

## Extent of Use of ICT Tools by Hill Farmers and Associated Social Factors

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### ABSTRACT

Hill farmers are the practitioners of complex, diverse and risk-prone agriculture. They are also facing lack of information dissemination channels which causes a huge communication gap in hills. The lack of information dissemination channels in hills is highly attributed to the geographical disadvantages of distantly located hamlets and fragmented household of hills. ICT has a significant role to bridge the gap of information dissemination in hills. In the present study an attempt has been made to delineate the extent of use of ICT tools by hill farmers and the associated social factors which influence the extent of use of ICT tools by the farmers. The study was conducted in Mahatgaon cluster of Hawalbagh block in Almora district, Uttarakhand taking a random sample of 100 farmers. The data was collected by a pre-tested structured interview schedule through personal interview method. The study revealed that majority of farmers often used mobile phone (98%) followed by TV (97%), telephone (60%), radio (57%) and internet (49%) as ICT tools. The ranking of the ICT tools used by the respondents was also done on the basis of MWS. It was found that mobile was in the first rank followed by television and radio. Internet was found to be in the last rank as far the usage is concerned. Out of total 14 independent variables studied, it was identified that factors viz. annual income, no. of crops cultivated, herd size, social participation, extension contact, mass media exposure and innovativeness were highly associated with the extent of ICT usage at 1% level of significance whereas factors viz. education, family size, landholding, training attended were associated with the extent of ICT usage at 5% level of significance.

**Key words:** Extent of use; Social factors; Pearson product moment; Correlation;

The farmers of the hill region are facing serious difficulties altogether with the lack of information dissemination channels. In this era of information access to the right information at the right time in the right format and from the right source can shift the balance between success and failure of the farmer (Opara, 2008). Lack of information dissemination in hill is highly attributed to the geographical disadvantages of distantly located hamlets and fragmented households (Lahiri, 2016). It is mere impossible for the extension functionaries of the government departments to reach each farmer's doorsteps with the basket of information regularly. Wide farmer: extension workers ratio i.e. 2879:1 (Mukherjee and Maity, 2015), bureaucratic and

administrative workload and financial constraints has made the public extension services as supply driven rather than demand driven. Agriculture is the mainstay in hills. Majority of hill farmers are practicing low productive traditional farming despite the advent of various improved farming practices for hills. Furthermore, in 21<sup>st</sup> century like Indian agriculture hill agriculture too has been challenged by scarcity of irrigation water, menace of wild animal, shortage of labour (Mukherjee, 2015) growing inter-farm as well as inter-regional disparity, unequal household income and low productivity (Mukherjee et al. 2012a,b) as a combined outcome of globalization and climate change. Most of the developing countries are now experiencing

paradigm shift from subsistence agriculture to commercial agri-business and from more resource intensive crops like winter rice to less resource using and remunerative vegetables (Maity *et al.* 2013). With this pace of movement role of information and communication technology comes first and foremost.

The influence of Green Revolution is not very much prompt in hills due to this fact. It is not that the hill farmers are not receptive to the improved farm practices. The reason behind the non-adoption and partial adoption of modern farm practiced is mainly the lack of awareness of the hill farmers regarding those practices (Joshi *et al.*, 2015). There is increasing demand for knowledge on agricultural practices and technologies among the farmers (Mukherjee *et al.* 2011, 2012c) although, the farmers have little information about the modern farm practices (NSSO, 2005). The expectation of speedy information relay is very high in hills but the situation is not very conducive for that purpose. In this insurmountable condition, the public and private agencies working in hills started using ICT tools to disseminate the useful information to their intended clientele. ICT has a significant role to bridge the gap of information dissemination in hills. The process of ICT interventions in hills is in very nascent phase but it is accelerating and new avenues are being opened day by day (Friedman, 2005).

Modern age is the age of ICT. ICT has alone changed the structure of the society from have and have not to inform and not informed (Aker, 2011). The speed of change of a society largely depends on its accessibility and usability of different ICT tools (Salau and Saingbe, 2006). There are several ICT tools which are being used in modern day for dissemination of information (Yadav *et al.*, 2011). These are radio, television, mobile phone, internet etc. which are capable of spreading the information to masses as fast as possible with less involvement of manpower. The process of information dissemination through these ICT tools is very cost effective and time saving. The advent of modern ICT tools has cut short the geographical distances of the people. The digitalization of the whole communication process from source to receiver by using of ICT tools has narrow down the physical barrier among the people throughout the world (Meera *et al.*, 2004). The development agencies of all the nations are starting to understand the gravity of ICT in accelerating the

development process by informing the masses about the development programmes and technological progresses which are happening in the world for the benefit of mankind. In India, the use of various ICT tools in dissemination of information is gaining its momentum day by day through various public and private initiatives. The success of some ICT interventions in India like e-*Chaupal*, Global Village, Village Kiosks, Wired Village etc. encourages the development workers to exploit the full potential of the ICT tools in stimulating the change process. ICT has a defined say in regions especially in hill where information dissemination is a very hard task due to complex, diverse and risk-prone geographical terrain and scarcity of resources.

Based on this context the present study was formulated to delineate the extent of use of ICT tools by hill farmers and the associated social factors which influence the extent of use of ICT tools by the farmers.

## METHODOLOGY

The study was carried out in Parkhola, Nogir, Chaukhola, Majhkhola and Nayee Basti villages of Mahatgaon cluster which is situated in Hawalbagh block of Almora district, Uttarakhand. Among 500 farm families of the cluster, 100 farmers were randomly selected for the purpose of the study. The data was collected by a pre-tested structured interview schedule through personal interview method. Extent of usage of ICT tools by the farmers were measured using a 3-point continuum *viz.* often (2), seldom (1) and never (0). Mean Weighted Score (MWS) was worked out to place the ICT tools in ranks as per their extent of usage. Fourteen independent social variables *viz.* age, education, family size, occupation, annual income, landholding, no. of crops cultivated, herd size, farming experience, social participation, training attended, extension contact, mass media exposure and innovativeness were studied to ascertain its association with the dependent variable i.e. extent of use of ICT tools. Pearson product moment correlation analysis was done for this purpose.

## RESULTS AND DISCUSSION

*Extent of usage of ICT tools by the farmers:* A perusal of Table 1 shows that majority of farmers often used mobile (98%) followed by TV (97%), telephone (60%), radio (57%) and internet (49%) as ICT tools. It was also found that most of the farmers seldom used radio

(40%) followed by telephone (15%) and internet (11%) as ICT tools. Internet was reported to be never used ICT tool by majority of the respondents (40%) followed by telephone (25%). The accessibility to internet in hills is comparatively low than the plains. The landline telephones become obsolete nowadays with the advent of mobile phones.

**Table 1. Extent of usage of ICT tools by the farmers (N=100)**

ICT tools	Extent of usage					
	Often (2)		Seldom (1)		Never (0)	
	No.	%	No.	%	No.	%
Radio	57	57.00	40	40.00	3	3.00
TV	97	97.00	3	3.00	0	0.00
Telephone	60	60.00	15	15.00	25	25.00
Mobile	98	98.00	2	2.00	0	0.00
Internet	49	49.00	11	11.00	40	40.00

Table 2 depicts that mobile phone was found to be in rank first according to its extent of use by the respondents. Other ICT tools like television, radio, telephone and internet had found their ranks in II, III, IV and V position on the basis of their extent of usage. Nowadays television has become a show in every household whether it is in rural or in urban area. The presence of radio is declining in the households but still it is a significantly used traditional media. The old family members of the rural households are more accustomed to listening radio compared to any modern mass media tool. With the advent of the mobile phone across the society, the uses of telephone are decreasing day by day. The respondents who had landline connections wanted to continue with minimum rent offer of BSNL. They perceived that the telephone would come in use at the of tower problem of the mobile or when there was no sufficient balance in the mobile to receive incoming calls. The accessibility to internet in hills is comparatively low than the plains. Most of the farmers also did not have the proper mobile set with a configuration of accessing internet in a good speed.

**Table 2. Ranking of the ICT tools used by the respondents (N=100)**

ICT tools	MWS	Rank
Mobile	1.98	I
Television	1.97	II
Radio	1.54	III
Telephone	1.35	IV
Internet	1.09	V

*Sendilkumar (2010)* in his study on knowledge and information sources utilization pattern of soybean growers reported that radio and television were the prime sources of information for the soybean growers. *Devi and Verma (2011)* in their study on farm women preferences of communication sources for farm information found that radio and television were frequently used by the farm women as impersonal cosmopolite source of information.

*Social factors influencing the extent of usage of ICT tools by the farmers* :Some farmers use more no. of ICT tools and some farmers use less no. of ICT tools. There must be some variables which influence the extent of use of ICT tools by the farmers. In order to identify these variables, Pearson product moment correlation analysis was done to know the association of 14 independent variables with the extent of usage of ICT tools by the farmers. These 14 independent social variables under the study were age, education, family size, occupation, annual income, landholding, no. of crops cultivated, herd size, farming experience, social participation, training attended, extension contact, mass media exposure and innovativeness.

**Table 3. Correlation Between independent variables and level of usages of ICT tools (N=100)**

Independent variables	(r)
Age	-0.210*
Education	0.240*
Family size	0.234*
Occupation	0.094NS
Annual income	0.379**
Landholding	0.199*
No. of crops cultivated	0.295**
Herd size	0.271**
Farming experience	-0.108NS
Social participation	0.334**
Training attended	0.255*
Extension contact	0.299**
Mass media exposure	0.304**
Innovativeness	0.315**

Table 3 shows the results of the correlation analysis between independent variables and level of usages of ICT tools. It was found that factors viz. annual income, no. of crops cultivated, herd size, social participation, extension contact, mass media exposure and innovativeness were highly associated with the extent of ICT usage at 1% level of significance whereas

factors viz. education, family size, landholding, training attended were associated with the extent of ICT usage at 5% level of significance. It was also found that the variable "age" is negatively associated with the extent of ICT usage and variables like occupation and farming experience were found to be non-significantly associated with the extent of ICT usage.

It can be inferred from the findings of the study that the old farmers tend to use less number of ICT tools. Farmers possessing higher education used to utilize more number of ICT tools. Respondents having large family size possess more ICT tools. Farmers earning more than others also had more number of ICT tools. Farmers having more landholding, bigger herd size and cultivating more number of crops tend to use more ICT tools. Respondents with wider social participation used to have more number of ICT tools. It can also be inferred that farmers who attended more number of trainings, had more extension contact and mass media exposure tend to use more tools. It is also very much usual that a farmer with higher degree of innovativeness used to experience more number of ICT tools than other members of farming community.

*Raksha and Meera (2015)* in their study on the factors determining the attitude of agricultural extension personnel towards the use of ICTs in agricultural extension system found that the independent variables viz. education, trainings received and innovativeness are positively and significantly correlated with attitude of agricultural extension personnel towards use of ICTs in agricultural extension system whereas age is negatively and significantly correlated. The results in this study that the trainings received was positively significant with attitude of extension personnel in ICTs use are supported by the study done by *Woodhouse and Baigent (2002)*, *Coulson (2000)*, *Small (2001)* and *Swann (2003)*. *Dhaka and Chayal (2010)* in their study on farmers' experience with ICTs on transfer of technology in

changing agri-rural environment found that the age of a respondent correlated negatively with frequent use of the internet services. It was also found that education was positively associated with frequent use of information services. It was also observed that exposure of farmers to mass media was found conducive to utilization of ICT by farmers. The respondent's level of innovativeness also significantly and positively influenced the use of ICT services by farmers.

## CONCLUSION

The results of present study show that tendency of hill farmers towards use of ICT tools. Mobile phone was found to be in rank first according to its extent of use by the respondents. Other ICT tools like television, radio, telephone and internet had found their ranks in II, III, IV and V position on the basis of their extent of usage. The use of ICT tools by the farmers is very much affected by their annual income, no. of crops cultivated, herd size, social participation, extension contact, mass media exposure, innovativeness education, family size, landholding and training attended. The factors like age and education are contributing negatively and positively towards extent of use of ICT tools and it cannot be controlled as other variables/factors. The other factor like trainings attended is very much directly associated with the extent of ICT usage. By training and creating awareness about effective use of ICT for agricultural information, the blended mode of ICT can be utilized. With this, not only the farmers get learn about the ICT tools but also they become well aware about knowhow of this technology and in future they can better utilize these tools in their field situations as per the needs and demands. Thus, with the help of findings of the study, the factors which are positively governing extent of use of ICT tools by farmers should be taken well care to promote efficient use of ICTs in agriculture.

## REFERENCES

- Aker, J. C. (2011). Dial 'A' for Agriculture: A Review of Information and Communication Technologies for Agricultural Extension in Developing Countries. *Agril.Eco.*, **42**(6): 631-647.
- Coulson, S. (2000). A provisional study of the strategic management of three public library authorities working towards 'New Library: The People's Network, Southborough, MSc thesis, Southborough University, USA.
- Devi, U. and Verma, S. (2011). Farm Women Preferences of Communication Sources for Farm Information. *Indian Res. J. of Ext. Edu.*, **11** (2): 15-19.

- Dhaka, B.L. and Chayal, K. (2010). Farmers' Experience with ICTs on Transfer of Technology in Changing Agri-rural Environment *Indian Res. J. of Ext. Edu.*, **10** (3): 114-118.
- Friedman, T. L. (2005). *The World is Flat: A Brief History of the Twenty-First Century*. Published by Farrar Straus and Giroux, New York.
- Joshi, P., Sharma, N., Roy, M.L., Kharbikar, H.L., Chandra, N. and Sanwal, R (2015). Traditional Food Practices in North Western Himalayan Region: Case of Uttarakhand. *Journal of Agricultural Engineering and Food Technology*. 2, (3): 170-174.
- Lahiri, B. (2016). Agricultural Information Seeking Behaviour of Garo Tribal Farmers of Meghalaya, India. *Ecology, Environment and Conservation*, 22: 227-236.
- Maity, A., Mukherjee, A., Pramanik, P., and Shubha (2013) Shifting towards vegetable cultivation from that of rice in Purba Medinipur district of West Bengal. *Bioinfolet - A Quarterly J. of Life Sciences*. **10** (3a): 876-878.
- Meera, S.N., Jhamtani, A. and Rao, D.U.M. (2004). Information and Communication Technology in Agricultural Development: A Comparative Analysis of Three Projects from India. *Agricultural Research and Extension Network (AgREN)*, Paper 135 (Sponsored by DFID, UK), Overseas Development Institute, London, UK.
- Mukherjee, A. (2015) Prioritization of Problems in Integrated Agriculture: A Case of Rampur Village in Sub Humid Region of Eastern India. *Indian Res. J. Ext. Edu.* **15** (1): 53-59.
- Mukherjee, A., Bahal, R., Roy Burman, R., and Dubey, S.K. (2012a). Factors Contributing Farmers' Association in Tata Kisan Sansar: A Critical Analysis. *Indian Res. J. of Ext. Edu.*, **12** (2): 81-86.
- Mukherjee, A., Bahal, R., Roy Burman, R., and Dubey, S.K. (2012c). Conceptual Convergence of Pluralistic Extension at Aligarh District of Uttar Pradesh. *J. of Comm. Mobi. and Sust. Devel.* **7** (1&2): 85-94.
- Mukherjee, A., Bahal, R., Roy Burman, R., Dubey, S.K., and Jha, G.K. (2012b). Constraints in Privatized Agricultural Technology Delivery System of Tata Kisan Sansar. *J. of Global Commu.* **5** (2): 155-159.
- Mukherjee, A., Bahal, R., Roy Burman, R., Dubey, S.K., and Jha, G.K. (2011). Effectiveness of Tata Kisan Sansar in Technology Advisory and Delivery Services in Uttar Pradesh. *Indian Res. J. of Ext. Edu.*, **11** (3): 8-13.
- Mukherjee, A., Maity A. (2015) Public-private partnership for convergence of extension services in Indian agriculture. *Current Science*. **109** (9) :1557-1563
- Opara, U. N. (2008). Agricultural Information Sources Used by Farmers in Imo State, Nigeria. *Information Development*, 24: 289-295.
- Raksha and Shaik N. (2015). Determinants of ICTs in Agricultural Extension System. *Indian Res. J. of Ext. Edu.*, **15** (1): 1-7.
- Salau, E.S. and Saingbe, N.D. (2006). Access and Utilization of ICTs among Agricultural Researchers and Extension Workers in Selected Institutions in Nassarawa State of Nigeria. Retrieved at <http://patnsukjournal.net/vol4No2/pl.pdf>, pp. 1-6.
- Sendilkumar, R. (2010). Knowledge and Information Sources Utilization Pattern of Soybean Growers. *Indian Res. J. of Ext. Edu.*, **10** (3): 71-74.
- Small, G. S. (2001). Making the training work. *Public Library Journal*, 16(4), 8 -136.
- Swann, D. (2003). ECDL for educators: ICT skills training in context. *Computer and Education*, 103, 16-17.
- Woodhouse, S. & Baigent, H. (2002). People's network. *Library Association Record* 104:1, pp. 18.
- Yadav, B. S.; Khan, I. M. and Kumar, M (2011). Utilization Pattern of Different Sources and Channels of Agriculture Information Used by the Fenugreek Growers. *Indian Res. J. of Ext. Edu.*, 11 (1): 44-49.

