

**RESEARCH ARTICLE :**

e- Readiness and determinants of e-readiness of farmers - A study on the mobile based ICT users in agriculture

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ARTICLE CHRONICLE :

Received :
23.10.2017;

Revised :
04.04.2018;

Accepted :
17.04.2018

KEY WORDS :

e-readiness, Mobile advisory beneficiaries, Policy makers, Effective utilisation

SUMMARY : Information and Communication Technology (ICT) plays an important role in the transfer of agricultural information to the farming community. The benefits and reach of such ICT interventions amongst the farming community depend upon several factors such as e-readiness level and extent of utilisation of the ICT based extension services. The present study as part of Ph.D. research work was an attempt to measure the e-readiness level of the farmers of mobile based ICT users at the division of Agriculture Extension, IARI, New Delhi. Data were gathered from farmers (users and non users of ICT based extension service) from Andhra Pradesh, Telangana, Madhya Pradesh and Karnataka states of India. Majority of the mobile advisory beneficiaries (95%) were less e-ready. Variables namely Zaid crops, innovativeness and risk orientation showed significant and positive effect on e-readiness of the farmers while age showed significantly negative effect on e-readiness. The findings of the study related to e-readiness level of the farmers could provide guidance to the relevant organisations and policy makers for designing and implementation of ICT programmes for the effective utilisation of ICT based extension projects.

How to cite this article : Vankudothu, Ravinder Naik, Padaria, Rabindra Nath and Marwah, Sudheep (2018). e-Readiness and determinants of e-readiness of farmers - A study on the mobile based ICT users in agriculture. *Agric. Update*, 13(2): 203-206; DOI: 10.15740/HAS/AU/13.2/203-206. Copyright@2018: Hind Agri-Horticultural Society.

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BACKGROUND AND OBJECTIVES

Over the years, use of Information and Communication Technology (ICT) has been increasing across all sections of society. Information Technology has made the whole world a global village, as the information on any part of the world is just a click away. ICTs have become an indispensable part of human life. It is also being utilised as an effective medium for information dissemination and

knowledge management in agriculture. Various attempts have been made by different international and national organisations including the non-profit organisations and private agencies to reach the farming community with a view to addressing their farm related queries and there by acting as a link between the information requirements of the farmers and scientific knowledge domain.

No doubt, the efforts made by the ICT

based extension initiatives to reach the un reached farmers attained its goals in praise worthy manner. It is the fact that the acceptability of these extension methods and end results finally depend on the farmers who are the final players of the knowledge transfer chain. The success of any project depends largely upon how best it is taken by the end users, the readiness of the farmers (e-readiness) towards ICTs and ICT based extension services plays an important role in the successful spread of ICT based extension services to them.

e-readiness has been defined as the degree to which an individual or a community is prepared to participate in the networked world. The concept of e-readiness index is assuming prominence at national and international level. India's position at 58th rank by the International Telecommunications Union (ITU, 2014) and classification of Indian states into six different categories (NCAER, 2008) on the basis of e-readiness index clearly signify its importance at all levels. Purnomo and Lee (2010) reported that farmers' readiness towards ICT tended to be negatively perceived by Agriculture Extension Officers, while personal readiness, infrastructure readiness and management readiness towards ICT tended to be positively perceived by them.

It was evident from the above that e-readiness played a major role in the effective utilisation of ICT based extension services by the farming community. Keeping these things in view, the present study is an attempt to understand the farmers' level of e-readiness towards ICT based extension services.

RESOURCES AND METHODS

The study was carried out during 2014 in four states namely Andhra Pradesh, Telangana, Karnataka and Madhya Pradesh over Mobile based ICT model (IFFCO-IKSL). In total six districts were selected to study the IFFCO-IKSL model. Thirty mobile advisory beneficiaries and twenty non- beneficiaries from each district were selected to study the IFFCO-IKSL model. To study the e-readiness level of the farmers, a composite e-readiness index was constructed comprising of six indicators namely; e-awareness, e-skill, e-ownership, e-accessibility, e-frequency of use and e-willingness. Each indicator was measured with respondents' response to a set of statements. The collected data were analyzed using SPSS.

OBSERVATIONS AND ANALYSIS

The results obtained from the present study as well as discussions have been summarized under following heads:

e-readiness :

As a part of the study, an e-readiness index was constructed to understand farmers e-readiness towards Information and Communication Technology using principal component analysis. Based upon the assessment model of Aydin and Tasci (2005), a spectrum of classification of the e-readiness level of the respondents (Least e-ready, Less e-ready, e-ready, Highly e-ready and very highly e-ready) and suitable interventions required by the agencies has been proposed (Fig. A). As the index value ranged from 0-1, the expected mean would be 0.5. This expected mean value was used to categorise the respondents whether e-ready (>0.5) or not e-ready (<0.5).

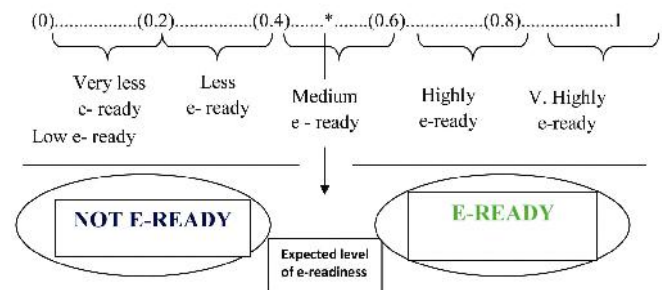


Fig. 1 : Assessment of e-readiness level

e-readiness of the farmers :

From the Table 1, it was revealed that majority of the respondents were found to be less e-ready (95%) while only 5% of the total respondents were e-ready. It was also observed that, about 85% of the non users of

Table 1 : Distribution of the respondents based on the e-readiness index values (n=300)

Sr. No.	Category	IFFCO-IKSL mobile advisory	
		Users (n=180)	Non users (n=120)
1.	Least e-ready (≤ 0.20)	0.00	17 (14.16)
2.	Less e-ready (0.21-0.40)	171(95)	102 (85.00)
3.	e-ready (0.41-0.60)	9(5)	1(0.83)
4.	Highly e-ready (0.61-0.80)	0.00	0.00
5.	Very Highly e-ready ($> .80$)	0.00	0.00
Mean e-readiness score		0.337	

*Figures in parenthesis indicates the percentage

Table 2 : Correlation between the socio-personal characteristics and e-readiness of beneficiaries of IFFCO-IKSL mobile advisory (n=180)

Sr. No.	Variable	Correlation co-efficient (r)
1.	Age	-.080
2.	Farming experience	.055
3.	Annual income	-.133
4.	Education	.023
5.	Occupation	-.051
6.	Crops grown in an year	-.026
7.	Allied agriculture activity	.093
8.	Total land	-.138
9.	Social participation	.011
10.	Extension orientation	.084
11.	Mass media exposure	.293**
12.	Innovativeness	.359**
13.	Economic motivation	.294**
14.	Risk orientation	.288**
15.	Decision making behaviour	.001
16.	Self confidence	.343**
17.	Information networking	.242**
18.	Market orientation	.068

* and ** indicate significance of values at P=0.05 level (1 tailed test) and 0.01 level (2 tailed test)

Table 3 : Logistic regression analysis of e-readiness of mobile advisory beneficiaries**(n=180)**

Sr. No.	Parameter	Estimate of parameter	S.E.	Wald	Sig.	Odds ratio
	Constant	17.224	40193.62	.000	1.000	30214315.35
1.	Gender	-.143	.643	.049	0.824	.867
2.	Marital status	-.498	.618	.650	0.420	.608
3.	Age	-.092	.034	7.354	0.007*	.912
4.	Farming experience	.056	.036	2.400	0.121	1.058
5.	Annual income	-.247	.318	.599	0.439	.782
6.	Education	.164	.183	.802	0.371	1.178
7.	Type of family	-.239	.417	.327	0.568	.788
8.	Family size	-.349	.309	1.279	0.258	.705
9.	Type of House			2.290	0.318	
10.	Occupation	.315	.554	.323	0.570	1.370
11.	<i>Kharif</i> crops	-.239	.210	1.292	0.256	.787
12.	<i>Rabi</i> crops	.228	.202	1.270	0.260	1.256
13.	<i>Zaid</i> crops	1.248	.597	4.371	0.037*	3.482
14.	Allied agriculture activity			3.343	0.502	
15.	Land holding	-.067	.039	2.857	0.091	.936
16.	Social participation	-.251	.263	.913	0.339	.778
17.	Extension contact	-.052	.084	.393	0.530	.949
18.	Extension participation	-.131	.093	1.977	0.160	.877
19.	Mass media participation	.076	.076	.986	0.321	1.079
20.	Innovativeness	.111	.035	10.292	0.001*	1.118
21.	Economic orientation	.091	.056	2.680	0.102	1.095
22.	Risk orientation	.096	.044	4.888	0.027*	1.101
23.	Decision making behaviour	-.114	.096	1.406	0.236	.893
24.	Self confidence	.015	.039	.157	0.692	1.015
25.	Information networking	.005	.052	.008	0.930	1.005
26.	Market orientation	.072	.107	.452	0.502	1.075

* indicates significance of value at P<0.05

the ICT based extension services were found to be less e-ready, about 15% of the non users were least e-ready. It was clear from the above figure that majority of the respondents were less e-ready and least e-ready and very few were e-ready which indicated the kind of interventions and efforts required by the external agencies to transform the farming community to be e-ready.

In case of the beneficiaries of IFFCO-IKSL mobile advisory, out of the eighteen variables, six variables namely mass media exposure, innovativeness, economic motivation, risk orientation and self confidence were found to be significantly correlated ($p < .01$) with e-readiness index value (Table 2).

Determinants of e-readiness :

An investigation was made to identify the determinants of e-readiness using the binary logistic regression. To find out the influence of independent variables on e-readiness, binary logistic regression analysis was used. The e-readiness score was substituted by 1 for above average and 0 for below average. The estimate of parameter, standard error, wald values and odds ratios are furnished in the Table 3.

It was revealed from the above Table 3 that three out of 26 variable namely Zaid crops ($p < 0.05$), innovativeness ($p < 0.05$) and risk orientation ($p < 0.05$) showed significant and positive effect on e-readiness of the farmers while age ($p < 0.01$) showed significantly negative effect on e-readiness. It is inferred from the odds ratio in the Table 3 that one unit increase in innovativeness, risk orientation and area under zaid crop would lead to 1.1, 1.1 and 3.5 times increase in the e-readiness level of the farmers. This could be because of the fact that the individuals with high level of innovativeness could try to find out the ways of maximising their potential at all levels by adopting the recently novel technologies such as ICT mediated extension, and those with higher risk taking ability could be venture some and prepared to take risk in order to seek future prospects. Those farmers who grow zaid crops are generally profit motivated to get the higher

returns in lean season for which they need various types of information such as crop related, market based and weather information which leads to dependence on ICT mediated extension services.

Conclusion :

Majority of the farmers had low level of e-readiness which indicated that there was a need to improve their e-readiness level so as to make them reap the benefits of the ICT based extension services. Mass media exposure, innovativeness, economic motivation, risk orientation and self confidence and information networking were found to be significantly correlated with the e-readiness level of the mobile advisory beneficiaries. However, the relatively lower level of e-readiness deserves attention for concerned interventions to make farmers e-ready towards ICT based extension services. Need-based and relevant programmes from the ICT based extension services could result in better spread of such extension services amongst the farming community.

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