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RESEARCH ARTICLE

Enhanced role of ICT in Extension, Research and Governance towards achieving sustainable agriculture – A study of Punjab

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Abstract

Agriculture is backbone of nation's economy. The sustainable development of agriculture depends upon the accessibility of scientific information. ICT has promising potential to contribute in the individual information need and develop strong communication network between researcher-extension agent-farmers. Its opportunities extended to the areas of extension, education and research. In Punjab, numbers of services are providing by the public as well as private agencies but its use is limited. Progressive farmers showed the appreciable extent of use of cell phones in the area of extension followed by computers and landlines but negligible use of internet in all components. The major area of use was the information regarding the local extension services, development projects and expert advice. In governance, health services and payment of bills are major activities used by the landlines and cell phones respectively. They showed negligible interest in the area of research. Among the non progressive farmers, there reliability was more on landlines and used it mainly for expert advice and local extension services. They also used cell phones appreciably to gather the information on sustainable practices while subsidiary information, banking and health services were major services among the e-governance. The uses of computers were meager but internet use was almost none among both the groups of farmers. The limiting factors were the low level of education and exposure with the media of the non progressive farmers. Whereas, lack of awareness and basic infrastructure in the villages are the main reason of differences in the information required by both the groups of farmers. Conclusively, there is need of integrated efforts through educating and training the farmers to make them comfortable with ICT use.

INTRODUCTION

Sustainable agriculture is major focus of scientists, experts and government. Earlier efforts were made to enhance the production of crops to combat the rising food demand of the country, but economic growth and social empowerment of farmers are important for sustainability. The sustainable growth and development of agriculture depend upon the accessibility to timely, proper and scientific information. Recent developments in Information Communication and Technologies (ICT's) offer great potential to bridging the gaps between the scientific information and ultimate users. Moreover, ICT's could significantly overcome the constraints to education and training in rural areas and positively impact on knowledge development. Axinn and Thorat (1972) described six

components of a rural social system viz. production, supply, marketing, education/extension, research and governance. ICT's have capability to fulfill the information need of all the component of rural social system.

However, the utility of ICT's to gather information extended to important areas of education/extension, research and e-governance as well. Most of the ICT models including both private sector as well as public sector have been launched with agricultural applications as their prime focus (Narula, 2010). Moreover, ICT would also help farmers to know about various governmental financial schemes like Farmers Credit Card, Crop Insurance Scheme, and Debt Waving schemes (Misra, 2009) but its utility is limited to ultimate users. This article reflects the extent of use of prevailing ICT tools for seeking the information related to extension, research and governance by the progressive and non progressive farmers of Punjab.

METHODOLOGY

The study was conducted on two groups of farmers viz Progressive and Non progressive farmers. Active members of *Punjab Kisan Club* in Punjab Agricultural University (PAU) were considered as progressive farmers as they regularly attended the training programme and exposure visits conducted by university and hence more exposed to the latest technologies. Thus, 75 farmers were the active members of *Punjab Kisan Club*, PAU. While, 75 non-progressive farmers were selected from 5 different villages of Ludhiana district randomly. Thus, the total sample size comprised of 150 farmers for the purpose of this study. ICT tools such as *Computers (laptops, desktops, CD's, floppy and hard diskette etc), Internet (World Wide Web), Cell Phones (2nd generation phones and smart phones) and Telephone (Landline and public phone booths)* were selected purposively. The data was collected personally through Interview schedule and analyzed as the mean scores for each area worked out to know the extent of use of IT tools on three point continuum bases.

RESULTS AND DISCUSSIONS

Socio personal profile of Progressive and Non Progressive farmers

Majority of the progressive farmers i.e. 72.67 percent showed higher orientation towards young to middle age group and on the other part, majority (85.33%) of non progressive farmers were showing inclination towards middle to old age group. Similar findings were reported by *Narula (2009).* Among progressive farmer's data revealed that 48 percent progressive farmers had higher education above matric. while the substantial portion (70.67 %) of non progressive farmers were showing lesser education orientation. Education played a very important role in progressiveness of the farmers and they actively participated in the regular activities of *Punjab Kisan club*. These findings are in conformity with *Meitei and Devi (2009).*

Table1. Socio-personal profile of progressive and non progressive farmers

S.no	Socio-personal characterstics	category	Progressive farmers (n=75)		Non-progressive farmers (n=75)	
			f	%	f	%
1.	Age (years)	Young (20-34)	24	32.00	11	14.67
		Middle (35-44)	38	50.67	36	48.00
		Old (45-60)	13	17.33	28	37.33
2.	Education	Illiterate	4	5.33	10	13.34
		Primary	7	9.34	12	16.00
		Middle	28	37.33	31	41.33
		Matric	33	44.00	21	28.00
		Graduate	3	4.00	1	1.33
3.	Occupation	Farming	67	89.33	72	96.00
		Farming + Subsidiary	8	10.67	3	4.00

From the data, it is observed that 89.33 percent of progressive farmers and 96 percent of non progressive farmers were associated with farming only while 10.67 percent of progressive and 4 percent of non progressive farmers were associated with farming as well as subsidiary as their occupation. So, Majority of both the groups was having farming as their major occupation and hence, their livelihood depends on it.

Extent of use of selected IT tools in the areas of Extension

It was found in table 2; the uses of computer were highest to enquire on development projects, with mean score of 0.27, as MNREGA, ATMA etc, among the progressive farmers. while, they followed the tool for the information on sustainable practices, expert advice, ITK's, extension benefits and contingency advices in respective order. It was also interesting to find the extent of use of computers among non progressive farmers which showed

highest use for expert advice (MS, 0.08) and fewer on sustainable practices and local extension services. The higher education level and regular exposure with the media might be the possible reason of higher and diversified use of technology among the progressive farmers.

The use of telephone in seeking expert advice (MS 0.20) was highest among the progressive and information for other services (MS 0.15) and local extension services (MS, 0.11) were other significant areas. while, they used the device meagerly for adoption of contingency services (MS 0.05) and sustainable practices (MS 0.03). Among the non progressive farmers, the extent of use of telephone was highest for expert advice (MS 0.24) but others as local extension services (MS 0.16), sustainable practices, other information's and contingency advisories used in respective order. The basic reasons for the higher use of telephone among the non progressive farmers were that they felt easy with the use of this conventional tool. It was also computed from the table that the use of cell phones were appreciable in all the area of extension. The progressive farmers used cell phones highest to get the information on local extension services (MS 0.43). Expert advices (MS 0.39), sustainable practices (MS 0.36) and ITK's were other prioritizes area of use. Also, among the non progressive farmers, cell phone use were appreciable in seeking experts advice (MS 0.25) while sustainable practices (MS 0.11), contingency advisories, other information's as crop loan, relative farmers etc and local extension services were other areas of cell phone use. It was also found that both the groups of farmers were comfortable with the use of telephonic system but progressive farmers were more inclined towards the use of cell phones because of its versatile and latest features while non progressive farmers showed more reliability on landlines. The reason might be the rigidity to adopt new technology among the non progressive farmers. Similar findings were reported by *Lanjewar and Rathore (2007)*.

It was also found from the table, that both the groups were not significantly exposed for the use internet for their information needs except by some young ones for extension benefits, development projects and sustainable practices among the progressive farmers. This study was in line with the study of *Dey et al (2009)*.

Extent of use of different IT tools in the areas of research

The use of almost all the selected IT tools was limited in the areas of research component of Rural Social System by the farmers. It was very surprising to found that, there was no user of any IT tool among the non progressive farmers for any area of research. It is clearly depicted in Table 3, that the use of computers were limited to only saving the information about new findings and results whereas telephones and internet were used to seek new findings but the use of cell phones were to find the solutions of research queries by the progressive farmers. This might be due to the utility of IT tools for research area were

Table 2: Extent of use of selected IT tools by the respondents in different areas of Extension

S.no	Areas of	Progressive farmers (n=75)								Non- progressive farmers (n=75)							
	Extension	Computer		Telephone		Cell phones		Internet		Computer		Telephone		Cell phones		Internet	
		MS	Rank	MS	Rank	MS	Rank	MS	Rank	MS	Rank	MS	Rank	MS	Rank	MS	Rank
1.	Sustainable practices	0.22	2	0.03	5	0.36	3	0.03	3	0.06	2	0.09	3	0.11	2	0.00	-
2.	Indigenous technical knowledge	0.11	4	0.00	-	0.24	4	0.00	-	0.00	-	0.00	-	0.00	-	0.00	-
3.	Ongoing development Projects/schemes	0.27	1	0.00	-	0.15	5	0.07	1.5	0.00	-	0.00	-	0.00	-	0.00	-
4.	Expert advices	0.13	3	0.20	1	0.39	2	0.00	-	0.08	1	0.24	1	0.25	1	0.00	-
5.	Contingency advisories	0.03	6	0.05	4	0.11	6	0.00	-	0.00	-	0.01	5	0.08	3	0.00	-
6.	Local Extension services	0.05	5	0.11	3	0.43	1	0.08	1	0.03	3	0.16	2	0.05	5	0.00	-
7.	Any other information	0.00	-	0.15	2	0.07	7	0.07	1.5	0.00	-	0.05	4	0.07	4	0.05	1

n = no. of respondents, MS = mean score

Table 3: Extent of use of selected IT tools by the respondents in the different area of Research

S.no	Area of use	Progressive farmers (n=75)								Non- progressive farmers (n=75)							
	Research	Computer		Telephone		Cell phones		Internet		Computer		Telephone		Cell phones		Internet	
		MS	Rank	MS	Rank	MS	Rank	MS	Rank	MS	Rank	MS	Rank	MS	Rank	MS	Rank
1.	Research queries	0.00	-	0.00	-	0.04	1	0.00	-	0.00	-	0.00	-	0.00	-	0.00	-
2.	Research feedback	0.00	-	0.00	-	0.00	-	0.00	-	0.00	-	0.00	-	0.00	-	0.00	-
3.	New findings/results	0.05	1	0.03	1	0.00	-	0.03	1	0.00	-	0.00	-	0.00	-	0.00	-

n = no. of respondents, MS = mean score

Table 4: Extent of use of selected IT tools by the respondents in the different area of Governance

S.no	Area of	Progressive farmers (n=75)								Non- progressive farmers (n=75)							
	Governance	Computer		Telephone		Cell phones		Internet		Computer		Telephone		Cell phones		Internet	
		MS	Rank	MS	Rank	MS	Rank	MS	Rank	MS	Rank	MS	Rank	MS	Rank	MS	Rank
1.	Subsidy information	0.00	-	0.35	2	0.68	2	0.03	1	0.00	-	0.31	1	0.60	1	0.00	-
2.	Land recording	0.00	-	0.03	5.5	0.60	3	0.00	-	0.00	-	0.00	-	0.21	6	0.00	-
3.	Banking	0.00	-	0.05	4	0.39	4	0.00	-	0.00	-	0.03	3	0.51	2	0.00	-
4.	Health services	0.00	-	0.51	1	0.25	6	0.00	-	0.00	-	0.12	2	0.35	3	0.00	-
5.	Bill payment	0.00	-	0.03	5.5	0.07	1	0.00	-	0.00	-	0.00	-	0.07	7	0.00	-
6.	Judicial and legal system	0.00	-	0.00	-	0.24	7	0.00	-	0.00	-	0.00	-	0.24	4	0.00	-
7.	Any other public services	0.00	-	0.07	3	0.35	5	0.00	-	0.00	-	0.00	-	0.23	5	0.00	-

n = no. of respondents, MS = mean score

appreciate by some young, educated progressive farmers only while rest were not apprehend with the importance of this component in sustainability.

Extent of use of different IT tools in the areas of Governance.

It is clearly revealed from table 4, there were no users of computer in any area of governance among all the respondents. There was only one user of internet (MS 0.03), among the progressive farmers, used to seek only subsidy information. Telephones were the main tool used for health services (MS 0.51) by progressive farmers and for subsidy information (MS 0.35) by non progressive farmers. The use of Telephone was least for land recording services and bill payment by progressive as well as non progressive farmers in all the areas of governance component. Among the cell phone users subsidy information attains the first rank with MS 0.68 and MS 0.60 for progressive and non progressive farmers respectively. While judicial and legal system (MS 0.24) and bill payment (MS 0.07) were least concerned areas of governance component by progressive and non progressive farmers respectively. This importance of this component was recognized by both the groups of the farmers as it directly applied to their day to day activities. Thus, the uses of all the tools applied in this component for which farmers were comfortable. These findings were in line with of *Narula (2009).*

CONCLUSION

The study concludes that, ICT's has tremendous potential to fulfill the farmer's daily information needs. Though numbers of private and public projects have been launched with agriculture as their prime focus but farmers are not able to use them significantly. It may be due to low education level and lesser exposure of new technologies limits the farmers from their utility. Moreover, the study also reflects the difference between the usages of tools among two groups because the profiles of progressive farmers were more oriented towards younger and educated farmers. They also showed more eagerness to use modern ICT tools for information seeking. The importances of extension and governance component are appreciated by the farmers but they showed no usage of research information.

Thus, in today's age of smart technologies, awareness campaigns and training courses should be undertaken to train the farmers for the use of computers, internet and mobile phones in all the areas of Rural Social System. Integrated efforts of public and private agencies in this field can play a vital role to achieve the sustainability in agriculture through ICT.

REFERENCES

[1] Adekoya A E (2006) USE of ICT Among Rural People in Oyo State, Nigeria, retrieved from www.medwell.com on Aug 9, 2009.

[2] Anonymous (1998) A report from FAO, retrieved from http://www.fao.org. on june 11,2010

[3] Anonymous (2006) Statistical abstract of Punjab-2006. Economic Advisor of Government Punjab, Chandigarh. 147-216.

[4] Anonymous (2008) World Bank to set up 20 agri marts in Punjab, retrieved from www.expressindia.com on Feb 8, 2009.

[5] Axinn and Thorat (1972) *Modernizing World Agriculture*, Pp 7-10, Oxford & IB Pub.co., New Delhi.

[6] Dey B L, Pendergast R and Newman D (2009) How can ICTs be used and appropriated to adderess agricultural information needs of Bangladeshi farmers? retrieved from www.bar.gov.ph on Aug, 9, 2009.

[7] Farrell O C, Norrish P and Scott A (1999) Information and Communication Technologies for Sustainable Livlihoods, retrieved from www.fao.org on Aug 9, 2009.

[8] Findlay A (1993) Computer awareness among limited resource farmers, retrieved from www.joe.org on Feb 3, 2009.

[9] Langerwar D M and Rathore M K (2007) Utility perception about ICT among farmers. *Asian J of Extension Education.***27**; 95-101.

[10] Meitei L S and Devi T P (2009) Farmers information needs in rural Manipur; an assessment, *Annals of Library and information studies*. **56**; 35-40.

[11] Misra P K (2009) ICTs Supported Lifelong Learning For Indian Farmers; Needs, Challenges and Strategies, retrieved from www.ou.nl on Aug 9, 2009.

[12] Narula S (2009) A study of prioritisation plugging information gaps through ICTs. *TERI University*, New Delhi, India.

[13] Phougat S (2006) Role of Information Technology in agriculture, retrieved from www.techno-preneur.net on Feb 2, 2009.

[14] Robinson S (1998) Telecenters in Maxico; The first phase CF Farell O C, Norrish P and Scott A (1999) Information and Communication Technologies for Sustainable Livlihoods, retrieved from www.fao.org on Aug 9, 2009.

[15] Singh B P and Tewari R (2003) Farmers Development Through Information Technology Present Scenario & Its Perspective, retrieved from www.bhu.ac.in on Aug 9, 2009.

[16] Starasts A and Waewick E (2004) Constructing useful information for farmers- the role of IT, retrieved from www.cropscience.org.au on Feb 12, 2009.