



Role of Information and Communication Technologies (ICTs) in agriculture trade's information

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ABSTRACT

The present study was carried out in four districts of Haryana during 2017. Farmers use ICTs for various activities such as marketing, marketing price, time of market inflow, quality parameters that affect price, marketing procedure and other facilities available at marketplace. The results indicate that majority of the farmers use ICTs for the purpose of information of weather forecasting, crops related government policies, credit/loan facilities for crops cultivation, insurance of crop and subsidies for crop cultivation. The variables: education, socio-economic status, land holding, extension contact, mass media exposure, scientific orientation, economic motivation and risk orientation exhibited significantly positive correlation with marketing of agricultural produce, whereas age was significantly negatively correlated with marketing. The regression analysis shows significantly positive impact of education, socio-economic status, land holding, extension contact, mass media exposure, economic motivation and risk orientation on agricultural produce marketing, whereas, age, scientific orientation and irrigation facilities exhibited significantly negative impact on marketing.

Keywords: ICTs, Marketing, Weather forecasting

In the developing countries, there is a need to shift the focus from delivery of technology to delivery of proper knowledge and agricultural information to the farmers (Jones 1997). This is possible with the use of ICTs which can make agricultural extension a more diversified and knowledge driven system for meeting the demands of farmers regarding information needs to make more sustainable use of on-farm resources. With the use of ICTs, the developing countries now have the access to the latest information regarding weather, natural resources and other agricultural information (Rao 2007). ICTs can be used for distance learning programs and help the farmer for learning new approaches and technologies which results in increase of income (Chapman and Slaymaker 2002, Sideridis 2010). ICT can continuously introduce new sets of information services to agricultural markets where farmers can have a better control not only on information access and but also on disseminations as well.

Berman (2008) showed that new ICT methods had played a crucial role in the development of emerging countries. The ICT tools like mobile phones have reduced the gap among traders and farmers and at the same time, farmers directly communicate with buyers and customers and get good price of their product. Mobile phones have created a new business opportunity for the poor farmers and have given the access to information about market, health and weather services in remote areas. Fafchamps and Ruth (2005) also reported that the use of mobile phones among farmers has played positive role on their income and productivity as the farmers can now communicate with buyers and sell their product at good price. In this context, ICTs can offer the means for development in developing countries (Rashid and Elder 2009). ICT offer opportunities to reach more people through easy access to local or global information and knowledge (Meera *et al.* 2004). Keeping in view this information, the present study was conducted to find out the level of access and usage of ICTs by the farmers for getting agricultural trade related information in the study area.

MATERIALS AND METHODS

The present study was carried out in Haryana during 2017. Random sampling technique was used to select the sample households. At first, four districts of Haryana state; Yamunanagar, Karnal, Hisar and Fatehabad were randomly

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selected. Thereafter, Radaur and Chhachroli blocks from Yamunanagar district; Indri and Nilokheri blocks from Karnal Districts; Hisar I and Hisar II from district, and Bhattu and Fatehabad blocks from Fatehabad districts were also randomly chosen. Further, two villages from each selected block were selected randomly and in total, a sample of 240 respondents; 15 farmers from each village were drawn for the present study. Keeping in view the nature of data, objectives of the study and applicability of the study, statistical tools like percentage, weighted mean, coefficient of correlation and multiple regression analysis were used to analyze the collected information. The correlation coefficient between the dependent and independent variables was also computed with the help of Pearson's formula of correlation coefficient. Multiple regression equation was fitted to find out the amount of variation caused by independent variables constituting personality traits of respondents on dependent variable.

RESULTS AND DISCUSSION

Usage of ICTs for agricultural market information and other supporting factors' information gathering: The farmers in the study area were using different ICT tools like mobile phones, radio, television, WhatsApp etc. and the availability/accessibility was for mobile phones was highest due to their easy use and affordability. The farmers use these ICT tools for place of marketing, marketing price, time of market inflow, quality parameters that affect price, marketing procedure and facilities available at market as shown by their respective weighted mean value of 1.21, 1.19, 1.16, 1.12, 0.94 and 0.88 (Table 1). The total impact of ICTs on agricultural trade information gathering was positive with its average weighted mean value of 1.08. These results are like the results of Chachhar *et al.* (2013) who reported that internet is a good source of disseminating information regarding price and marketing of goods and farmers are

receiving information within minutes from all over the world. Further, the results reveal that the farmers in the study area were using ICTs for the purpose of information on weather forecasting, crops related government policies, credit/loan facilities for crops cultivation, insurance of crop and subsidies for crop cultivation as revealed by their respective positive weighted mean value of 1.05, 1.03, 1.02, 0.95 and 0.94. The overall impact of ICTs on supporting factors' information was also positive with the average weighted mean value of 0.99. Similar findings were reported by Murty and Albino (2012).

Relationship between respondent's personal variables and usages of ICTs for marketing by farmers: The data (Table 2) revealed that correlation between usage of ICTs for marketing with education (0.534), socio-economic status (0.611), land holding (0.082), extension contact (0.651), mass media exposure (0.567), scientific orientation (0.312), economic motivation (0.635) and risk orientation (0.217) was significantly positive which means that unit increase or decrease in these variables will increase or decrease the usage of ICT tools among the farmers. Age (0.541) exhibited significantly negative correlation; meaning that older farmer tends to use less ICT tools. Syiem and Raj (2015) also reported that old aged farmers had lesser degree of usage of ICTs when compared to young farmers with preferably higher level of educational qualification. Similarly, the impact of variables; education (0.645), socio-economic status (2.873), land holding (0.464), extension contact (0.675), mass media exposure (1.778), economic motivation (3.153) and risk orientation (0.4.77) was significantly positive on marketing of agricultural produce, whereas, the impact of age (0.583), scientific orientation (1.134) and irrigation facilities (0.769) was significantly negative. These results are in close conformity with the results of Mittal *et al.* (2015) who revealed that socio-economic characteristics

Table 1 Usage of ICTs for agricultural trade information and other supporting factors' information gathering n=240

Area of information	Always (2)	Sometime (1)	Never (0)	Total weighted frequency score	Weighted mean	Average weighted mean
<i>Usage of ICTs on agricultural trade information gathering</i>						
Marketing price	112(224)	62	66	286	1.19	1.08
Quality parameters that affect price	95(190)	79	66	269	1.12	
Time of market inflow	105(210)	69	66	279	1.16	
Place of marketing	116(232)	58	66	290	1.21	
Marketing procedure	52(104)	122	66	226	0.94	
Facilities available at market	36(72)	138	66	210	0.88	
<i>Usage of ICTs for other supporting factors' information gathering</i>						
Weather forecasting	95(190)	62	83	252	1.05	0.99
Crops related government policies	91(182)	66	83	248	1.03	
Credit /loan facilities for crops cultivation	88(176)	69	83	245	1.02	
Insurance of crop	70(140)	87	83	227	0.95	
Subsidies for crop cultivation	69(138)	88	83	226	0.94	

Figures in parentheses indicate weighted score.

Table 2 Relationship between respondent's personal variables and usages of ICTs for marketing by farmers

Variable	Correlation coefficient (r)	Regression coefficient	't' values
Age	-0.541*	-0.583	-1.362*
Education	0.534**	0.645	0.214*
Socio-economic status	0.611**	2.873	2.228**
Landholding	0.082*	0.464	0.397*
Irrigation facilities	0.095 ^{NS}	-0.769	-0.580*
Extension contact	0.651**	0.675	0.366*
Mass media exposure	0.567**	1.778	0.786*
Scientific orientation	0.312*	-1.134	-0.842*
Economic motivation	0.635**	3.153	1.787*
Risk orientation	0.217*	0.477	0.304*

* Significant at 5% level of significance and, ** Significant at 1% level of significance, $R^2=0.4540$

of farmers like age, level of education and farm size were having significant effect on farmer's use of different sources of agricultural information.

The present study reveals that the farmers were largely using ICTs for knowing the place of marketing, marketing price, time of market inflow, information of weather forecasting, crops related government policies, credit/loan facilities for crops cultivation, insurance of crop and subsidies for crop cultivation. It was also found that farmers' age, education, socio-economic status, landholding, irrigation facilities, extension contract, mass media exposure, scientific orientation, economic motivation and risk orientation were significantly related with the usage of ICTs in the study area. Based on the findings, it is suggested that more awareness cum training programmes on use of ICTs should be organized in order to increase the confidence, competence and skill in using ICTs for development. We also do not deny the fact that successful use of information as a resource for agricultural development depends largely on the accessibility and adequacy of the information source,

farmers' preference for a particular information source and farmer's ability to use information. Therefore, the increased engagement in social media among rural youths on farming is needed to enhance the communication pattern among themselves and extension personnel.

REFERENCES

- Chapman R and Slaymaker T. 2002. ICTs and rural development: review of the literature, current interventions and opportunities for action. Working Paper 192, Overseas Development Institute, London.
- Chhachhar A R, Qureshi B, Khushk G M and Ahmed S. 2013. Impact of information and communication technologies in agriculture development. *Journal of Basic and Applied Science Research* 4(1): 281–88.
- Fafchamps M and Ruth V H. 2005. Selling at farm gate or traveling to market. *American Journal of Agricultural Economics* 87(3): 717–34.
- Meera S N, Jhamtani A and Rao D U M. 2004. Information and communication technology in agricultural development: a comparative analysis of three projects from India. Agricultural Research and Extension Network Paper, p 134.
- Mittal S and Mehar M. 2015. Socio-economic factors affecting adoption of modern information and communication technology by farmers in India: analysis using multivariate probit model. *The Journal of Agricultural Education and Extension* 1(14): 199–212.
- Murty and Albino. 2012. Electronic media in rural agricultural business- A promotional injection. *Journal of Research in Science and Technology* 1 (11): 63–68.
- Rao N. 2007. A framework for implementing information and communication technologies in agricultural development in India. *Technological Forecasting and Social Change* 74(4): 491–518.
- Rashid A T and Elder L. 2009. Mobile phones and development: an analysis of IDRC- supported projects. *Electronic Journal on Information Systems in Developing Countries* 36(2): 1–16.
- Sideridis B A, Koukouli M and Antonopoulou E. 2010. ICT and farmers: lessons learned and future developments. *Journal of Agricultural Informatics* 1(2): 35–41.
- Syiem R and Raj S. 2015. Access and usage of ICTs for agriculture and rural development by the tribal farmers in Meghalaya state of North-East India. *Journal of Agricultural Informatics* 6(3): 24–41.