ICT's at grassroot level- Experiences of CRIDA

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For sustainable agricultural development access to information, knowledge about interventions, technology that is accessible and available at farmers doorstep, is prerequisite. But prior to that all that need to know is what to do and how to do it. At this juncture IT applications play a crucial role to support learning and method of application through which more sustainable management of information and knowledge resources could be done. Shifting paradigms in technology transfer and knowledge access at the grassroots level focuses on the integrated use of modern ICT tools based on people's felt needs for the technology. In the present era of knowledge revolution, with the advent of Information & communication technologies like computers, mobile phones and other facilities like video conferencing etc. a lot of progressive dynamics are visible in human life. It is also essential that the knowledge transferred using ICT tools should meet the immediate demand / priorities of the clientele in terms of knowledge, attitude skills and practice. These ICT tools could be used efficiently for knowledge resources management in agriculture also in order to address the knowledge gap among the farmers, researchers and extension functionaries.
In this backdrop, an initiative is taken up under a project on "Sustainable rural livelihoods through enhanced farming systems productivity and efficient support systems in rainfed areas". This is an action research project implemented under the National Agricultural Innovation Project in selected village clusters of the 8 backward districts of Andhra Pradesh. A consortium of institutions from public, private and NGO sectors are implementing this project. The major objective of the project is to bring in an overall improvement in the livelihoods of the rural households. It facilitates farmers and other stakeholders to use the knowledge resources suitably designed for them. The paper would reveal how the ICTs are integrated and used in the project to harness technology access and utilization by rural clientele through knowledge management.

INTRODUCTION

A large pool of technical knowledge is available with various sources like research organizations, state agricultural universities, NGOs, and farmers for improving the productivity of rural enterprises. Yet this knowledge has not reached the needy and brought out desirable changes at the grassroots level. There are many reasons for this knowledge gap. The major one being lack of adequate number of extension functionaries at the field level who have been traditionally trying to bridge the knowledge gap between research and farmers' fields. Due to the advent of ICTs as tools of information dissemination in the last decade, there is hope for bridging the knowledge gap with little or no human intervention. Introduction and promotion of innovative applications like ICT products would not only meet the specific needs for improving efficacy of technologies but also assist the agricultural extension functionaries in collecting, organizing and communicating useful information to farmers in an efficient and cost effective manner. Sporadic attempts have been made to effectively use ICTs as knowledge empowerment tool in various settings across developing countries. India is one of those countries that has employed this tool effectively to

demonstrate the power and possibilities with ICTs as having transformative potential. However, many issues remain to be addressed to realize the full potential of ICTs in the rural sector. Access to information and information to access are the two sides of the point to attain e-inclusion of 1.2 billion + people of India and in particular the 120 million farming house holds out of which 80 per cent who are small and marginal farmers (Moni et al. 2011). Keeping this in view, an attempt is being made to understand what it takes to set up ICT enabled rural knowledge centres and run them effectively as tools of knowledge empowerment under a project mode.

THE SETTING

The CRIDA led NAIP sub project "Sustainable rural livelihoods through enhanced farming systems productivity and efficient support systems in rainfed areas" is being implemented as an action research pilot project in selected village clusters of the 8 backward districts of Andhra Pradesh involving a consortium of institutions from public, private and NGO sectors.(Table-1) Realizing the importance of ICT's for development of sustainable societies in viable rural space ,one of the specific objective of the project is "capacity building and skill development of primary and secondary stakeholders through knowledge sharing, collective action and use of modern ICTs". The present paper discusses the issues and challenges associated with use of ICTs to access useful information by the rural community and its utilization. The project has adopted an innovative deployment framework which addresses issues of access, content, connectivity, facilitation, maintenance and last but not the least, the sustainability.

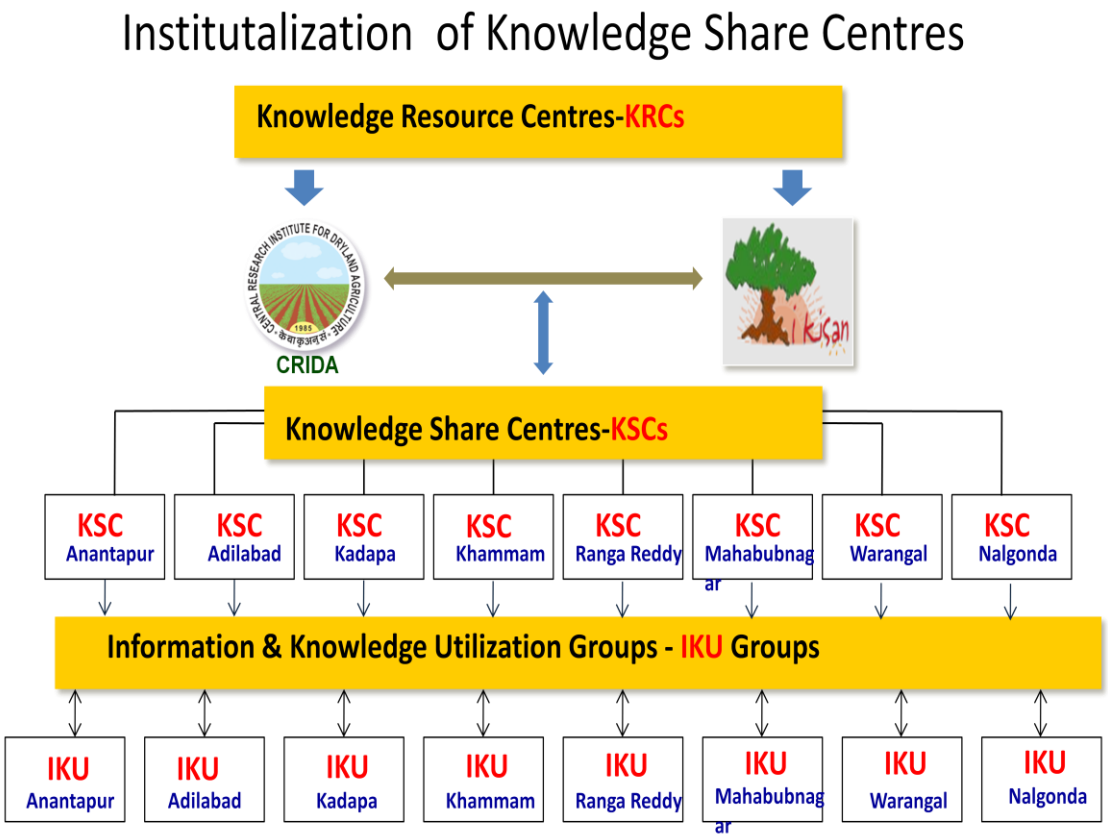
Table 1: Project cluster profile

District	Cluster Anchor	Cluster Where KSC located	Villages/Hamlets covered under the cluster	Geo gra-phic al Area (ha.)	Hou se hold s (No.)
Adilabad	KVK, Adilabad	Seethagondi	Old Somwarpet, New Somwarpet, Garkampet, Arkapalli, china Malkapur, Pedda Malkapur, Kotwalguda	1913	575
Palamur (Mahabub -nagar)	BIRD-AP	Jamisthapur	Jamisthapur, Telugu gudem, Kodur Thanda	1217	739
Anantapur	Agriculture Research Station, Reddipalli	Pampanur	Pampanur, Pampanur Thanda, Y.Kothapalli	2111	576
Nalgonda	SAIRD, KVK, Gaddepalli	Dupahad	Jalmal Kunta, Seetamma Thanda, Yellappa Kunta Thanda, Chinna garekunta, Peda Garekunta, China Seetaram Thanda, Peda Seetaram Thanda, Lalsing Thanda	800	621
Warangal	MARI	Jaffergudem	Jaffergudem, satyanarayanapur, Ramannagudem, Kusumbai Thanda, Chakal Zal Thanda,	2070	689

			Lokiya Thanda, Vapul Gadda Thanda, Cherla Thanda		
Khammam	SECURE, CWS	Tummalacheruvu	Tummala cheruvu, Bandla Pullaiah Gumpu, Kurvapalli Kotturu, Koremvari Gumpu, Ramavaram, Mamillavai, Venkatapuram, Bheemavaram	6934	629
Ranga Reddy	WASSAN	Ibrahimpur	Ibrahimpur village, Ibrahimpur Thanda/ Roopsing Thanda, Dhadi Thanda, Malkaipet Thanda	898	409
Kadapa		B. Yerragudi	Brahmana Yerragudi Kaspa, V.N.Palli, Mudindla Palli, Kapu Palli, Konampeta, P.V. Palli, Puttakarla vary colony, Madhigapalli	1354	516

Set up of Knowledge Share Centres

ICTs for rural masses is planned through establishment of **KSC (Knowledge Share Centres**) at grass roots level which envisages the access to value added information services on latest tools and technologies of agriculture for improving the rural livelihoods. It also facilitates the sharing of data, information and the collective knowledge gleaned from research, experiences and interaction with cluster partners.



This is operationalized by working with a partner ikisan who has an exclusive mandate to deploy ICT equipment in a secure premise specially built for the purpose. Besides Ikisan is also responsible for coordination of content development, periodical updating of content, continuous maintenance of ICT equipment, training and capacity building of rural youth for enabling access to knowledge by the rural community. The cluster anchoring partners who work in tandem with IKisan are responsible for the upkeep of KSC and mobilization of community so that the last mile connectivity can be established. This is done by identifying potential youth to train as KSC operator, organizing the community as Information and Knowledge utilization (IKU) groups, and providing feedback to the lead centre about the functioning of KSCs. To sum up the organization of KSCs at the cluster level is as follows:

i. Knowledge Resource centers- Apex level for generation of need based knowledge resources.
ii. Knowledge Share centers-Cluster level for dissemination of knowledge resources.
iii. Information and Knowledge utilization groups- For adoption of the knowledge resources diffused at grassroots level.

Services of the KSC

The grassroots level clientele have serious concern over the credibility of channels by which information and technology developed by the research organizations reaching them or available to them. Hence, the channel, mode and the way of delivery mechanism plays a crucial role for access and utilization. In this context an information need assessment survey was conducted across the clusters to ascertain the communities' information need priorities and sources. This helped to initiate site specific content development for deployment in the kiosks. This content is made available to the rural communities through different tools such as touch **screen kiosks**, query reddressal system through **Interactive voice responsive system-** IVRS, Internet and **display announcement system (**DAS).

Touch Screen Kiosk

As a part of outreach event through ICT tools it was planned to introduce touch screen the unique, interactive tools for one stop access to information to cater the needs of individual or very small group of farmers with minimum literacy standards.

Fig.2: Women get to know how to access information from touch screen

Touch screen information kiosk version is set up in a stand-alone system equipped with content containing appropriate images& voice backup files of different topics on Crop information like Package of practices, Management timetable and Crop diagnostic services (QSS) of crops pertaining to NAIP clusters is provided . So far the content of ten cluster specific crops Paddy, cotton, chillies, redgram , blackgram, bengalgram, greengram, Maize, Castor & groundnut are placed in kiosk for accessing information.

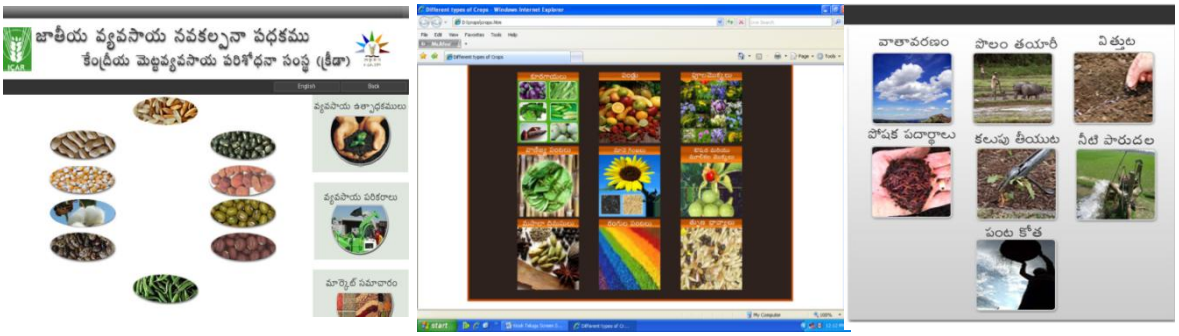


Fig.3: Screen shots of the content in local language placed in kiosk

Display announcement package

It is a communication media in the Knowledge share center to address the needs of medium to large group of audience. **The** display system comprising the display TV monitor with LCD screen is connected to data input computer.

Fig.4: Rural women watching film on DAP

It displays the information with voice input which can serve the needs of illiterate farmers. Now it is being used to play the films through CDs/DVDs that create awareness of the improved and latest technologies of different crops.

Interactive Voice Response System (IVRS)

This particular Interactive Voice Response System (IVRS) application was developed in order to provide content and current market information in voice format to farmers who are far away from the KSC and those who are not able to come to KSC. The voice information is provided in local language (Telugu) and as well as in English. By using this service farmer can directly get the current price information, weather information, best management practices for agriculture and allied information make a call from his mobile or from any pay phone. Toll free number of IVRS is **1800 4252436.**

Table-2: IVRS Usage in Clusters April 2010- March2011

Name Of Cluster	No.Calls	Duration(Min)	Avg.time/Call(Min)
Jamisthapur	113	176	1.56
Seethagondi	79	148	1.87
Ibrahimpur	167	314	1.88
Gaddipalli	398	856	2.15
B.Yerragudi	251	372	1.48
Pampanur	83	107	1.29
Tummalacheruvu	137	198	1.45
Jaffergudem	40	62	1.35

Internet

Internet is one of the most important components in Information and Communication Technology that forms the major part of the NAIP. Internet facility was provided for emails, job search and examination results for rural youth and farmers as well. Train and bus ticket reservations are also being done which can be printed out without wasting time and money. Since the remote sites were not connected with basic telephone lines, a survey was undertaken to determine the strength of mobile signals in each of the sites. Based on the outcome of the survey, USB data card based Internet connectivity was provided. The following table summarizes how the mobile connectivity of different service providers was used for providing the Internet connectivity.

Table 3 Mobile network identified for Internet connectivity

Cluster	**District**	**Network**
Dupahad	Nalgonda	IDEA
Jaffergudem	Warangal	AIRTEL
B.Yeeragudi	Kadapa	AIRTEL
Pampanur	Anatapur	BSNL
Tummalacheruvu	Khammam	AIRTEL
Jamistapur	Mahabubnagar	IDEA
Seethagondi	Adilabad	BSNL
Ibrahimpur	Ranga Reddy	IDEA

Mobile based advisories

The other prominent ICT application planned using IT tool mobile phone to reach farmers is "Sasyavani" short message services as text messages as well as voice alerts. Timely delivery of accurate advice/message/diagnostic & solution services is an essential feature of the Sasyavani ICT service. As the alerts about information of weather information, market prices, crop management alerts etc,. Exploitation of the mobile phone as a communication device ensures fast precise accurate needy location specific information dissemination to the end users. The service would enable clientele to access weather information, market price alerts in both audio and message forms with easy to understand interface.sasyavani is providing instant access to the best management practices of the selected crops relevant to locality, daily market information for chosen commodities by the farmer pertinent to cluster villages, weather based agro advisory services, pest diagnostic and management services which enables the farmer to have better yield of quality produce fetching better price.

KEY FINDINGS

KSC s have achieved the objective of establishing remote access to information and knowledge resources in agriculture to clientele ,Three years experience from the NAIP project in A.P. revealed that this innovative technology transfer through KSCs is quite successful with gradually increasing foot falls in all the eight pilot villages introduced

OPERATIONAL CONSTRAINTS

Connectivity

Despite the efforts to set up internet facility in the remote areas , the speed with which the internet works is at 128kbps only. Linkages with NRSC are being explored to have satellite connection through VRC concept in the cluster villages to overcome the above problem.

Community mobilization

Mobilizing the community to use the ICT extension services at Knowledge share centers is an initial challenge in the project. Collective and cooperative efforts of cluster partners (NGOs), experts from KRC(CRIDA & Ikisan) and operators in convincing the farmers about the services is foundation step for success of Knowledge share centers.Awareness camps, Focus group interactions with different groups like farmers, rural women, youth etc,.. quiz exercises on ICT services of KSCs, incentives for the clientele who register for IKU groups motivated rural community and enhanced their participation.

Attrition

Attrition of the KSC operators is another challenging issue which is hampering the services of KSC. Monthly review meetings capacity building programmes to KSC operators on updates, new ICT services were regularly done to keep them abreast of changing ICT environment of the KSC enabling them to offer better services to farmers.

Frequent repairs

With so much infrastructure established in the KSC's frequent problems in operating the equipment arouse which may hamper the services of KSC. The operators and some village youth are suitably trained to tackle the problem

Power problems

Particularly during summer months the power cut for continuous six hours are affecting the KSC operation. Even though there is two hour backup with UPS it is not sufficient to handle the operations. It is being planned to support the KSC with inverters from the project funds

SUMMARY

Advent of Information & communication technologies changed the global scenario in reaching the clientele. In the present era of knowledge revolution, with the advent of IT tools like computers, mobile phones and other facilities like video conferencing etc,. lot of progressive dynamics are visible in human life. These ICT tools could be used efficiently for knowledge resources management in agriculture in order to address the knowledge gap among the farmers, researchers and extension functionaries. Application and use of ICT's in agriculture sector puts forward hitherto untapped possibilities for technology access and utilization **.** At a same time it is also essential that the knowledge transferred should meet the immediate demand / priorities of the clientele in terms of knowledge, attitude skills and practice. It is in this context Knowledge Share Centres. ensures the availability of right information at right time if not at their door step , but in the common place in their village. The role of KSC as information and knowledge delivery systems has become crucial in generating, disseminating and utilization of value added information for farm related activities.ICTs if properly deployed with specific advice to village level the location specific advisories offer an apt solution for the problems faced by the farmers. The experience of

knowledge share centres functioning at field level reveals the need for trained manpower with expertise to tackle repairs of ICT tools, solutions to sustainability challenges and reduction in the operation cost without compromising on the quality of the services.

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