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Accessibility and utilization of electronic and web based weather information sources by farmers of Ranchi district of Jharkhand

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Abstract
The present research was conducted in Ranchi district of Jharkhand in the selected eight villages. In this investigation it was found that majority of the farmers (85.8%) had low access to electronic and web based weather information sources majority of the farmers (92.5%) had low utilization of such weather information sources. Through regression analysis, it was found that the R^2 between personal variables and accessibility was 0.895 and the R^2 between personal variables and utilization was 0.725.

Keywords: Accessibility, utilization, information, weather

Introduction
ICTs stand for information and communication technologies and are defined, for the purposes of this primer, as a "diverse set of technological tools and resources used to communicate, and to create, disseminate, store, and manage information." These technologies include computers, the internet, broadcasting technologies (radio and television), and telephony. ICT is finding its applicability in many diverse sectors. Nowadays, it is also gaining relevance in agriculture sector.

Information and communication technology in agriculture (ICT in agriculture), also known as e-agriculture, is developing and applying innovative ways to use ICTs in the rural domain, with a primary focus on agriculture. ICT in agriculture offers a wide range of solutions to some agricultural challenges. It is seen as an emerging field focusing on the enhancement of agricultural and rural development through improved information and communication processes. E-agriculture continues to evolve in scope as new ICT applications continue to be harnessed in the agriculture sector. Besides being a rapid disseminator of information regarding various types of agricultural information, ICT nowadays is also being harnessed to disseminate meteorological information to farmers. A common problem in developing countries is the lack of integrated means of processing and delivering agro-meteorological information to the farming communities. Even with improved agricultural technology and improved level of farm inputs, the agricultural sectors in these countries operate below their potential level owing to the challenges imposed by marked intra-seasonal weather and inter-annual climate variability. In the near future, ICT would have a major role to play in dissemination of weather and climate change information to farmers. Under the light of present circumstances the study was conducted in Ranchi district of Jharkhand state.

Methodology
The present study was carried out based on primary data about socio-personal, socio-economic and communicational attributes of respondents which were collected through personal interview with the help of structured pre-tested interview schedule. All the electronic medium and ICT based weather information sources accessed by the farmers in the study area were enlisted and their perception was noted. In Jharkhand, Ranchi district was purposively selected since the researcher was well acquainted to the area. Two blocks namely Kanke block and Angara block were randomly selected out of which four villages from each block was randomly chosen. 15 farmers from each village were randomly selected for interview. Thus a sample of 120 respondents was taken.

Results and discussion
Access to electronic and web based weather information sources
Table 1 illustrates the access of farmers to electronic and web based weather information sources. It can be concluded that majority of the farmers (85.8%) have very less access to such

sources. 12.5 per cent of the farmers fall under medium category while only 1.7 per cent of the respondents have high access level to electronic and web based weather information sources.

Table 1: Frequency distribution of respondents according to their access

Category	Frequency	Per cent (%)
Low	103	85.8
Medium	15	12.2
High	2	1.7

Utilization of electronic and web based weather information

With regards to utilization of information, it can be said from table 2 that majority of the respondents (92.5%) rarely utilize such weather information, with only 0.8 per cent of the respondents frequently utilizing such information. 6.7 per cent of the respondents utilize such weather information sometimes.

Table 2: Frequency distribution of respondents according to the utilization pattern

Category	Frequency	Per cent (%)
Rarely	103	92.5
Sometimes	15	0.8
Frequently	2	6.7

Correlation between personnel variables and accessibility to electronic and web based weather information sources:

Table 3 reveals the Pearson correlation coefficient between personal variables and access to electronic and web based weather information sources. It can be said that possession of weather information yielding electronic gadgets (0.477), access to internet (0.453), need of weather information (0.463), perception about effectiveness of weather information (0.900), perception about credibility of weather information (0.928), mass media exposure (0.603), innovativeness (0.311), cosmopoliteness (0.301) and education (0.356) are positively significant at one per cent level of significance. Contact with extension agencies (0.089) and social participation (0.109) are positively non-significantly correlated, whereas age (-0.127) is negatively non-significantly correlated.

Table 3: Correlation between personnel variables and accessibility to electronic and web based weather information sources

Variables	Correlation coefficient
(X_1)-Possession of weather information yielding electronic gadgets	0.477**
(X_2)-Access to internet	0.453**
(X_3)-Need of weather information	0.463**
(X_4)-Perception about effectiveness of weather information	0.900**
(X_5)-Perception about credibility of weather information sources	0.928**
(X_6)-Contact with extension agencies	0.089
(X_7)-Social participation	0.109
(X_8)-Mass media exposure	0.603**
(X_9)-Innovativeness	0.311**
(X_{10})-Cosmopoliteness	0.301**
(X_{11})-Age	-0.127
(X_{12})-Education	0.356**

**Correlation is significant at 0.01 level of significance

Correlation between personnel variables and utilization of electronic and web based weather information

Table 4 illustrates the Pearson correlation coefficient between personal variables and utilization of electronic and web based weather information. It can be said that possession of weather information yielding electronic gadgets (0.481), access to internet (0.408), need of weather information (0.455), perception about effectiveness of weather information (0.772), perception about credibility of weather information sources (0.810), mass media exposure (0.599), innovativeness (0.275), cosmopoliteness (0.248) and education (0.328) are positively significant at one per cent level of significance. Contact with extension agencies (0.123) and social participation (0.076) are positively non-significantly correlated, whereas age (-0.126) is negatively non-significantly correlated.

Table 4: Correlation between personnel variables and utilization of electronic and web based weather information

Variables	Correlation coefficient
(X_1)-Possession of weather information yielding electronic gadgets	0.481**
(X_2)-Access to internet	0.408**
(X_3)-Need of weather information	0.455**
(X_4)-Perception about effectiveness of weather information	0.772**
(X_5)-Perception about credibility of weather information sources	0.810**
(X_6)-Contact with extension agencies	0.123
(X_7)-Social participation	0.076
(X_8)-Mass media exposure	0.599**
(X_9)-Innovativeness	0.275**
(X_{10})-Cosmopoliteness	0.248**
(X_{11})-Age	-0.126
(X_{12})-Education	0.328**

**Correlation is significant at 0.01 level of significance

Regression between personnel variables and access to electronic and web based weather information sources:
Table 5 show the regression coefficient of personal variables with accessibility of respondents to electronic and web based weather information sources estimated through enter method of which adjusted R-squared was found to be 0.882.

Table 5: Regression coefficient of personal variables with access to electronic and web based weather information sources (Y_1):

Variable			Regression coefficient
(X_1)-Possession of weather information yielding electronic gadgets			-0.003
(X_2)-Access to internet			0.032
(X_3)-Need of weather information			0.017
(X_4)-Perception about effectiveness of weather information sources			0.141
(X_5)-Perception about credibility of weather information sources			0.686
(X_6)-Contact with extension agencies			0.084
(X_7)-Social participation			0.006
(X_8)-Mass media exposure			0.135
(X_9)-Innovativeness			0.031
(X_{10})-Cosmopoliteness			-0.002
(X_{11})-Age			-0.042
(X_{12})-Education			0.019
R-squared	0.895	mean of dependent variable	14.519
Adjusted R-squared	0.882	sum of residual squared	188.751
S.E. of regression	0.457	F-statistic	69.406

Table 6: Model summary of regression coefficient of personal variables with access to electronic and web based weather information sources:

Model	Unstandardized Coefficient		Standardized Coefficient	t	Sig.
	B	Std. error	Beta		
1. (Constant)	0.100	0.062	0.928	1.628	0.106
Credibility	0.056	0.002		27.006	0.000
2. (Constant)	-0.262	0.097		-2.704	0.008
Credibility	0.050	0.002	0.840	22.707	0.000
Mass media	0.090	0.020	0.171	4.626	0.000
Exposure					
3. (Constant)	-0.335	0.099		-3.375	0.001
Credibility	0.051	0.002	0.852	23.318	0.000
Mass media exposure	0.079	0.020	0.150	4.028	0.000
Contact with extension	0.096	0.039	0.079	2.474	0.015
Agencies					

The model summary of regression coefficient of personal variables with access to electronic and web based weather information sources is presented in table 6. It was found through stepwise regression estimation method that credibility of weather information sources affected access to weather information sources by 86.0 per cent. Similarly mass media exposure was found to affect 88.0 per cent and contact with extension agencies affected up to 88.5 per cent. The formula for regression coefficient can be given as

$$Y_1 = 0.100 + 0.860*X_5 + 0.885*X_6 + 0.880*X_8$$

Regression between personnel variables and utilization of electronic and web based weather information
Table 7 shows the regression coefficient of personal variables with utilization of electronic and web based weather information sources. It can be said by estimating the regression coefficient through enter method that the adjusted R-squared value was 0.691

Table 7: Regression coefficient of personal variables with utilization of electronic and web based weather information (Y_2)

Variable			Regression coefficient
(X_1)-Possession of weather information yielding electronic gadgets			0.047
(X_2)-Access to internet			0.039
(X_3)-Need of weather information			0.070
(X_4)-Perception about effectiveness of weather information sources			-0.160
(X_5)-Perception about credibility of weather information sources			0.801
(X_6)-Contact with extension agencies			0.096
(X_7)-Social participation			0.000
(X_8)-Mass media exposure			0.206
(X_9)-Innovativeness			0.012
(X_{10})-Cosmopoliteness			-0.017
(X_{11})-Age			-0.069
(X_{12})-Education			0.002
R-squared	0.725	mean of dependent variable	21.842
Adjusted R-squared	0.691	sum of residual squared	283.950
S.E. of regression	1.008	F-statistic	21.509

Table 8: Model Summary of regression coefficient of personal variables with utilization of electronic and web based weather information:

Model	Unstandardized coefficient		Standardized coefficient	T	Sig.
	B	Std. Error	Beta		
1. (Constant)	8.220	0.132	0.810	62.245	0.000
Credibility	0.066	0.004		15.017	0.000
2. (Constant)	7.504	0.210		35.724	0.000
Credibility	0.056	0.005	0.683	11.597	0.000
Mass media exposure	0.179	0.042	0.248	4.218	0.000

The model summary of regression of personal variables with utilization of electronic and web based weather information is given table 8. By estimating the regression coefficient through stepwise method it was found that credibility and mass media exposure affected utilization up to 65.4 and 69.7 per cent respectively. The formula for regression coefficient can be expressed as:

$$Y_2 = 8.220 + 0.654*X_5 + 0.697*X_8$$

Conclusion

It can be concluded from the findings of the research that majority of the farmers had low accessibility to electronic and web based weather information sources and which was even lower in case of utilization of information from such sources. Possession of weather information yielding electronic gadgets, access to internet, Need of weather information, mass media exposure, innovativeness, cosmopoliteness and education were some of the variables which had positive correlation and were significant. Major constraint in this case was lack of awareness about such facilities. Many of the farmers were not well acquainted with the working and benefits of such sources and still depended on traditional means i.e. superstitious beliefs for procuring predictions about weather. It can be said that by equipping the farmers with proper tools and means can increase their access and utilization of electronic and web based weather information sources. It can also be suggested that by educating them about such sources of information, they may be able to better utilize those sources of weather information. Innovativeness and cosmopoliteness of an individual are some of the attributes that greatly contributed towards low accessibility and utilization. Furthermore, the respondents must perceive the need of weather information as felt needs are the ones for which an individual strives the most.

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