- Willingness of partners to uptake (ability of content to value add to their services)
- Attributing the 'knowledge' to productivity/ income/ other gains

Understanding the above issues related to use of ICTs is critical for extension scientists and field extensionists to fully harvest the potential of ICTs. Instead of "ICT centric approach of extension", it is time that we move towards "extension centric approach for ICTs".

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