

A Case of ICT in Agriculture and Rural Development in J&K

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Abstract: *In order to transform rural community into an information driven, modern and competitive society, the role of Information Communication Technology (ICT) can not be ruled out. The existing Transfer of Technology mechanisms and extension programs, mostly run by the government departments, eg: Community Information centers (CIC) by National Informatics Center (NIC) in Jammu and Kashmir state & North eastern states, Agriculture Universities, Agriculture knowledge centers (Known as Krishi vigyan kendras (KVK)) of India are slow and in many cases ineffective as bridges between the research community and the farmers as the proper use of ICT hasn't been made till date. For this study, a Stratified sampling has been done for the in-depth analysis to find out the relation of ICT with agriculture and rural development on a five point likert scale and using a Socio-Economic-Scale named Uday Pareek scale (Uday Pareek, 2001).*

Keywords: *ICT, agriculture, rural development, technology divide, farming community, community Information Center, Agriculture knowledge Center, Krishi Vigyan Kendra.*

1. Introduction

In J&K, with 70 per cent of the population residing in rural areas, the key development goals consist of reducing poverty, raising levels of education,

improving standards of health, enhancing empowerment and reversing the loss of environmental resources. Quick dissemination of technological information from the agricultural research system to the farmers in the field, and reporting of farmers' feedback to the research system is one of the critical inputs in the transfer of agricultural technology. The information and communication support during the last five decades has mainly been conventional. It has primarily been public sector service to the farming community. The extension personnel of the Department of Agriculture disseminated technological messages to the farmers manually. This approach has not been able to reach the majority of farmers spread across the whole country. To reach million of farmers spread over a vast and varied geography is an uphill task. The diversity of agro-ecological situations adds to this challenge further. Therefore, educational demands from farmers are urgent, huge, multiple and practical as well. The issue of access and quality of education in rural area becomes the primary challenges before administrators of India today. There are many major challenges for agricultural and rural development in India as follows: extending access and improving quality of public services including health, education and good governance; faster dissemination of technological research to the grassroots level; providing Information and Communication Technology (ICT) based services to the rural population; integrating the local market with national and international networks.

However, the major issues and concerns in meeting these challenges are: limited capacity building of rural masses; low purchasing power; lack of basic infrastructure; non availability of local content; lack of coordination among development agencies.

2. Study Area

The present study is an attempt on the proper implementation and effective use of ICT in the field of agriculture and rural development for the benefit of farming community and rural people of J&K.

3. Objective of the study

- To analyze a result-centric implementation of ICT in Rural Development.
- To know the constraints and limitations for the access to the ICT by Farmers and Rural People.

4. Review of Literature

In examining the potential of ICT for rural development, it is essential to recognise that information dissemination is a fundamental element of any rural development programme as rural areas are often characterised as information-poor (Robert Chapman and Tom Slaymaker, 2002). In understanding the relationship between ICT and rural development, indigenous sensitivities and the question of sustainability is at the core of what Michael Gurstein refers to as Community Informatics, which, in the context of rural development, posits that: ‘...access to ICT can provide a set of resources and tools that communities, and individuals living in communities can use to pursue their goals...It includes in the Developing Country context, how to ensure that individuals or communities may make use of the opportunities provided by ICTs’(Michael Gurstein, 2000). The very need to engage project partners and rural communities in dialogue to reach consensus on objectives which can increase the centrality of ICT in daily life because specific needs are accommodated. The positive side of participatory approaches to empower communities to pursue self determined goals can be seen with the Information Village Research Project managed by the MS Swaminathan Foundation (MSSRF). Begun in 1998 in Pondicherry, Southern India, the project connects 10 villages and attempts to empower rural communities beyond being a user of ICT to a becoming a manager of ICT programmes (S. Senthilkumaran, 2003). Communities are actively responsible for the development and dissemination of relevant content and databases in Tamil, management of the information and network, and the regulation and control of data. A second case study that involves the participation of rural communities in designing specific objectives is seen in the Dhar District of Madhya Pradesh, India, through the Gyandoot project where a network of kiosks in the district are linked to district headquarters of the local government to provide information and services which are

determined by villagers themselves (Gyandoot project, 2000). The potential to adopt ICT in innovative applications in light of technological limitations is seen with Kothmale Community Radio where information is retrieved daily from the Internet and broadcast to 350,000 listeners in Sri Lanka in the local language of Sinhala or Tamil (Kothmale Community Radio's portal). Another example of ICT as a malleable tool is Malaysia's Mobile Internet Unit (MIU) which has brought ICT skills training to rural students(Anis Yusal Yusoff, Sharon Y.P. Lim 2003).

5. Research Methodology:

5.1 Sample Features

The following two important sections have been selected for the analysing the role of ICT in Agriculture and Rural development and vis-à-vis analyzing the drawbacks and difficulties of Farmers and Rural people in making full use of ICT for their betterment.

- Farmers and Rural people
- Agriculture University Staff

Both the sections were administered with three questionnaires. First questionnaire is for Farmers and rural Community and their views about the use and no use of ICT. Second questionnaire is for Farmers to know their views about the Krishi Vigyan Kendras and the use of ICT by them. Third questionnaire is for Agriculture University Staff as they are at the core of formulating policies for the farmers and disseminating knowledge through KVK's.

5.2 Pattern of Analysis

The use of statistical tools is imperative for analyzing and interpreting the data more scientifically and accurately. The type of statistics tools used in the present study included measures of central tendencies such as mean, standard deviations and averages besides calculating the percentage scores. The correlations were also calculated where ever required. To see whether their existed significant differences between rural males, rural females and Agriculture University staff, t- tests and z tests were performed in addition to ANOVA(Analysis of Variance). Based on respondents profile,

Uday Parikh scale was used to do meaningful analysis of data. The means were calculated based on likert scale 1 to 5, 1 defining the presence of that item to minimum and mean score 5 signifies presence of that particular item to maximum.

TABLE 1: SEX WISE PERCEPTION OF FARMERS & RURAL PEOPLE TOWARDS PROBLEMS FACED IN USING ICT SERVICES

	PERCEPTION OF FARMERS & RURAL PEOPLE TOWARDS PROBLEMS FACED IN USING ICT SERVICES										Chi/z Value	Sig.
	Male					Female						
	SD	D	UC	A	SA	SD	D	UC	A	SA		
Illiteracy	0	0	0	70.4	29.6	0	0	0	65.5	34.5	7.21	0.03
	MEAN=3.52 SD=0.84					MEAN= 3.69 SD=0.96					Z=2.0	0.16
Unfriendly human intermediary	0	0	0	70.4	29.6	0	0	0	65.5	34.5	7.22	0.02
	MEAN=3.52 SD=0.84					MEAN= 3.69 SD=0.96					Z=2.0	0.16
Difficult software interfaces	7.2	0	0	22.4	70.4	0	0	0	32.7	67.3	6.29	0.04
	MEAN= 4.56 SD=0.82					MEAN= 4.67 SD=0.47					Z=0.99	0.32
Irrelevant information and services	6.43	0	0	11.8	81.7	0	0	0	1.82	98.2	11.3	0.00
	MEAN= 4.65 SD=0.81					MEAN= 4.98 SD=0.13					Z=8.98	0.00
Absence of local language	0	0	0	7.22	92.8	0	0	0	32.73	67.27	6.28	0.04
	MEAN=4.63 SD=0.61					MEAN= 4.67 SD=0.47					Z=0.22	0.64
Not aware about the possible usage of ICT in day-to-day life	0	9.3	0	13.1	77.7	0	32.73	0	1.82	65.5	38.9	*
	MEAN= 4.5 SD=1.03					MEAN= 4.0 SD=1.41					Z=8.87	0.00
outdated content	9.26	13.09	0	70.4	7.22	0	34.6	0	65.4	0	37.3	0.00
	MEAN= 3.5 SD=1.17					MEAN= 3.31 SD=0.96					Z=1.27	0.26

The female population shows highest degree of agreement towards **Illiteracy is a problem faced in using ICT** scoring a mean of 3.69 and SD of 0.96 with 65% females agreeing to it followed by male population with a mean of 3.52 and SD of 0.84 with 70% males agreeing to it.

The female population shows highest degree of agreement towards **Unfriendly human intermediary is a problem faced in using ICT** scoring a mean of 3.69 and SD of 0.96 with 65% females agreeing to it followed by male population with a mean of 3.52 and SD of 0.84 with 70% males agreeing to it and 29.6% strongly agreeing to it..

The female population shows highest degree of agreement towards **difficult software interfaces is a problem faced in using ICT** scoring a mean of 4.67 and SD of 0.47 with 67% females strongly agreeing to it followed by male population with a mean of 4.56 and SD of 0.82 with 70% males strongly agreeing to it and 22.4% agreeing to it.

TABLE 2: SEX WISE PERCEPTION OF AGRICULTURE STAFF FACTORS LIMITING THE USE OF ICT BY FARMERS

	SEX WISE PERCEPTION OF FACTORS LIMITING THE USE OF ICT BY FARMERS										Chi / Value	Sig.
	Male					Female						
	SD	D	UC	A	SA	SD	D	UC	A	SA		
Inability of farmers to use ICT	0.00	10.26	10.26	69.23	10.26	0.00	9.09	9.09	72.73	9.09	0.05	.99
	MEAN= 2.59 SD=1.14					MEAN= 2.64 SD=1.12					Z=0.12	.90
No perceives economic benefits	0.00	5.13	12.82	46.15	35.90	0.00	0.00	9.09	36.36	54.55	1.60	.16
	MEAN= 2.87 SD=1.32					MEAN= 3.27 SD=1.19					Z=0.96	.35
Too hard to use	0.00	12.82	2.56	25.64	58.97	0.00	0.00	9.09	18.18	72.73	2.78	.38
	MEAN= 3.26 SD=1.14					MEAN= 3.45 SD=1.21					Z=0.48	.64
Lack of technology infrastructure	0.00	5.13	17.95	51.28	25.64	0.00	0.00	9.09	36.36	54.55	3.62	.07
	MEAN= 2.62 SD=1.41					MEAN=3.27 SD=1.19					Z=1.55	.14
Cost of technology	0.00	10.26	12.82	53.85	23.08	0.00	0.00	9.09	36.36	54.55	4.58	.26
	MEAN= 2.64 SD=1.31					MEAN= 3.27 SD=1.19					Z=1.52	.15
No useful information	0.00	5.13	17.95	53.85	23.08	0.00	0.00	9.09	36.36	54.55	4.34	.49
	MEAN=2.59 SD=1.39					MEAN= 3.27 SD=1.19					Z=1.62	.12
Fear of technology	0.00	5.13	17.95	53.85	23.08	0.00	0.00	9.09	36.36	54.55	4.34	.95
	MEAN= 2.59 SD=1.39					MEAN= 3.27 SD=1.19					Z=1.62	.12
It ent time 2 spend on technology	0.00	2.56	20.51	53.85	23.08	0.00	0.00	9.09	36.36	54.55	4.26	.16
	MEAN=2.56 SD=1.43					MEAN= 3.27 SD=1.19					Z=1.66	.11
Do nt understand value of ICT	0.0	5.13	12.82	53.85	28.21	0.00	0.00	9.09	36.36	54.55	2.93	.38
	MEAN= 2.79 SD=1.28					MEAN= 3.27 SD=1.19					Z=1.16	.26
Lack of training	0.00	5.13	12.82	53.85	28.21	0.00	0.00	9.09	36.36	54.55	2.93	.07
	MEAN= 2.79 SD=1.18					MEAN= 3.27 SD=1.19					Z=1.16	.26
Personal impediments	0.00	5.13	12.82	46.15	35.90	0.00	0.00	9.09	36.36	54.55	1.59	.26
	MEAN=2.87 SD=1.32					MEAN= 3.27 SD=1.19					Z=0.96	.35
ALL											5.18	.26
Overall Statistics		MEAN= 30.2 SD=13.6					MEAN= 35.5 SD=12.7				Z=1.21	.24

The above table 2. specifies the Sex-wise perception of agriculture university staff towards factors limiting the use of ICT in agriculture. In all the cases Chi and F test have been calculated on each option and the interpretations have been made on the basis of mean scores as mentioned

earlier. Based on F test (ANOVA), perception of employees of different sexes towards ICT penetration is seen to differ significantly at 0.01.

Table 3. Correlation between variables from perception of Farmers and Rural people regarding Uptake of ICT

	Age	Gender	L-level	Occupation	Religion	Comm.	Family
RUAware of ICT	0.073	0.041	0.582	0.706	0.143	0.291	0.284
Unfriendly Human Interface	-0.136	0.316	0.810	0.696	0.035	0.309	0.274
Difficult Software Interface	-0.366	0.360	0.379	-0.012	-0.369	-0.034	-0.043
Irrelevant Information & Services	-0.381	0.332	0.471	0.111	-0.406	0.023	-0.006
Absence Of Local Language	-0.349	0.400	0.413	0.021	-0.276	0.001	-0.022
Not Aware About Possible Usage Of ICT	-0.212	0.391	0.125	-0.223	0.018	-0.054	-0.081
Outdated Contents	-0.175	0.301	0.051	-0.217	0.078	-0.012	-0.089
Time Consuming	-0.107	0.270	-0.235	-0.546	0.033	0.049	-0.300
Tardy Response From Government	-0.235	0.480	0.436	0.094	-0.031	0.046	0.038

6. Conclusion

From the above analysis, following conclusions have come out which may be used as guiding principles for the action plan and recommendations in J&K for implementation of ICT for Agriculture and Rural Development:

- There is correlation between funding of ICT by the government and uptake of ICT by the farmers and rural people.
- There is correlation between Literacy and improved uptake of ICT in the agriculture.
- Community Information Centers should be made accountable.
- Agriculture Universities needs to play an important role in familiarizing farmers with the use of ICT, so that they become self dependant.
- International agencies, governments and the private sector need to make far greater and long-term investment in ICT for extension.
- Use of the local language that the people are well versed in.
- Agricultural development agencies tend to establish their networks and programmes in isolation or small local partnerships. There is need to build on these initiatives and create a larger coalition, network and knowledge management system to apply ICT systemically to extension.
- There is enormous need for capacity-building in smallholder communities in low-income groups that are starved of research, advisory and information services

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