

Exploring the extent of farmer's access on information communication technology (ICT) in Cooch Behar district of West Bengal

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ABSTRACT

In the present era of knowledge upliftment, the information enables the individual to explore and excel their cognitive element for developing the socio economic status in the socio-cultural milieu. The higher accessibility of information plays a pivotal role in ensuring sustainability of any livelihood generating activity. In a country like India where majority of the population staying in the remote area are still continuing their livelihood with the help of agriculture. In this case, the productivity and profitability of the farming enterprises strongly associated with the timely availability of appropriate information. For enhancing the access of information, Information Communication Technology (ICT) can create the environment and motivate the people to avail the benefit of technological backstopping. With this backdrop, the present study has been conceptualized to assess and analyze the access of farming community to various ICTs for doing their agricultural activity effectively and efficiently. The study was conducted in five villages of Cooch Behar-I and Cooch Behar-II block of Cooch Behar district of West Bengal. Purposive as well as multistage and random sampling procedures were followed in selecting the respondents. In the present study, farmers' access on ICT tools was considered as dependent variable and the other related social, personal, psychological and communication attributes were considered as the independent variables. The data were collected with the help of the structured interview schedule through personal interview method. The major statistical measures used were coefficient of correlation and multiple regressions. From the coefficient of correlation, it has been found that the variables like possession of assets and Utilization pattern of communication sources are positively and significantly associated with the dependent variable, access to ICT tools whereas one variable like experience in farming is negatively and significantly associated with the access of the farmers to the ICT tools. In multiple regression analysis, the variable like experience in farming is significantly and negatively contributing towards characterizing the access on ICT tools while other variables like house type, utilization pattern of communication sources are significantly and positively contributing towards characterizing the access on ICT tools, and the entire explicability is 36.20%.

Keywords: Explicability, information accessibility, ICT, livelihood generation, sustainability

In the changed social scenario and changed extension paradigm, the use of human resources for communication of new ideas is very difficult. The future generation needs the acumen and skill to utilise the mechanised information services. The gigantic population pressure in the country like India compels the extension system to attach with the mechanised information services to reach a very good number of people at a time with the updated information. The information availability is not the issue in rural areas also but the accessibility is the real problem in the remote areas as the extension system suffers from the paucity of manpower. There is a need of replacement of the existing information services with the help of easily accessible, economic and remunerative information communication tools. The Information and Communication Technology (ICT) enabled extension services are key changing agent to modify the agrarian situation and farmers' lives by improving access to

information and sharing knowledge. The ICT is a broad term used to describe the tools and processes to access, retrieve, store, organise, manipulate, produce, present and exchange information by electronic and other automated means. It includes a range of technologies like radio, television, computer, multimedia, internet and satellite based communication systems. In supporting to the traditional agricultural methodology, the application of ICT has given adequate and appropriate information to the farmers about crop productivity, weather forecasting, market information etc. Access to ICT is now considered as one of the important determining factors for the development status of a country. The country like India is increasingly integrating ICT into its national development plan and adopting strategies for its wide spread promotion in all the spheres of economic activities by ensuring the benefits of ICT to all the different socioeconomic strata and the

grassroots of rural India for transforming a nation into a knowledge vibrant e-learning society. Not only that but also this new millennium market place has placed greatest demand for a broader base of population to have intensive knowledge and exhaustive updated information in the concerned field. The changing scenario demands people to adapt new ways for updating their skill and knowledge by using information communication technology. Smith (2003) pointed out that agricultural information professionals must support agriculture by managing and improving access to a proliferating and increasingly complex array of information in a climate of already shrinking resources worldwide.

In spite of the remarkable advance in ICT tools, farmers of our country still lack proper skill and knowledge to access various ICT tools and often face hurdles in effectively accessing various ICT tools for improving their agricultural practices. According to Girard (2003), absence of any public-access facilities for ICTs in rural areas is a huge barrier to use by small-scale farmers in rural areas. Dhaka and Chahal (2010) in a study in Bundi district of Rajasthan reported that illiteracy, non-availability of relevant and localised contents in their languages, affordability, poor accessibility and awareness and un-willingness for adoption of new technologies imposed major problems in adopting ICT by farmers. Therefore, any strategic intervention towards improving the access of the farmers to the ICT enabled extension services should also consider the constraints faced by the farmers. Olaniyi *et al.* (2013) conducted a study on Accessibility and relevance of information and communication technologies (ICTs) among cassava farmers in Nigeria and reported that generally, 7 out of 14 of the selected ICT tools were categorized into high level of awareness. These are radio, television, video recorder, audio cassette, Mobile telephone (GSM), computer and camera. Balaji *et al.* (2007) observed that the use of ICTs - radio, television and mobile phones in particular, could accelerate agricultural development by improving access to information and knowledge services.

Under such a research climate, the present study has been conceptualized and conducted to assess and analyse the access of the farmers to various ICT tools existing in the rural area and thereby explore the attributes of the farmers, which have significant influence on their access to ICT tools.

MATERIALS AND METHODS

The study was conducted in five villages of Cooch Behar-I and II block of Cooch Behar district of West Bengal. Purposive as well as multistage sampling and random sampling procedures were followed in selecting

the respondents. An exhaustive list of ICT tool users for agricultural extension services was prepared with the help of the local people, local administrators *etc.* From the exhaustive list twenty (20) number of ICT tool users were randomly selected as respondents from each selected villages. Accordingly, the total number of respondents was hundred (100). Access of ICT tools is operationalized as frequency of using ICT tools by the farmers for obtaining information on different areas related to agriculture. The variable is measured using schedule developed for the study. The schedule consisted of 13 areas of information. Extent of access is studied on a five point continuum *viz.*, daily, weekly, monthly, whenever needed and never with scores 5, 4, 3, 2, 1 and 0, respectively for each of the four ICT tools. Because of the total score obtained, the respondents are divided into 'low', 'medium' and 'high' category based on mean and standard deviation.

RESULTS AND DISCUSSION

Table 1 presents the distribution of the farmers according to their access on ICT tools. The results show that majority of the respondents are under low level of access on ICT tools 10-19.66 (58%) followed by medium level of access on ICT tools 19.67-29.33 (31%) and high level of access on ICT tools 29.34-39 (11%) respectively. Similar findings were also noticed by Khalak *et al.* (2018). The mean score of total distribution is 19.08 and standard deviation is 6.87. The coefficient of variation within the distribution being 36.01% signifies high consistency level of the distribution for the variable 'access on ICT tools'. It implies that farmers have lack of access to ICT tools and therefore adequate facilities should be provided to improve their access to ICT tools.

Table 2 reflects the Pearson's coefficient of correlation among the dependent variable, access to ICT tools of the farmers with the twenty causal variables. The result shows that the variables possession of asset (X_{16}) and Utilization pattern of communication sources (X_{20}) are positively and significantly associated with the dependent variable, access to ICT tools. On the other hand, the variable experience in farming (X_3) is negatively and significantly associated with the access of the farmers to the ICT tools.

Experience in farming and access to ICT tools

In the present study, experience in farming has been conceptualized as the time span for which a farmer is practising his farming. So, it is discernible that farmers cultivating for long time would have more experience than those cultivating for comparatively lesser time. As the farmers with higher experience have developed their own perception regarding various aspects of farming due

Table 1: Distribution of respondents according to their access on Information Communication Technology (ICT) tools (Y)

Category	Score	Frequency	Percentage
Low	10-19.66	58	58
Medium	19.67-29.33	31	31
High	29.34-39	11	11

Table 2: Correlation coefficient of access on ICT tools (Y₂) of respondents with 20 independent variables

Variables	Coefficient of correlation (r)
Age(X ₁)	-0.181
Caste(X ₂)	0.042
Experience in farming (X ₃)	-0.337**
Educational Qualification(X ₄)	0.16
Family Education Status(X ₅)	-0.048
Family Annual Income (X ₆)	0.182
Family Annual Expenditure(X ₇)	0.149
Land Holding (X ₈)	0.033
Possession of assets(X ₉)	0.326**
Livestock possession(X ₁₀)	-0.031
House Type (X ₁₁)	0.156
Social Participation(X ₁₂)	0.11
Self Confidence (X ₁₃)	-0.018
Risk Preference (X ₁₄)	0.188
Scientific Orientation (X ₁₅)	0.179
Economic Motivation (X ₁₆)	0.178
Management Orientation(X ₁₇)	0.051
Decision making ability(X ₁₈)	0.172
Achievement Motivation (X ₁₉)	-0.088
Utilization pattern of communication sources(X ₂₀)	0.343**

Note: *,** Significant at 5% and 1% level, respectively

to their exposure to various situations, they do not feel ICT tools very important for their farming vocation rather they utilize their own knowledge gained through experience. On the other hand, the farmers with lesser experience in farming have to consult with resource persons, agriculture experts and progressive farmers to solve their problems. Now a days, ICT tools are also providing technical support to the farmers through various web-based services correctly and instantly. Therefore, the farmers with low level of farming experience find it easier and beneficial for them to access the ICT tools to solve their problems. Hence, the variable experience in farming is significantly and negatively associated with the dependent variable, access to ICT tools.

Possession of assets and access to ICT tools

In any rural social system, possession of assets is always treated as the indicator of the social status. The person possessing a good numbers of sophisticated assets

are enjoying the better social status than any other person. The member of the community are giving due importance to those persons in case of adopting any new technology. Similarly, within the farming community, it has been observed that the resource-rich farmers usually have higher level of asset possession which, in turn, motivates and facilitates their access to modern ICT tools related to agriculture for betterment of their farming practices. In the present study, it has been found that the farmers with higher level of asset possession are more interested in using various ICT based extension services for managing their farming enterprise effectively. That is why the variable possession of assets is significantly and positively associated with the dependent variable, access to ICT tools.

Utilization pattern of communication sources and access to ICT tools

Communication sources play pivotal role in changing the outlook of people in different perspectives.

Table 3: Multiple regression analysis of access on ICT tools (Y₂) of respondents with 20 variables

Variables	Standardized regression coefficient ($\hat{\alpha}$)	Unstandardized regression coefficient (B)	S.E of 'B'	t-value
Age(X ₁)	0.201	0.144	0.131	1.093
Caste(X ₂)	-0.031	-0.333	1.035	-0.322
Experience in farming (X ₃)	-0.485	-0.446	0.172	-2.58**
Educational Qualification(X ₄)	0.065	0.542	0.873	0.621
Family Education Status(X ₅)	-0.075	-0.195	0.257	-0.756
Family Annual Income (X ₆)	0.152	2.165	3.640	0.594
Family Annual Expenditure(X ₇)	-0.073	-1.256	4.461	-0.281
Land Holding (X ₈)	-0.053	-0.190	0.488	-0.390
Possession of assets(X ₉)	0.133	0.079	0.071	1.105
Livestock possession(X ₁₀)	0.015	0.018	0.130	0.145
House Type (X ₁₁)	0.190	2.003	1.108	1.808*
Social Participation(X ₁₂)	0.034	0.581	1.775	0.327
Self Confidence (X ₁₃)	0.097	0.253	0.264	0.959
Risk Preference (X ₁₄)	0.054	0.240	0.449	0.536
Scientific Orientation (X ₁₅)	0.030	0.100	0.340	0.294
Economic Motivation (X ₁₆)	0.052	0.225	0.463	0.485
Management Orientation(X ₁₇)	-0.041	-0.069	0.167	-0.415
Decision making ability(X ₁₈)	0.094	0.504	0.554	0.910
Achievement Motivation (X ₁₉)	-0.072	-0.266	0.367	-0.724
Utilization pattern of communication sources(X ₂₀)	0.243	0.394	0.173	2.272*

Note: *,** Significant at 5% and 1% level, respectively; R²= 0.362

Moreover, they can get up-to-date information and develop appropriate perception about various issues and events. In the present study area, different sources of communication like Krishi Prayukti Sahayak, contact farmers, panchayat members, block development officer, farmers club *etc.* have been But, farmers often find it difficult to contact these communication sources due to time and resource constraints. In this situation, ICT tools can cater to the information needs of the farmers in an appropriate way. Likewise, farmers in the study area who maintain a contact with various communication sources are also interested to access modern ICT tools for updating their knowledge and skill regarding farming practices. This may be the plausible reason behind the positive and significant association between the variable utilization pattern of communication sources and access to ICT tools.

Table 3 reflects the multiple regression analysis of access on ICT tools with the 20 predictor variables. From the table it is observable that the variable experience in farming is significantly and negatively contributing towards characterizing access on ICT tools. Other variables like house type and utilization pattern of communication sources are significantly and positively contributing towards characterizing access on ICT tools.

Experience in farming and access on ICT tools

Experience in farming defines the role of a farmer towards the agricultural activities and skill in farming practices. In the present study area most of the farmers are young aged and new to agriculture. They have very less experience in farming but their educational qualification is very good. They have more interested towards the information sources like mobile, television, computer, and internet. They have the ability to use ICT tools and their access is higher than the old aged farmers who have more experience in farming. That is why the variable 'experience in farming' is significantly and negatively contributing towards characterizing the predicted variable 'access on ICT tools' which is similar to the study of Khalak *et al.* (2018). The variable experience in farming is directly contributing 48.50 % in case of characterizing access on ICT tools. One unit change of the variable experience in farming is delineating the 0.446 unit change in the predicted variable access on ICT tool

House type and access on ICT tool

In our society house type is a factor which helps in determining the quality, status and economic condition of individuals. The people who have good quality of

house type is economically strong and they have a good prestige in the society. The people having good quality house have more mobility towards modern world. They are more interested to know about the information sources available in the modern world. They are the information seekers to know about the modern technologies used in agriculture. Hence, they are interested to use ICT tools and have more access to ICT tools. This may be the reason that the variable 'house type' is significantly and positively contributing towards characterizing the predictor variable 'access on ICT tools'.

Utilization pattern of communication sources and access on ICT tools

Communication sources play vital role in providing the updated information in the farming community. In the present study, the communication sources like Krishi Prakhyuti Sahayak, Contact farmers, Assistant director of agriculture, Krishi Vigyan Kendra etc. provide the agricultural information timely to the farmers. The officers are having knowledge about how to access the ICT tools. They remain up to date about the information needs by using ICT tools. In the study area, the farmers have a very good contact and relationship with the communication sources. The farmers most often visit the KVKs, ADA office and block office to get the appropriate information. That is why the variable 'utilization of communication source is significantly and positively contributing towards characterizing access on ICT tools. The variable utilization of communication sources is directly contributing 24.30 per cent in case of characterizing access on ICT tools. One unit change of the variable is delineating 0.394 unit change in the predicted variable access on ICT tools.

The R^2 value being 0.362, it is to infer that the twenty predictor variables put together have explained 36.20 per cent variation embedded with the predicted variable access on ICT tools used by the respondents. Still 63.80 per cent variable embedded with predicted one remains unexplained.

In the present scenario, information is the prerequisite to empower the society. The information makes the society more knowledge vibrant and creates the environment to explore innovation for agricultural development. The man power scarcity in the country like India exerts the negative impact on the accessibility of information by the remote area people. Consequently the tools of ICT plays a pivotal role to empower the people with information and more updated knowledge required for agricultural development. The present study in this perspective rightly explored the area of accessibility of the updated information through ICT

tools. Due to lack of awareness and paucity of skill to handle the ICT tools among the farmers restricts the access and utilization of ICT tools in the remote areas. There is a need to establish the ICT infrastructure and build awareness and skill among the farmers to get benefit from the ICT tools in its fullest extent. The farming experience of the farmers is also make them more inclined towards enhancement of the access to ICT tools. Experience of scientific farming practices always helps the farmers to go along with the technical knowledge which will be available and accessible with the help of increasing the accessibility of ICT tools. The more experienced farmers are mostly engaged in case of getting more knowledge on scientific practices through use of ICT tools. The economic status like the type of house the farmers are residing and the possession of assets is also reflects the enhanced access of the ICT tools as the people are more exposed to the outside world through the system. The perception of the farmers regarding the utilization pattern of information sources can create a space to enhance the accessibility of the ICT tools. So, all those socio-personal, economic and communication attributes of the farmers can explain the enhanced ability of accessing the ICT tools for better, timely, updated information for agricultural development.

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