

PERCEPTION OF AGRICULTURE STAFF IN THE IMPLEMENTATION OF ICT IN AGRICULTURE AND RURAL DEVELOPMENT IN J&K STATE (INDIA)

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In order to transform rural community into information driven, modern and competitive society, the role of Information Communication Technology (ICT) cannot be ruled out. The people working in the agriculture sector are least equipped with proper tools to deal with rapidly changing agricultural production scenario and international competitive environment. Also, the existing Transfer of Technology mechanisms and extension programs, mostly run by the government departments, eg: Community Information centers (CIC) by National Informatics Centre (NIC) in Jammu and Kashmir state of India are slow and in many cases ineffective as bridges between the research community and the farmers. This is partly due to inadequate use of new means of information dissemination under these programs. The existing "technology divide" can be addressed effectively through extensive use of ICT, especially when the present extension system is no longer relevant and able to meet the increasing demands of our farming community and rural people. So in this scenario the views of stakeholders in the policy making of use of ICT in agriculture and rural development is taken into account. One of the foremost stakeholder is agriculture university which has a liability of disseminating information amongst rural farmers. So we have taken the perception of the agriculture staff also, while formulating guiding principles for the action plan and recommendations in J&K ICT for Agriculture and Rural Development. . 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. Few of the conclusions that came out were that there is correlation between funding of ICT by the government and uptake of ICT by the farmers and rural people, secondly there is correlation between Literacy of rural people and improved uptake of ICT in the agriculture, thirdly Agriculture Universities needs to play an important role in familiarizing farmers with the use of ICT, so that they become self dependant.

Keywords: ICT, Technology Divide, Farming Community, Agriculture Staff

1. INTRODUCTION

As information and communication technologies (ICTs) diffuse into all branches of the economy their impact has come to be very pervasive. The pervasiveness of the ICTs is posing the challenge of assessing their impact on economic development and transformation. ICT refer to a myriad of stand-alone media, including telephone and mobile telephony, radio, television, video, tele-text, voice information systems and fax, as well as computer-mediated networks that link a personal computer to the Internet. The ICTs will be disaggregated into ICT producing activities and ICT using activities. There are three stakeholders when we have to formulate a policy for ICT penetration into rural people and farmers; Farmers and rural people, Community Information Center Operators and Agriculture University Staff. In this paper we have taken into consideration the perception of Agriculture Staff only as including the perception and results of all the stakeholders would be beyond the scope of this paper.

This study intends to explore factors, which may need to be improved so that ICT programme becomes more effective. Identifying these factors will help increase the

knowledge regarding the Agriculture University staff' perception of using ICT for the agricultural sector. Assuming that these factors can be clearly identified, the information can be used by the extension organisation to increase the use of this approach of learning as well as improve the quality of agricultural learning. This, in turn, will have a positive impact on sustainable agricultural development in Jammu & Kashmir and the economy of the state in general. The results will also serve as a valuable baseline of ICT diffusion, so that the growth or decline of this approach can be tracked.

Therefore, the main purpose of this study is to investigate the Farmers and Rural people readiness and barriers towards ICT programmes in the agricultural sector. This study is performed with the guidance of the following research questions:

1. What is the readiness level of Farmers and rural people as perceived by the Agriculture Staff towards already implemented ICT programme through Community Information Centers?
2. What is the barriers level of Farmers and rural people as perceived by the Agriculture Staff towards ICT programme through Community Information Center?

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2. STUDY AREA

The present study was an attempt on the proper implementation and effective use of ICT in the field of agriculture and rural development with reference to Community Information Center initiative started by Govt of India in J&K state.

3. OBJECTIVES 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.
- To understand the perception of Agri-University staff in formulation of ICT Model for Rural people.

4. REVIEW OF LITERATURE

Given that two-thirds of the world's poor live in rural areas, it is important to examine the potential of ICT to improve access to basic human development needs such as food, education and healthcare. In examining the potential of ICT for rural development, it is essential to recognize that information dissemination is a fundamental element of any rural development program as rural areas are often characterized as information-poor [1]. The question is how ICT can be integrated into local knowledge and information networks to address locally identified knowledge gaps. With the emphasis on 'Information and Communications', the importance of context-driven and indigenous approaches such as projects that meet local needs, demand-driven content and local language mediums become obvious. In turn, issues of sustainability which involve factors of human capacity, social capital and best practice models also highlight the importance of leveraging the collectivist nature of rural communities to optimize the benefits of ICT for rural development. 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'[2]. To begin with, an important part of attaining economic and social betterment involves an active participation by beneficiaries in the project development process. This points to 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 programs.[3] 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.[4] Both case studies illustrate a consistent usage of ICTs in daily life because of the communities' involvement to create services which are relevant. While rural development presents realistic limitations on the accessibility of new technologies like the Internet, this does not mean an end for the benefits of ICT to reach a majority of the rural poor. This points to the second area of Community Informatics in which ICT, as a 'set of resources and tools', can be interpreted as a general-purpose technology which has the potential to be complementary if a creative adaptation of available ICTs exists. Contrary to popular associations of ICT with only computer mediated tools such as the Internet is the fact that its broader definition also includes long-existing mediums such as print- media, radio, telephone and television. In terms of development, discourse on ICT disparities have been largely obsessed with technological concerns relating to computer-mediated ICTs in terms of infrastructure, networks and connectivity, without a acknowledging that communities can make the most of available ICTs to disseminate information. 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.[5] Community radio was established in 1989 to Kothmale in the central part of Sri Lanka, some three hours bus ride from the capital Colombo, and serves a 25 kilometer radius to cover neighboring rural towns such as Gampola, Nawalapitiya and Thispane.

While radio to date has served many development purposes such as the dissemination of information programmes on agricultural practises, rather than abandon radio for the Internet as a development channel Kothmale radio has blended the two media so that radio becomes an interface and intermediary between the Internet and its listeners requests which are submitted through letters,

telephone calls or right in the studio. Using the radio as an interface is not only an appropriate use of complementary and available ICTs, but a reflection of the importance of taking into account the e-readiness levels of its community so that the Internet is introduced gradually and non-intrusively. Turning once more to the Information Village Research Project managed by MSSRF in Pondicherry, weather forecasts downloaded from the US Navy's public website are broadcast by volunteers over loudspeakers to fishing villages on the Bay of Bengal for the benefit of fishermen who cannot read.[6] Another example of ICT as a malleable tool is Malaysia's Mobile Internet Unit (MIU) which has brought ICT skills training to rural students. The information and communication support during the last five decades has mainly been conventional. 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. This gap remains a challenge for the extension systems even today for a very large and geographically varied location. Therefore, educational demands from farmers are urgent, huge, multiple and practical as well. There are many major challenges for agricultural and rural development in J&K 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.

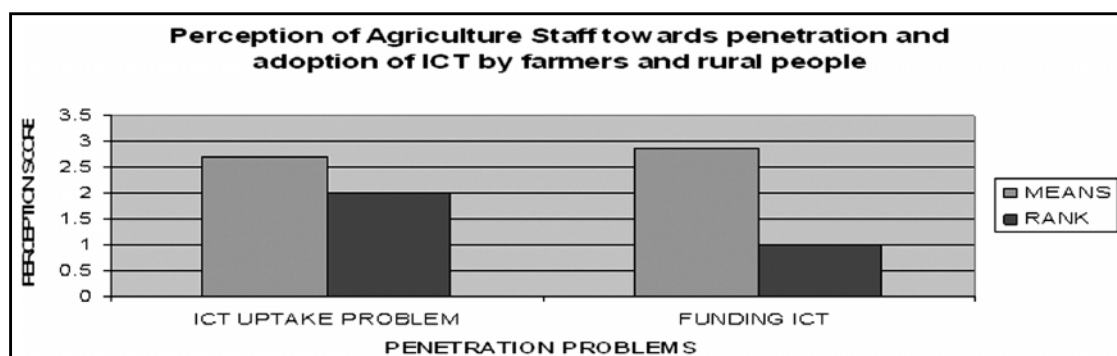
5. RESEARCH METHODOLOGY

5.1 Sample Features

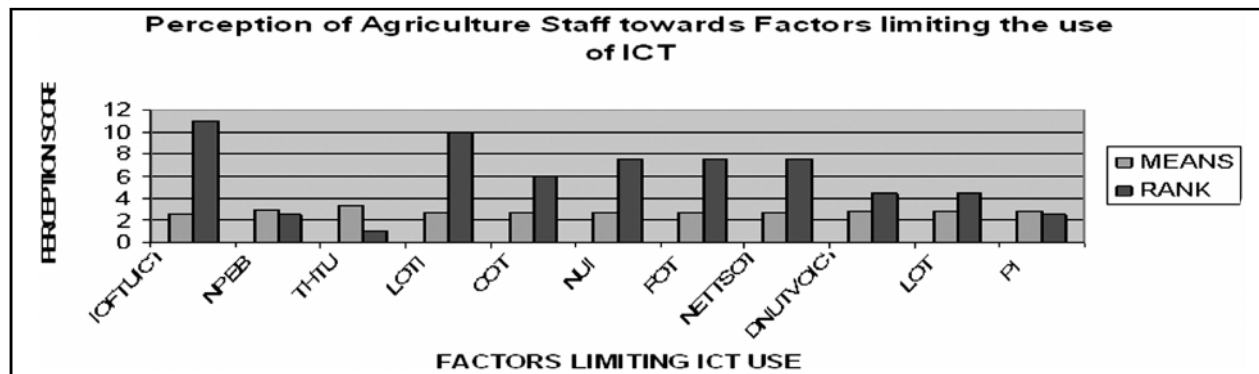
Agriculture University Staff have been selected for analyzing the role of ICT in Agriculture and Rural development and vis-à-vis analyzing the drawbacks and difficulties of Farmers and Rural people in making full use of ICT for their betterment. Agriculture University Staff are directly or indirectly concerned with the development of agriculture and rural development in the state and therefore their views are most important to make a frame work or Model of ICT in the state for Agriculture and Rural Development. A sample of 50 people from Agriculture Universities was selected through Stratified sampling. The respondents were administered the survey questionnaire personally. They were asked to answer the statements on a likert scale ranging from never/rarely to very frequently/always(1 – 5).

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 Agriculture University staff, t- tests and z tests were performed in addition to ANOVA(Analysis of Variance). Based on respondents profile, Uday Parikh scale [7] 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.



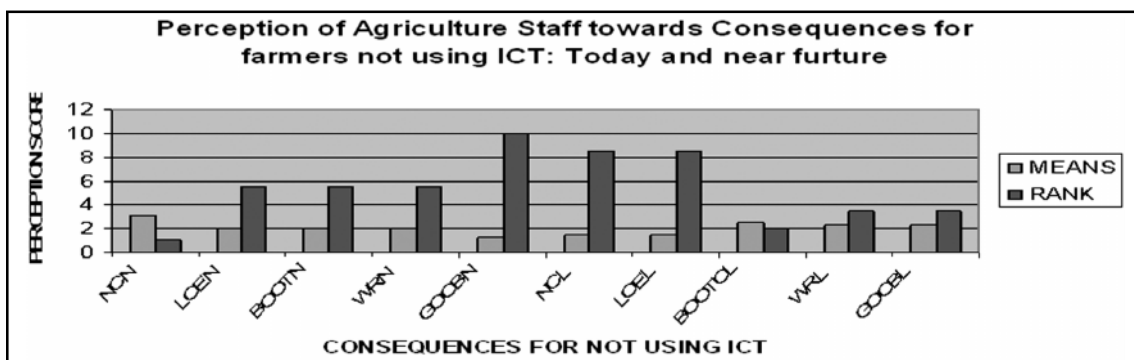
Graph. 1: Perception of Agriculture Staff Towards Penetration and Adoption of ICT by Farmers and Rural People.



Graph. 2: Perception of Agriculture Staff Towards Factors Limiting the Use of ICT

This analysis shows that Agriculture University Staff feels that technology is not easy to use and because of lack of information the farmers and rural people feel that it is of no economic benefit to them. They also feel that technology should be made more easy so that even an illiterate person should be able to use it, like if he is not able to write, his command in local language should be executed and the result should be shown in the form in which he understands, that's technology, which is not impossible now.

This table summarizes the perception of agriculture staff regarding the Consequences for farmers not using ICT: Today and near future by farmers and rural people. This analysis shows that Agriculture University Staff feels that if the farmers and the rural people will not use ICT today or do not learn the use of ICT, they will be at loss in the long run. As the world has gone digital, everything will be available and is still available on the internet including the information about the agriculture. Any person who do not use ICT, whatever may be the reason will be at loss, may it be farmers and rural people.



Graph. 3: Perception of Agriculture Staff Consequences for Farmers not Using ICT: Today and Near Future

Table 1
Age Wise Perception of Agriculture Staff Towards ICT Penetration

	20to 30yrs					30 to 40yrs					40 to 50yrs					50&above					Chi/ F Value	Sig.
	SD	D	UC	A	SA	SD	D	UC	A	SA	SD	D	UC	A	SA	SD	D	UC	A	SA		
ICT -uptake problem	0.0	0.0	0.0	0.0	0.0	0.0	6.25	15.6	78.1	0.0	0.0	7.1	0.0	71.4	21.4	0.0	0.0	0.0	0.0	100	32.35	0.01
	MEAN = 0.00 SD = 0.00					MEAN = 2.41 SD = 1.16					MEAN = 3.07 SD = 0.73					MEAN = 4.0 SD = 0.0					F = 5.87	0.01
Funding ICT for farmers	0.0	0.0	0.0	0.0	0.0	0.0	12.5	9.3	78.1	0.0	0.0	7.1	0.0	71.4	21.4	0.0	0.0	0.0	0.0	100	31.67	.01
	MEAN = 0.00 SD = 0.00					MEAN = 2.47 SD = 1.05					MEAN = 3.07 SD = 0.73					MEAN = 4.0 SD = 0.0					F = 5.87	0.01
Overall	0.0	0.0	0.0	0.0	0.0	0.0	12.5	9.3	78.1	0.0	0.0	7.1	0.0	71.4	21.4	0.0	0.0	0.0	0.0	100	32.36	.01
Overall Statistics	MEAN = 0.00 SD = 0.00					MEAN = 2.43 SD = 1.09					MEAN = 3.07 SD = 0.73					MEAN = 4.0 SD = 0.0					F = 5.74	0.01

The above table 1 specifies the age-wise perception of agriculture university staff towards penetration 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 ages towards ICT penetration is seen to differ significantly at 0.01. The staff above the age of 50 years shows highest degree of agreement towards ICT uptake problem (IUP) scoring a mean of 4.0 and SD of 0.0 followed by staff between the age group of 40 to 50 with a mean of 3.07 and SD of 0.73 followed by staff between the age group of 30 to 40 years with a mean of 2.41 and SD of 1.16. This reflects that the staff above the age group of 50 strongly agree that there is a problem in the uptake of ICT.

6. SUMMARY OF FINDINGS

- 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.
- Extension and research needs to focus on the agricultural practices of the future, not the present.
- SKUAST Agriculture Universities (Jammu & Kashmir) needs to play an important role in familiarizing farmers with the use of ICT, so that they become self dependant.
- There have been few independent evaluations of the quality and impact of ICT in agricultural development in other states and J&K should follow the suit.
- We should make use of the local language that the people are well versed in like (Urdu, Dogri, Gojri, Kashmiri, Hindi).
- 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.

7. CONCLUSION

Measuring and identifying how ICT models in agriculture impact on the farmer level remains a challenge. The agriculture and rural community in J&K will continue to grow and experiment with existing ICT and networking platforms, and will continue to learn from their experiences. The success of the use of ICT in agricultural development, and in particular through public private partnerships in J&K, can be evidenced by measuring impact through indicators, such as increase in awareness levels; replication of the existing models; increase in income levels; demand for new services; increase in services usage, and so on. But perhaps the best measure of impact can be seen on the improvements of livelihoods in rural areas.

8. REFERENCES

1. Robert Chapman and Tom Slaymaker, ICTs and Rural Development: "Review of the Literature, Current Interventions and Opportunities for Action", Overseas Development Institute, Working Paper No. 192, 2002.
2. Michael Gurstein, "Rural Development and Food Security": A 'Community Informatics' Based Conceptual Framework For FAO' <<http://www.fao.org/sd/CDdirect?CDre0055c.htm>>
3. S. Senthilkumaran, "Impact of ICTs on Poverty Alleviation in Rural Pondicherry", MSSRF's Project in Pondicherry, 2004
4. See <<http://www.sustainableicts.org/Gyandoot.pdf>> and <<http://gyandoot.nic.in/>>.
5. See Kothmale Community Radio's Portal < <http://www.kothmale.net/>>
6. See <http://ileia.test.kolibrie.net/2/18-2/28_30.PDF> 5 September 2003.
7. Uday Pareek, "Training Instruments In HRD and OD", 2nd ed, 2001, sixth reprint 2005, Tata McGraw Hill, ISBN 0-07-048324-8

