Farmer's awareness and use of different ICT tools

ABSTRACT

Information and communication technologies (ICTs) are a broad range of technological tools and resources to create, stockpile, produce value and manage information. Radio and television broadcasting, computer hardware, software services, and electronic media could all be included. ICTs have seen significant changes in recent years and are developing as a significant tool for speeding agricultural growth in a developing country like India. The objective of study was to know awareness and use of different ICT tools by farmers. The study was conducted in village Gudli of Mavli block of Udaipur district of Rajasthan. The information was collected through Participatory Rural Appraisal using interview technique by group and individual contact method. Each farmer was critically interviewed about awareness & use of ICT tools including e-mail, radio, kiosk, computer, mobile etc. For this, the data was collected from 100 farmers. Result revealed that 100 per cent respondents having mobile without internet, were aware about calling from mobile, SMS and memory stick, and were also using them (calling, 82%) (SMS service 68 %). It was observed that 82 per cent respondents answered to all calls. Majority of the respondents (48-88%) were not using e-mail, radio, kiosk & computer. About one third of the respondents i.e. 36-48 per cent knew about accessing different internet sites, office documents & presentations. This is an ICT era, but till today, half of the farming community are suffering from various types of problems due to the gap between ICT and its use without need assessment and participation of farming community although farmers are using mobile phone for calling, gathering and exchange of information, entertainment etc. Now a day it has been observed that farmers are using different ICT tools i.e. mobile, kiosk etc. for gathering information about their crop production, daily wholesale rates in mandi market, information about climate, various crop diseases and other information related to agriculture.

KEYWORDS

Awareness, ICT with & without internet, Mobile, e-mail.

1. INTRODUCTION

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The ICTs in recent years have witnessed major changes and are emerging as a powerful tool for accelerating agricultural growth in developing country like India. There has been a rapid growth in the ICT sector since the late 1980s and the use of ICT has dramatically expanded since the 1990s. Simultaneously the Indian agriculture is moving towards feminization and the role of women and men in agricultural growth and development has been increasing considerably. World population is expected to surpass the 9 billion mark by 2050, and agricultural production will need to increase by 60 per cent from its 2005/2007 levels to meet this additional food demand. ICT applications can make a significant contribution to meet this future global food needs.

The important task of agricultural extension service is to facilitate exchange and share agricultural information, knowledge and skills. The transfer of agricultural information from research centres to farmers is very important as it helps farmers to learn innovations which improve agricultural productivity. Therefore, the need of farmers for relevant and current information on new agricultural practices is a vital issue that needs to be considered by every nation especially developing countries.

Information and Communication Technology can do so by collecting and sharing timely and accurate information on weather, inputs, markets, and prices; by feeding information into research and development initiatives; by disseminating knowledge to farmers; by connecting producers and consumers and through many other avenues. The present study was undertaken to address some of these dimensions. More specifically this study examines the availability and accessibility to different ICTs hardware to farmers. According to Laudon (2000) and Ongori (2009) that ICT are often perceived useful if it involves low cost, has the power to succeed in wider market and ready to gather large information within a brief time.

Through this study we may know the use of mobile phone that how farmers are using them. Are they using the mobile efficiently are they using it with ease, using normal function of mobile or not or for what purposes they are using it. When we get the data about their knowledge and the use of mobile we can make use this information for their effective utilization of the technology to educate them in agricultural and allied field activities. According to Sife *et al.* (2010) mobile technology has provided multidimensional benefits to the agricultural people and it helps in interaction, accessibility, and quick/timely information exchange.

2. RESEARCH METHODOLOGY

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For the plan period in research project on All India Coordinated Research Project on Home Science Funding by India Council of Agriculture and Research, it was decided to work on modern ICT use and knowledge of farming community. This is very important to know the use of ICT tool specially mobile because almost all the farming community have a mobile phones for various purposes. But how much they are using it in enhancing their knowledge regarding farming and other activities it is a big issue. Because it has been observed that farming community also have these easy accessible technology with them but they are not used to encroach and utilize the knowledge and information regarding new and innovative farming technologies from this tool.

For the purpose, Gudli village of block Mavli was selected as AICRP Home Science Extension work was being carried out is the same village. For this, the data was collected from 100 farmers. The information generated by Participatory Rural Appraisal Technique and it was supplemented with questionnaire based information collected through personal interview. They were asked about use of frequency to use mobile with Internet, without internet, their awareness about SMS, memory stick, video calling, SMS, WhatsApp group, Facebook, game, songs, information about agricultural technologies etc. It was also asked about purpose of using mobile. After collection of data it was recorded in data sheet in excel form and then data were analysed by calculating frequency and percentage and reported in the tabular form. Although the study was conducted to know, farmers awareness and use of different ICT tool but the study was delimited to know about use of mobile phones because it was observed in preliminary study that other ICT tools such as laptop, PC etc. were not available abundantly so it was decided to know about use of mobile phones only as it was available with 100 percent respondents.

The result of the study further can be used to plan and develop policies for maximum use of ICT tool for enhancing knowledge and education in the field of agriculture and allied areas by making them trained to use mobile phones for their knowledge upgradation.

The future plan of conducting such study would be to develop different apps for agriculture to increase production and productivity of crops, all package of practices related to different crops. Although so many apps are available related to agriculture and allied sector but after getting results from such studies, particular apps may be developed to get better results specially in the field of agriculture. The farmers were also convinced

by giving information to researcher and they do not have any objection to get information from them.

3. RESULTS AND DISCUSSION

Table 1. Distribution of respondents according to their use of ICT tools n= 100

	With internet service (%)	Without internet Service (%)
Mobile owned by respondent	64	100
Mobile of some family member	0	0
Personal computer/laptop	24	30
Family common computer /laptop	0	0
Kiosk / common service centres in village	0	0

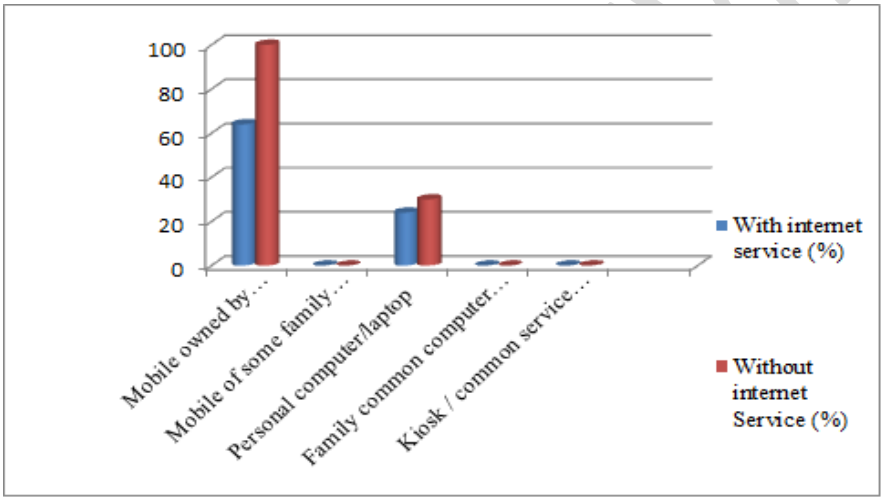

Fig 1. Distribution of respondents according to their use of ICT tools

Table and Fig 1 depicts that all the respondents i.e.100 per cent possessed their mobile and used it frequently while 64 per cent of them used internet facility as they had this facility on their mobile. Regarding personal computers/laptop only 20 per cent of respondents possessed it & used but did not access as they did not have facility on their laptop. The reason behind 100 per cent respondents were owner of mobile phone was that mobile has become necessity of everyone, by owing mobile, everyone feels connected with each other any time and furthermore no technical skill is required to operate simple mobile. In this regard, those who were use to internet were using mobile with internet facility and rest of them were using to for receiving & doing calls. In a study of Meso et al. (2005) "it had been observed that perceived usefulness and perceive simple use, greater reliability of the technology and easier access to ICT are among the important catalyst for better confidence thus create a far better usage of ICT". Duan *et al*. (2009) reported that "lack of data on ICT will keep

people in rural areas far away from the ICT services like internet and telecommunication and this directly will create people's negative attitude towards ICT".

Table 2. Percent distribution of the respondents according to their Awareness and Use of different ICT tool and Services n=100

ICT tools and services	Aware (%)		Use (%)	
	Yes	No	Yes	No
Mobile without internet				
Calling	100	0	100	0
SMS	100	0	82	18
Memory stick	100	0	68	32
Mobile with internet				
Video Calling	84	16	68	32
SMS	76	24	60	40
Memory stick/ Memory card	76	24	50	50
Whats app	70	30	60	40
Facebook	52	48	42	58
Games/ movies/ songs	64	36	40	60
Accessing different internet sites	48	52	30	70
Computer /laptop without internet				
Office documents/presentations etc.	48	52	30	70
Computer/laptop with internet				
Office documents/presentations etc.	36	64	12	88
Facebook, social media	16	84	24	88
Accessing different internet sites	16	84	24	88

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It is evident from table 2 that 100 per cent respondents having mobile without internet were aware about calling from mobile, SMS and memory stick, and were also using them (calling, 82%) (SMS service 68 %). Further, it was observed that the respondents who had internet facility (48-84%) were aware about calling, messaging, about memory stick, memory card, what's app, face book and games, movies, songs and accessing different sites. While their use was by 30-68 per cent respondents. The reason behind it was that they had to take help of their children. The results are comparable with a study conducted by Meena *et al.* (2011) that "80.63 per cent farmers were having awareness about one or the other mode of information technology, while only 19.38 per cent are seeking agriculture information thorough ICTs". In the continuation Dhaka and Chayal (2010) observed that "majority of the farmers (50.67%) have knowledge of ICT services and also use them frequently as and when they need information". While, Raguprasad (2011) revealed that "35 per cent of the farmers had medium level of knowledge about ICT tools followed by high (34.17 %) and low (30.83%) level of knowledge". In a study of Hasan *et al*. (2019) "it had been observed that 23.7 percent

farmers had moderate awareness on use of ICT in farm practices while 60 per cent and 12.7 per cent of the farmers had low and very low awareness on use of ICT based facilities in their farm practices". Leeuwis and Van den Ban (2004) suggested "on the premise of observation within the study that information sources or media play vital roles, in creating awareness about new agricultural technologies among farmers. Researchers observed that mass media were spreading agricultural technologies to the farmers at a faster rate than personal contacts"

About one third of the respondents i.e. 36-48 per cent knew about accessing different internet sites, office documents & presentations. While very few i.e. 12-30 per cent were using these facilities as it was of use for those respondents who perform the work of documentation. About facebook, social media and accessing different internet sites, these were aware by 16 per cent respondents and only 12 per cent were using them as and when required. Results were in line with a study conducted by Nagalakshmi *et al.* (2011) that majority (58.83%) of extension personnel had medium level of knowledge about ICTs followed by 29.41 per cent having high knowledge and 11.76 per cent of personnel having low knowledge of ICTs. Kabir (2015) found that half of the farmers (50.0%) had medium level of knowledge on ICTs. Furthermore, they had highly favourable attitude (58.9%) towards the Information and Communication Technology. Study conducted by Philip and Sriram (2017) showed that quite half the respondents had medium level of awareness on ICT tools and services. Majority of the respondents were conscious of mobile advisory services by Agricultural Produce Market Committee (APMC). Almost two thirds of the respondents were conscious of KCC (Kisan Call Centre) service. Slightly but two-fourths of the respondents were conscious of touch screen kiosks.

Table 3. Distribution of respondents according to pattern of use of mobile n= 100

<table>
<tr><th colspan="8">Calls</th></tr>
<tr><td colspan="3" rowspan="2">1. Answering calls</td><td colspan="2">All calls</td><td colspan="2">Known calls</td></tr>
<tr><td>Yes(%)</td><td>No (%)</td><td>Yes (%)</td><td>No (%)</td></tr>
<tr><td colspan="3"></td><td>82</td><td>18</td><td>18</td><td>82</td></tr>
<tr><th colspan="8">SMS</th></tr>
<tr><td rowspan="3">2. SMS received</td><td colspan="2" rowspan="2">Can you read messages</td><td colspan="4" rowspan="2">If no, than who reads them for you (n= 13) *</td><td colspan="2">Read all messages (n=37)</td></tr>
<tr><td>Yes</td><td>No</td></tr>
<tr><td colspan="2"></td><td colspan="4"></td><td>27</td><td>10</td></tr>
<tr><td>Yes</td><td>No</td><td>Wife</td><td>Children</td><td>Relatives</td><td>Friends</td><td colspan="2" rowspan="2">Read messages from known numbers (n=37)</td></tr>
<tr><td>(%)</td><td>(%)</td><td>(%)</td><td>(%)</td><td>(%)</td><td>(%)</td></tr>
</table>

	74	26	0	0	0	0	27.03	72.9
3. Source and type of SMS	Wife		Children	Relatives	Friends	KVKs	Agriculture dept	Any other
			(%)	(%)	(%)	(%)	(%)	(%)
i) Voice	0		0	30	40	0	0	0
ii) Written	46		24	70	52	0	0	0
iii) Video	0		12	54	40	0	0	0

4. SMS sent	**Can you write messages**		**If no, than who write them for you** (n=13)*			
	Yes	**No**	**Wife**	**Children**	**Relatives**	**Friends**
	(%)	(%)	(%)	(%)	(%)	(%)
	74	26	0	0	0	0

Memory stick/memory card						
5. Capacity of memory stick /card	**Availability**		**Capacity of memory stick**			
	Yes	No	4 GB	8 GB	16 GB	32 GB
	(%)	(%)	(%)	(%)	(%)	(%)
	84	16	16	8	38	22

*Multiple response

The table 3 depicts the pattern of use of mobile by the respondents. It was observed that 82 per cent respondents answers to all calls of which, 18 per cent were the known calls. On asking about receiving SMS, 74 per cent reported that they could read the messages and also go through it completely. Pant (2011) found that use of phone was appreciated by farming communities as easy, fast and convenient to get information on different aspects of agriculture.

The table further reveals that 24-70 per cent respondents receive written messages, (30- 40%) voice messages and 12-54 per cent respondents receive video messages from their wife, children, friends and relatives. Only 30 per cent respondents received messages from Agriculture department. Nearly three fourth of the (74%) respondents were able to write messages. It was interesting to note that 84 per cent of them had memory card of 4-32 GB capacity. The reason observed for this was SMS forwarding is very easy task, no need of any technical knowledge so all the respondents do the same & Jio mobile data were free available for almost one year so everybody used at their maximum level. Even the task of sending SMS, forwarding SMS, opening were done by their kids also. According to Kaske (2018) majority (90.6%) of household heads made phone calls for agricultural purposes. Over three quarters

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(85.9%) of the household heads received phone calls related to agriculture. Short message service (SMS) was poorly used. Similar results are shown by Rogers (2003) that community perceived that ICT is beneficial, it'll create a sustainable usage of ICT. Perceived usefulness must be persistent to possess a far better impact on ICT usage.

Table 4. Distribution of respondents according to frequency of use of different ICT tools

n=100

ICT tools	Frequency of usage			
	Always %	Sometimes %	Rarely %	Never %
Television	64	32	4	0
Radio	12	24	4	60
Mobile	94	6	0	0
Kiosk / common service centres	12	0	0	88
Computer	0	20	6	0
Internet	46	20	0	34
e- mail	20	24	8	48

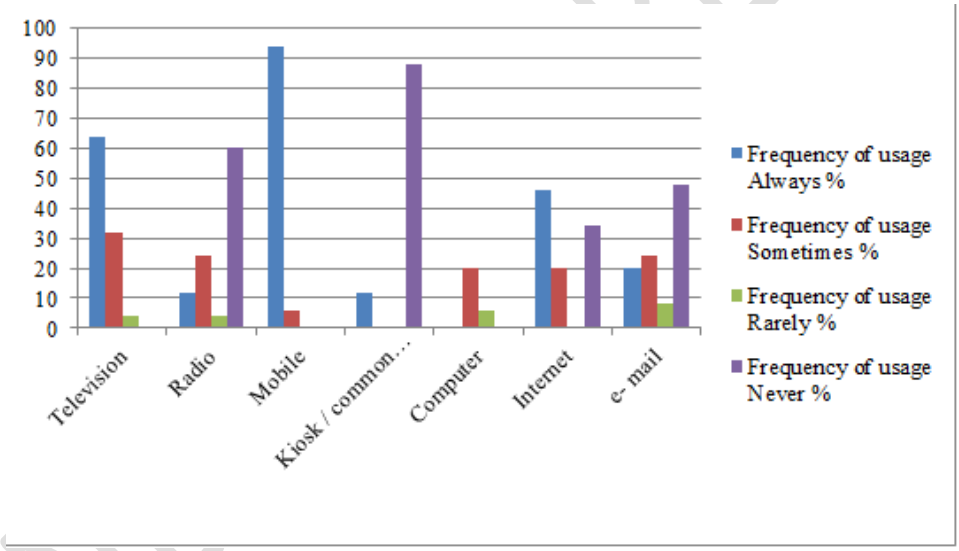

Fig 2. Distribution of respondents according to frequency of use of different ICT tools

Table 4 and Fig 2 shows that television & mobile were used by more than fifty per cent of the respondents always (64- 94%), internet by 46 per cent respondents. The use of e- mail, radio kiosk & computer was not there from majority of the respondents (48-88%). Similarly, the use of rest of the ICT tools was also negligible. The reason of using TV & mobile was due to easy availability & accessibility of the tools. Tadasad *et al.* (2003) stated that 42.70 per cent very often used websites; 33.60 per cent often used; 19.60 per cent occasionally used; 2.80 per cent rarely used and 1.40 per cent not at all used websites. Shiro (2008) conducted a case study on DIY ICT and located that "the

agricultural communities have a really positive attitude towards ICT and that they welcome any ICT project to be developed in their areas. However, their lack of ICT knowledge prohibits them from using ICT frequently". Dixon (2009) found that "that frequent usage and exposure to ICT must be considered if someone wants to make a positive attitude towards ICT".

According to Hassan et al. (2011) attitude is that the most vital contributor for perceived usefulness towards ICT usage. Armstrong et al. (2012) explored in his study that "the utilization of ICT tools in agriculture sector for rural farmers while emerging as a possible for improving the livelihoods of farmers remains not been adopted fully by all farmers within the Ratnagiri district".

Table 5. Distribution of respondents according to their purpose for using ICTs n= 100

ICT tools	Education (%)	Health (%)	Business (%)	Agriculture (%)	Social welfare (%)	Entertainment (%)
Television	22	4	0	30	0	100
Radio	0	0	0	12	0	40
Mobile	22	0	34	30	0	96
Kiosk /common service centres	12	0	4	0	0	0
Computer	18	0	0	0	0	14
Internet	34	0	26	0	0	62
e- mail	12	0	0	0	0	0

Table 5 depicts the purpose for using ICTs by the respondents. It was observed that 100 per cent respondents watch Television for entertainment, agriculture programme (30%), education (22%) and health purpose (4%). Radio was listened by 40 per cent respondents for entertainment purpose and 12 per cent respondents for agriculture purpose only. Mobile was used by 96 per cent respondents for entertainment, while 30 per cent to 34 per cent used it for business purpose, agriculture purpose and 22 per cent for education purpose. Kiosk services were used for educational purpose by 12 per cent respondents and for business purpose (4%). Computer was used for educational and entertainment purpose by 14-18 per cent respondents. The main purpose of using TV & mobile was observed as entertainment available all time, easy accessibility, easy to handle and cheapest media of entertainment. Dhaka and Chayal (2010) showed that majority of the farmers (57.33%) utilize ICTs for getting farm produce price. Kafura *et al.* (2016) revealed that most use of different ICT tools was found low among the respondents in the study area. Television as ICT tool was found more popular among the farmers in securing agricultural information. Another study

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of Rodman (2006) proves that agriculture is becoming increasingly information sensitive; hence, access to information has become a pre -requisite and a valuable resource for agricultural development.

Malhan and Rao (2007) reported that telephone facility has increased the chance of getting access to the people living even in remote areas. It contributes towards developing farmers‟ linkages with people including extension experts. Help lines facilitate the mechanism for getting information/assistance regarding people's problems by using toll free numbers. ICT has been shown to possess an increasing impact on agricultural sector and on the processes related to food production (Blurton, 2010).

Internet was used by 62 per cent for entertainment, Educational purpose (34% respondents), 26 per cent respondents told that they used it for business purpose. Email was used by 12 per cent respondents for educational purpose as they reply for some competition exam etc. Banmeke and Ajayi (2008) found that respondents mostly used information board, video presentation and the radio programme at the centre. The most frequently sought information is on fertilizer application, harvesting methods and market information. Rudroju (2013) observed that 65.71 per cent of respondents were utilising information services of KCC, 61.43 per cent and 55.71 per cent of them were utilising services of Krishi Marata Vahini and e-Choupal, respectively. It was observed during their interview that if farmers are facilitating with these facilities & be aware of advantages of using ICT tools then definitely the use of ICT tools can be increased from 12 per cent to approx. 50 per cent, As they were using these tools as per their convenience & if they are trained in their use. According to Lindell (2020) teachers increased their possibility knowledge when they were exposed to the students' idea that mobile phone use could support the students' division of labor, when they want to communicate experiences with each other, independently of place and time. Mittal and Mehar (2012) found that majority of the farmers in rural areas used mobile phones as a tool of connecting with people and friends. Thus ICTs are widely used mainly for the aim of social communication.

The use of e- mail, radio kiosk & computer was not there noted from majority of the respondents (48-88%). About facebook, social media and accessing different internet sites, these were aware of by 16 per cent respondents and only 12 per cent were using them as and when required. If the ICT tools will be made available & accessible to the farmers, the use of tools also may be increased in their day to day life. According to Jabir (2011) ICT-based

information delivery has helped the livestock farmers of Uttar Pradesh in India in making significantly better quality decisions on various livestock practices as compared to ICT non-users.

4. CONCLUSION

It can be concluded that television & mobile were used by more than fifty per cent of the respondents always (64- 94%), internet by 46 per cent respondents. Regarding 24-70 per cent respondents receive written messages, (30-40%) voice messages and 12-54 per cent respondents receive video messages from their wife, children, friends and relatives. Mobile was used by 96 percent respondents for entertainment, while 34 per cent used it for business purpose and 22 per cent for education purpose.

These result will be helpful to policy makers, App developers, researchers to involve the agricultural information in the form of designing agricultural apps, so that farmers may get benefit to enhance their knowledge and may use the application in their fields to get more production and productivity and adopt allied activities to increase their family income results into improvement in their living conditions and also raise their living standard.

Consent

As per international standard or university standard, respondents' written consent has been collected and preserved by the author(s).

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