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Use of ICTs by Tribal Farmers for Obtaining Agricultural Information in Southern Rajasthan

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ABSTRACT

Most of the tribal farmers of Southern Rajasthan are using ICT tools for seeking the agricultural information via mobile phones, television, radio, kisan call centre, information kiosks, internet and expert system. The study was conducted in Southern Rajasthan covering two districts (Banswara and Dungarpur) on the basis of availability of maximum facilities and infrastructures to promote use of ICT. Empirical data were collected personally from 160 farmers through a structured interview schedule. The results showed that majority of the farmers owned mobile phones as well as television and radio. The most frequently used ICT for social communication, contacting middle men for the marketing of produce and contacting experts on real time basis was mobile phone followed by television. The use of radio and kisan call centre was lower as compared to mobile phones and TV due to ICT availability and access levels being lower than other ICTs. Internet, touch screen computer and information kiosk and other application were still being rarely used by young and educated. Majority of the farmers (60.62%) were used the ICTs during the evening hours due to free and leisure time and telecast or broadcast of agricultural programs during the evening hours.

NTRODUCTION

Information Technology includes all of the technology that is used to collect, process, protect, and store information. It denotes hardware, software, and computer networks. Information and Communication Technology (ICT) a term coined by Stevenson in 1997, currently used to malicious an extensive range of services, applications, and technologies, using various types of tools and software, often running over the telecommunication network is the foundation of the economy and a driving force of social changes in the 21st century. It influences all facets of life, and without it, life will be virtually impossible in times to come. The importance of ICTs is not the technology as such, but it's enabling the function in access to knowledge, information, and communications, increasingly important elements in today's economic and social interactions.

Information is vital in agricultural development because it is a tool for communication. Extension services are required to improve agricultural productivity by providing farmers with requisite information helping them to optimize use of limited resources (Muyanga and Jayne, 2006; Singh et al., 2017). Worldwide agriculture has witnessed a shift in the past few decades and extension mechanism need to stay ahead and equip the farmers by enhancing their management and decision making skills (Singh et al., 2018; Singh et al., 2020a). But in reality there is only one extension worker available for every 1156 farmers in India (DFI, 2017). In India, large numbers of positions in public extension system are vacant, resulting in overload for extension personnel and thus, lowering their efficiency (Mukherjee and Maity, 2015). Extension system is also entrusted with numerous other development activities, which ultimately weaken the focus on

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extension (Singh et al., 2018). It results large that numbers of farmers are still unreached. The reports imply that only 41 per cent of the farming families are in contact with government or private extension services. The government extension system covers only 11 per cent of the households (Bera, 2014).

Information and Communication Technologies (ICTs) has the abilities of reaching large number of people simultaneously, therefore have a greater role in the extension work. Sandhu et al., (2012) concluded mobile based delivery ensures timeliness and is of great use to the farmers. Dissemination of agricultural information through television and radio has played an important role for a long time, but the recent developments in the mobile and internet has provided new ways of technology transfer. Keeping in view the facts and importance, the study was conducted to assess the use of ICT tools by tribal farmers to obtain agricultural information in Southern Rajasthan.

METHODOLOGY

The present study was conducted in Dungarpur and Banswara districts of Southern Rajasthan. The districts were selected based on the availability of maximum number of facility centres for promoting use of ICT. For the selection of tehsils, two tehsils from each selected district were selected for the purpose of investigation, two gram panchayats from each selected tehsil and two progressive villages from each selected gram panchayats were selected based on the availability of maximum number of facility centres for promoting use of ICT in identified gram panchayats. The selection of respondents was based on the criterion that least one of the ICT tools being used for seeking agricultural information. Ten respondents were selected from each identified village by random sampling technique, thereby, making a sample of 160 respondents. The data was collected by a pre-tested structured interview schedule through personal interview method.

To measure the extent of use of ICTs for seeking information on agriculture among the respondents, a toolwas developed. A total of 17 ICT tools and electronic media were included to find out the application of ICT and other electronic media. The responses were recorded on a three point continuum i.e. frequently, occasionally, and seldom which were assigned 3, 2 and 1 score respectively. To find out level of ICT use overall score for each respondent was calculated and respondents were categorized into three groups on the basis of calculated mean and standard deviation of the scores obtained by the respondents. Frequency and percentage of respondents in each category i.e. less use, moderate use and high use were calculated. The application index for each respondent was calculated by using the following formula:

$$\text{Application index} = \frac{\text{Total score obtained by respondents}}{\text{Maximum obtainable score}} \times 100$$

To determine the extent of use of each ICT tool mean per cent score was worked out and ranked accordingly. In order to find out the difference between the respondents of Banswara and Dungarpurn districts about ICT application in agriculture, 'Z' test was. To know the time preferences for use of ICT tools, frequencies of each respondents for all the three time span i.e. morning, afternoon and evening were counted and converted into percentage.

RESULTS AND DISCUSSION

Data presented in Table 1 depict that majority (59.37%) of the respondents were found in the medium group of ICT use, whereas, 23.75 per cent respondents were in low group and remaining 16.88 per cent farmers were observed to be in the high group of ICT use. The results of the study are near about similar to the results of Sethy and Mukhopadhyay (2020). Further, among the subjects of different district, it was observed that 17.50 per cent respondents of Banswara district and 16.25 per cent respondents of Dungarpur district were under high ICT use group. Likewise, 21.25 per cent and 26.25 per cent respondents of Banswara and Dungarpur districts were reported in low level of ICT group application respectively. As such respondents of Banswara district used more ICT tools than respondents of Dungarpur district for seeking agricultural information. It can be further concluded that more than 78 per cent of respondents from Banswara district were observed to be either from medium or high ICT application group and about 73 per cent of the respondents of Dungarpur district were found to use ICT from medium to lower level in the study area. The findings are similar to the findings of Ndag et al., (2008). This is once again confirmed that application of ICT tools to a great extent depends on the access & availability of media and facility structures to explore the benefits of ICT. This might have reflected in the results.

The data depicted in Table 2 indicate that use of 'mobile phone' was highest (74.79%) among the farmers and this tool was ranked first. Similarly the utilization of 'TV' (69.17%) was accorded 2nd rank followed by, 'radio' (63.13%), 'kisan call centre' (53.75%), 'expert system' (53.54%), 'information kiosks' (42.08%) respectively. The findings of the study were found tuned with the findings of Sethy and Mukhopadhyay (2020). It further shows that the use of ICT tools for seeking agricultural information of 'multimedia' (41.88%), 'internet' (32.50%), 'teleconference' (29.58%), 'touch screen computer' (26.46%), 'video conference' (20.42%) and 'e-literature' (19.17%) were utilized by less number of respondents. Further, very poor application was found in the extent use of 'CD/ DVD' (15.00%), 'e-chaupal' (13.75%), 'e-learning' (11.87%), 'ITGK' (8.54%) and 'e-mail' (6.04%). As such the extent of application of ICT tools among the respondents of Banswara district was 6.67 to 75.42 MPS, while in case of

Table 1. Distribution of respondents on the basis of use of ICT tools for seeking agricultural information

S.No.	Level of ICT use	Banswara district		Dungarpur district		Total	
		Frequency	Percentage	Frequency	Percentage	Frequency	Percentage
1.	Less (up to 12)	17	21.25	21	26.25	38	23.75
2.	Moderate (13 to 21)	49	61.25	46	57.50	95	59.37
3.	High (above 21)	14	17.50	13	16.25	27	16.88
	Total	80	100.00	80	100.00	160	100.00

Table 2. Utilization of ICT tools by the farmers for seeking agricultural information

S.No.	ICT tools	Banswara district		Dungarpur district		Total	
		Percentage	Rank	Percentage	Rank	Percentage	Rank
1.	Television	68.75	II	69.58	II	69.17	II
2.	Radio	64.17	III	62.08	III	63.13	III
3.	e-literature	22.08	XI	16.25	XIII	19.17	XII
4.	Touch screen computer	29.17	IX	23.75	X	26.46	X
5.	Mobile phone	75.42	I	74.17	I	74.79	I
6.	Internet	35.42	VIII	29.58	IX	32.50	VIII
7.	Information Kiosks	44.58	VI	39.58	VII	42.08	VI
8.	Kisan call centre	55.83	IV	51.67	V	53.75	IV
9.	e-chaupal	15.42	XIII	12.08	XIV	13.75	XIV
10.	Video conference	19.58	XII	21.25	XI	20.42	XI
11.	e-mail	6.67	XVII	5.42	XVII	6.04	XVII
12.	ITGK	9.17	XVI	7.92	XVI	8.54	XVI
13.	Expert system	50.83	V	56.67	IV	53.54	V
14.	Teleconference	24.58	X	34.58	VIII	29.58	IX
15.	Multimedia	40.83	VII	42.92	VI	41.88	VII
16.	e-learning	13.33	XIV	10.42	XV	11.87	XV
17.	CD/DVD	11.67	XV	18.33	XII	15.00	XIII
	Mean	16.92		16.36			
	S.D.	5.07882		4.9881			
	'Z' Value	0.706^{NS}					

NS = Non-significant

Table 3. Suitability of time for the use of ICT tools by the farmers

S.No.	Suitability of time	Banswara district		Dungarpur district		Total	
		Frequency	Percentage	Frequency	Percentage	Frequency	Percentage
1.	Morning	14	17.50	12	15.00	26	16.25
2.	Afternoon	20	25.00	17	21.25	37	23.13
3.	Evening	46	57.50	51	63.75	97	60.62
	Total	80	100	80	100	160	100

respondents of Dungarpur district the extent of use of ICT tools was reported from 5.42 to 74.17 MPS with respect to all the tools included in the study. Further, it was noted that respondents of Banswara district had more use of tools than respondents of Dungarpur district. The results are found to partially similarity with the findings of Aphunu and Atoma (2011), Sharma et al., (2014) and Syieml and Raj (2015). There was no significant difference in the application of information and communication technologies between the farmers of Banswara and Dungarpur districts. It means that farmers of both the districts were using information and communication technologies at more or less similar scale for seeking agricultural information in the study area. Panda et al., (2019) reported that ICT tools utilized mostly for social media and video calling but less for computer, global positioning system, web camera and radio. The benefits extracted by the farmers by using ICT tools mostly for communication and for general information but very low to get higher price of produce with significance level of influence on benefit extraction. The present findings are contradictory to the findings of Rajpoot and Ansari (2009).

Efforts were made to know the suitability of time for use of ICT by the farmers with view targets the ICT promotional activities. To get an overview of the media habits and time preference, it is important to know the time during day when farmers prefer to use ICT tools. It is evident from the data contained in table 3 that majority of farmers (60.62%) were using the ICTs during the evening hours. This was due to the fact that the farmers feel free and has leisure time during evening hours and the programmes telecast or broadcast during evening hours can be enjoyed by them. It was further inferred that evening is the more suitable time for media broadcast and telecast.

CONCLUSION

The results concluded that the majority of the respondents were found in the medium group of ICT application, whereas, few farmers were observed to be in the high group of ICT application. The respondents ranked mobile, TV and radio in higher positions for getting agricultural information. There was no significant difference in the application of information and communication technologies between the respondents of Banswara and Dungarpur districts and majority of farmers were using the ICTs during the evening hours.

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