



Determinants of ICT Tools Accessibility by Farmers in Bihar

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ABSTRACT

The economy of a developing country like India is mostly dependent on performance of agriculture sector, and its growth highlights the need of transferring relevant timely information to farmers. Information and communication technology (ICT) plays an important role in this regard. India is progressively using ICT into its national development strategy and implementing tactics for widespread promotion in order to develop the country into a knowledge-rich, e-learning society. Present study was conducted during the year 2019 to determine the degree of access and use of ICTs by farmers and its determinants covering a random sample of 100 farmers in Katihar and Samastipur districts of Bihar. Majority of farmers were young and educated up to high school, mostly accessed mobile phone amongst the ICT tools. Farmers' diversified occupation, education, annual income, farming system/allied agricultural activities, mass media exposure, and extension contact were positively and significantly correlated with accessibility of ICT tools. Regression model revealed that selected farmers' attributes explained about 61 per cent variation in accessibility of ICT tools by the farmers.

INTRODUCTION

The goal to encourage improved information access in order to improve farming practices and enhance farmers' socio-economic conditions has long been the main objective of agricultural extensionists and rural advisory service providers. According to FAO (2011), disseminating information is crucial for players in the agricultural value chain in order to eliminate knowledge and communication asymmetries and the vicious cycle of poverty. Furthermore, the significance of ICTs in providing access to information in order to improve food security and rural livelihoods has been increasingly recognised and officially acknowledged at the World Summit on the Information Society (WSIS) 2003-2005 (IICD, 2007). Agriculture is the backbone of the Indian economy, with more than half of the Indian population relying on agriculture, hence agricultural development is critical for supporting economic development and feeding the rising population (Datt & Ravallion,

1996). The contribution of information and knowledge is one component that might enhance agricultural productivity. Since agricultural extension depends to a large extent on information exchange on the one hand and a broad range of other actors on the other (Mabe & Oladele, 2012), ICTs can be utilised to bridge the information gap. There is also a rising realisation among farmers regarding the value of knowledge, information, and proper learning techniques for moving towards development (Greenridge, 2003; Lightfoot, 2003).

ICT is a crucial facilitator and component of the emerging knowledge-based economy and information revolution (Dhaka & Chayal, 2010; Barh & Balakrishnan, 2018). In this 'Global Information Age,' the function of ICTs as a tool for advancement and development has been widely recognised, and it has been noticed that individuals from all walks of life are directly or indirectly touched by the IT industry. ICT is playing an important role in agricultural development by providing farmers with timely, reliable,

and accurate information, as well as decision support through ICT-based agricultural intelligence systems (Shalendra & Sharma, 2011). However, limited accessibility and use of ICT tools is difficulties in rural India due to the farmers' economic situation, a lack of infrastructure to support ICT applications, and a lack of trust in using ICT tools (Syiem & Raj, 2015). Keeping in view the importance and need of ICT tools' utilization in agriculture, present study was undertaken with an objective to assess the accessibility and use pattern of ICT tools by farmers and with its determinants in term of selected attributes of farmers.

METHODOLOGY

The study was conducted in Katihar and Samastipur districts of Bihar. A sample of 100 farmers was selected as respondents as per recommendation of KVK of respective districts representing one block and two villages in each district. Farmers' attributes considered as independent variables were age, education, family type, annual income, social participation, farming system with allied agricultural activities, mass media exposure, and extension contact. The dependent variables in the study were number of ICTs tool used, their accessibility/ availability and use pattern. The data were collected through a personal interview schedule survey in the year 2019. The various attributes of farmers were measured with the help of nominal/ ordinal/ interval/ ratio scale with the help of structured interview schedule. Accessibility to ICT tools was measured in terms of the possession of particular ICT tools by the respondents with their dichotomous responses in terms of "Yes" and "No" scored as 1 and 0 respectively. Accessibility score was computed on their total possession of various ICT tools. The data were compiled and analysed by using descriptive statistics like mean, standard deviation, correlation and regression.

RESULTS AND DISCUSSION

Farmers' accessibility to ICT tools

The differential accessibility to ICT tools by the respondent-farmers is presented in Figure 1. Majority of farmers used to access

mobile phone (91%) followed by television (87%), and radio (82%). Majority of farmers were having mobile phone that may be attributed to the fact that farmers appreciate mobile phone as easy, fast and convenient way to communicate and get relevant information of respective problems. Now a days, the mobile phone has generated an opportunity for the farmers to get the timely information about marketing and weather. Television programmes in channels like DD Kisan, Kisan TV etc. focused on identifying problems and providing relevant solutions including controlling of various crop related pests and diseases. Similarly, radio programmes like *Kheti-Grihashthi*, *Chaupal*, etc. provide relevant agricultural information and news about marketing of commodity, weather, etc. to farmers at their door step.

Similar to the findings of present study, Syiem & Raj (2015); Kumar et al., (2017); Sajesh & Padaria (2017); Nain et al., (2019) & Jat et al., (2021) also reported that mobile phone was highly accessible followed by television and radio among the farmers in Meghalaya, Haryana, Maharashtra and Rajasthan, respectively. The data also revealed that about 80 per cent respondents having internet connectivity and 77 per cent respondents having WhatsApp for accessing information. In contrast with the findings, Jayalakshmi et al., (2022) found that among the different modes of communication, the majority of farmers in Andhra Pradesh accessed agriculture information through mobile phones and further concluded that mobile apps, as an omnipresent tool in future extension.

Determinants of farmers' accessibility to ICT tools

Table 1 presents coefficient of correlation (r) values between farmers' attributes and farmers' accessibility to ICT tools. The attributes like diversified occupation, education, annual income, farming system including allied agriculture activities, mass media exposure, and extension contact were found to be positively and significantly correlated with accessibility or of ICT tools. That means, by improving all these factors, accessibility to ICT tools by the respondents will also be increased. People gain knowledge through the formal education system, which makes them more open

Figure 1. Farmers' differential accessibility to ICT tools

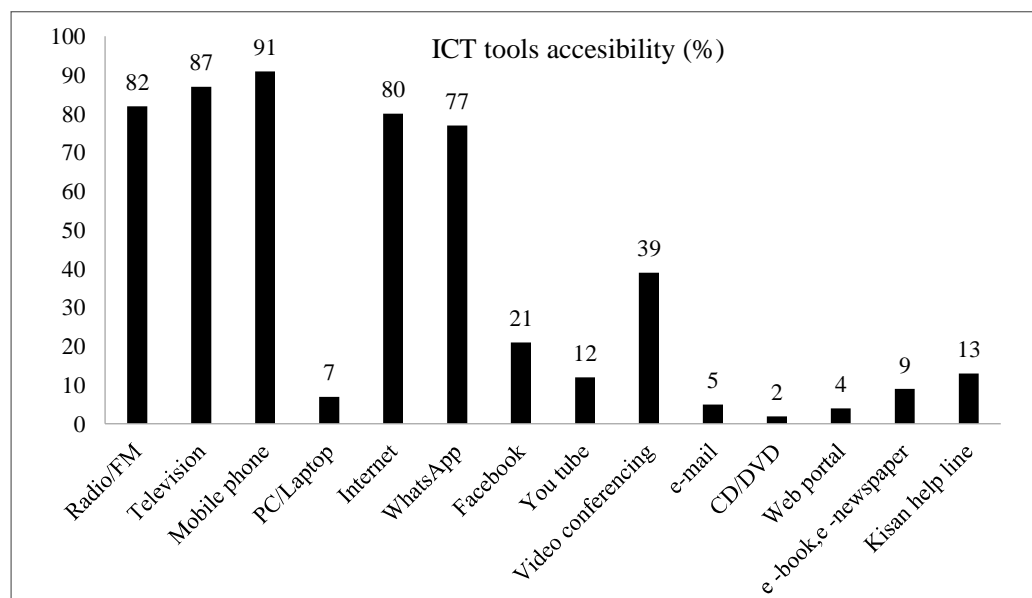


Table 1. Correlation between attributes of farmers and their accessibility to ICT tools

S.No.	Independent variable	Correlation coefficient (r)
1	Age	-0.103
2	Diversified occupation	0.280**
3	Education	0.569**
4	Annual Income	0.394**
5	Social Participation	0.083
6	Farming system including allied agricultural activities	0.407**
7	Mass media exposure	0.599**
8	Extension contacts	0.499**

Note: ** significant at 1% level and * significant at 5% level

Table 2. Multiple regression between attributes of farmers and their accessibility to ICT tools

S.No.	Independent variables	Regression coefficient	t value
1	Age	0.011	-0.474
2	Diversified occupation	0.490	2.042
3	Education	0.450	2.907**
4	Annual income	0.014	0.506
5	Social participation	0.001	0.460
6	Farming system	0.018	0.815
7	Mass media exposure	0.004	3.119
8	Extension contacts	0.005	2.657**

R square =0.609; F value=13.851**

** significant at 1% level and * significant at 5% level

to knowledge-providing agents such as ICT. Asset ownership is strongly tied to the family's economic situation, which makes the family more capable of using ICT tools and fosters a good attitude toward ICT. Farmers nowadays are keen to receive market information and a fair price for their produce, and ICT plays an important part in this. It might be the reason why mass media exposure and extension contacts are significantly and positively connected with ICT uses. Age is negatively and not significantly correlated.

Multiple regression examines the strength of the linear relationship between set of independent variables with a single dependent variable. A multiple regression analysis (Table 2) was done to determine functional relationship between farmers' attributes and their accessibility to ICT tools. The farmers' attributes like age, diversified occupation, education, annual income, social participation, farming system including allied agriculture activities, mass media exposure, and extension contacts together determined about 61 per cent variation in farmers' accessibility to ICT tools as evident from R square value of 0.609. Among eight attributes considered in multiple regression model, regression coefficients of education and extension contacts are found to be positively significant at 1% level of significance.

It was found that education and extension contact were positively and significantly contributing in shaping farmers' accessibility of ICT tools. This suggests that by enhancing these

aspects, farmers' access and use of the ICT tools will improve as well. Young farmers used to be more efficient in handling ICT tools than the elder ones. More the younger a person is, more he will accept new changes and try new technologies like ICTs (Kumar et al., 2017). Similar finding was reported by Panda et al., (2019) with respect to the farmers in West Bengal, where correlation coefficient of various farmers' attributes like education, socio-economic status, extension contact, mass media exposure, scientific orientation, economic motivation, and risk orientation were found positively and significantly associated with the attitude towards ICT tools. whereas, age was found negatively and not significantly correlated.

CONCLUSION

The proclivity of behaviour toward access of ICT tools can usher in a new era of information-based technology intervention in agriculture. The present study highlighted farmers' accessibility to ICT tools, as well as the effect of 'armers' attributes on it. The farmer's favourable access toward better using ICT technologies is enhanced by the family's educational status and economic wealth. Extension contacts are crucial markers for establishing favourable access toward successful ICT tool. As a result, future policy implications related to the development of positive attitudes among farmers toward accessibility and appropriate use of ICT tools need to consider perspectives such as high level of education and extension contacts besides other significant attributes of farmers like diversified occupation, income, diversified agricultural activities in farming system and exposures to mass media.

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