

e-Readiness in Agricultural Extension System

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ABSTRACT

A study was conducted in Ranga reddy district of Andhra Pradesh to measure the e-readiness of the public sector agricultural extension personnel towards use of ICTs. An index was developed to measure the e-readiness of extension personnel towards use of ICTs in agricultural extension system. Here, e-readiness is defined as physical, motivational, and literacy readiness of extension personnel to use ICTs in agricultural extension system. The findings show that majority of the respondents were old, male, doctorate, have less experience in job. About 27 per cent respondents possess smart phone and 47 per cent respondents have internet connection to their mobile phones. Study also reveals that respondents have enough accessibility and availability of ICTs in their working place, basic ICTs skills and high motivation. The areas which need attention are internet skills and software literacy skills.

Key words: Agriculture; e-readiness; Extension personnel;

Agricultural Extension, in the current scenario of a rapidly changing world, has been recognised as an essential mechanism for delivering knowledge (information) and advice as an input for modern farming and the role of ICT in actualizing so has drawn interest of practitioners (Richardson, 2003). The application of ICT in the field of agriculture and allied sectors has been reported from different parts of the globe. Agriculture is one of the most important sectors in India, and could benefit tremendously with the applications of Information and Communication Technologies (ICTs) especially in bringing changes to socio-economic conditions of poor in backward areas.

According to Arkhi *et al.* (2008) Considering the role of Extension in the Agricultural Information system as a connector between the farmers and the research centers, ICTs must play its role in using the up to date information and transferring it to the farmers and on the others hand by reporting the needs of the farmers to the centers. This process as a catalyst and by reducing the costs and facilitating communication by removing the physical distances among the villages and the farmers and facility the information transition helps the Agricultural Extension in playing its role. ICT has an important role in connecting research, extension and the market toward expanding the professional and

entrepreneurship abilities, capacities among the experts and the agricultural communities.

e-Readiness is defined as the degree to which an economy or community is prepared to participate in the digital economy (APEC, 2000). Powell (2000) defined e-Readiness as the availability and access to IT infrastructure, the policies to support and to participate in the international global network.

According to Richardson (2003) the challenges of extension have opened the door to examine how Information and Communication Technologies (ICTs) can be cost-effectively and practically employed to facilitate information delivery and knowledge sharing among farmers, extension agents and other stakeholders. Successful application of ICTs requires improved awareness among development actors such as extension workers, greater capabilities among development institutions such as extension, education and research organizations, a more cross sectoral approach to agricultural information, and a more realistic model of technology transfer.

Omotayo (2005) observes that frontline extension workers who become the direct link between farmers and other actors in the extension of agricultural knowledge and information systems are well positioned to make use of ICT to access expert knowledge or other

types of information that could facilitate the accomplishment of the farmers' routine activities.

The benefits of utilisation of ICT as an e-Learning media for agricultural extension and training purposes are well documented (*Hafkin & Odame 2002; Richardson, 2005*). Furthermore, *Richardson (2005)* argues that extension organisations have a key role in brokering between communication technologies, providing technologies and services, and the client groups they serve. *Woods et al (2002)* underlines that the traditional role of extension workers includes assessing and articulating technological needs of the farmers, studying and developing new technology, testing and evaluating new technology, and transferring new technology to farmers. In particular, AEO have a significant role in bridging the technological gap between the existing scientific knowledge base and information and knowledge of the farmers. As of now, the most appropriate target learners of ICT programmes are knowledgeable intermediaries such as AEO. On the other hand, ICT programme implementation relies on various facets such as the infrastructure, government policy, cultural factors, organisational factors, and human resources. *Soekartawi (2005)* identifies some problems in developing countries as being related to infrastructure and Internet connection, human resources, policy support from government and pedagogy. He emphasises that human resources is one of crucial factors to diffuse utilizing ICT to learners. *Kauffman and Kumar (2005)* introduce three stages of diffusion of ICT at the country level of analysis are the ICT readiness stage, the ICT intensity stage and the ICT impact stage. In the first stage of ICT readiness, they argue that when the technology is new to a country or a region, the readiness of its people to adopt it is a crucial issue. On the other hand, *Kaur and Abas (2004)* noted that ICT readiness assessment allows one to design comprehensive e-Learning strategies and effectively implement ICT goals. Hence, generally ICT readiness assessments help a country's leaders to measure and plan for ICT integration, focus their efforts and identify areas where further attention is required (*Krull 2003*). Quoting the Merriam Webster's Online Dictionary, *So and Swatman (2006)* clarify that readiness is defined as being "prepared mentally or physically for some experience or action". In terms of e-Learning, *Borotis and Poulymenakou (2004)* defined e-Learning

readiness as "the mental or physical readiness of an organization for some e-Learning experience or action".

Some prior studies have demonstrated that demographic and characteristic background such as age, gender, ethnicity, marital status, level of education, prior experiences with computers and the Internet influence the ICT and or e-Learning adoption (*Teo & Lim 2000; Muilenberg & Berge 2005; Ong & Lay 2006*). Therefore, this study examines the readiness of the agricultural extension personnel in terms of six parameters, availability, accessibility, basic ICT skill, internet skill, software literacy skill and motivational factor.

METHODOLOGY

The present study was conducted in Ranga Reddy district of Andhra Pradesh purposively as it is the one of the major states where a number of ICTs projects are being implemented. A sample of sixty respondents was selected from public sector consisting public organizations, State Department of Agriculture, Ministry of Agriculture, Acharya N G Ranga Agricultural University (ANGRAU) and ICAR institutes. Data was collected with the help of pre tested schedule. Simple statistical tools and techniques; frequency, percentage and mean score were used to analyze the data.

RESULTS AND DISCUSSION

Personal Profile of the Respondents : Personal profile of the respondents has the basic information on age, gender, education, number of years of service and major job responsibility area (Table 1).

Table 1. Personal profile of the Respondents (N=60)

Characteristics	Category	No.	%
Age	Young	18	30.00
	Middle	20	33.33
	Old	22	36.67
Gender	Male	39	65.00
	Female	21	35.00
Education	Graduate	00	00.00
	Post graduate	25	41.67
	Doctorate	35	58.33
Years of Service	Low (less than 5 years)	31	51.67
	Middle (5 to 10 years)	14	23.33
	High (more than 10 years)	15	25.00
Major job area	Extension	32	53.33
	Research	14	23.33
	Training	11	18.33
	Administration	03	05.00

It could be seen from the Table 1 that majority (36.37%) of the respondents were old age followed by middle (33.33%) and young (30.00%) With respect to Gender, majority (65.00%) of respondents were male followed by female (35.00%). It is evident that the percentage of women taken for study was more. The reason behind this difference might be due to more work specialization focus in R&D and SDA in comparison to private sector. The educational status of the respondents shows that not a single respondent was graduate. Majority (58.33%) of the respondents were doctorate followed by post-graduate (41.67%). The reason of absence of exclusive graduate respondents is the minimum essential educational level of entry to the occupation was post-graduation. With regard to number of years of service, a slightly higher than half of the respondents (51.56%) were belonged to low years of service followed by high (25.00%) and middle (23.33%). Majority (53.33%) of the respondents were involved in extension followed by research (23.33%), training (18.33%) and administration (05.00%). So, it could be summarized from the table that majority of the respondents were old, male, doctorate, have less experience in job and extension was the major job responsibility.

Table 2. Possession of Smart Gadgets by the respondents (N=60)

Smart Gadgets (ICTs)	No.	%
Personal computer / Laptop	56	93.33
Personal computer/ Laptop with internet	50	83.33
Mobile phone	60	100.0
Smart phone	16	26.67
Mobile phone/Smart phone with internet	28	46.67

Possession of Smart Gadgets by respondents : In the Table 2, possession of smart gadgets (ICTs) by the respondents is presented. The table shows that about 93 per cent respondents have personnel computers/laptop. About 84 per cent respondents have personal computer/laptop with internet connection. Cent per cent respondents have mobile phones. With respect to smart phone possession, about 27 per cent respondents possess smart phone. With the use of internet in mobile phone/smart phone, it is encouraging finding that about 47 per cent respondents have internet connection to their mobile phones. This opportunity can be better utilize to train extension personnel at their time and pace. This trend is showing the very good possibility of training and updating SDA sector extension personnel through

Table 3. e-readiness of Agril. Ext. Personnel (N=60)

Statements	No.	%	MS
<i>Availability at individual level</i>			36.33
Ability to use computer/Laptop without any other's assistance.	46	76.67	
Ability to use the internet	42	70.00	
Ability to handle the smart phone for my work.	21	35.00	
<i>Accessibility</i>			40.00
Accessibility of ICTs to every employee to utilize	54	90.00	
Accessibility of official computer/laptop to every employee	44	73.33	
Use of available ICTs only by technical's	22	36.67	
<i>Basic ICTs skills</i>			46.75
Ability to use the computers and its peripherals	51	85.00	
Ability to use MS windows	54	90.00	
Ready to participate in online prog.	47	78.33	
Use of modern ICTs	35	58.33	
<i>Internet skills</i>			43.89
Knowledge of online tech.	55	91.67	
Proper and safe use of the e-mail	59	98.33	
Knowledge & use of internet explorer	57	95.00	
Knowledge of group mails , online file sharing, discussion boards and chat tools etc	39	65.00	
Working knowledge of video chatting	38	63.33	
Working knowledge of social networking	42	70.00	
Knowledge of online surveys	37	61.67	
Working knowledge of spl. services	29	48.33	
Knowledge of online library and other resource database	39	65.00	
<i>Software Literacy applications</i>			30.40
Know the use of file compression or zip	35	58.33	
Knowledge of using several applications at same time	40	66.67	
Interest towards online learning through seminars/workshops	23	38.33	
Interest to learn more about ICTs proper courses	28	46.67	
Knowledge of Online Learning Management System	26	43.33	
<i>Motivational factors</i>			42.67
Overcoming physical and psychological distractions	44	73.33	
Motivation to learn despite the online distractions	41	68.33	
Motivation to learn without distractions at home or workplace	39	65.00	
Motivation to learn without any formal training	30	50.00	
Demanding nature of ICTs	51	85.00	
Speed of ICTs	51	85.00	

mobiles/smart phones at their ease level, time and pace to speed up the technology transfer skills and knowledge. In conclusion, the study revealed a good picture of ICTs possession by the respondents at their personal level. Now the efforts of the policy makers or the administrators should be on the idea how to utilize these available ICTs tools for the betterment of the extension personnel working at the field level.

e-Readiness of the Respondents : Table 3 gives the glimpses of overall individual e-readiness of extension personnel. For easy understanding, individual e-readiness was categorized into six components i.e., availability of ICTs, accessibility of ICTs, basic ICT skills, internet skills, software literacy skills and motivational factors. These components are planned carefully by keeping in mind the facts that first of all, availability of ICTs is very important. After availability, accessibility is important. Besides availability and accessibility, to use the technology effectively basic skills with internet skills and software literacy is necessary. Motivational factors are also important with other physical components so, total six components were taken to assess the e-readiness of the respondents.

Table 3 shows a broad picture of e-readiness of extension personnel. It could be inferred from the table that majority of the respondents were able to use computers/laptops without any other's assistance (76.67%) followed by internet use (70.00%) and handing smart phone (35.00%). With respect to accessibility, majority of the respondents have accessibility to use the available ICTs in the department (90.00%) and during working hours with internet facility (73.33%). Basic ICT skills show the latest trend of the skills possessed by the respondents to run the ICTs. It shows that 90 per cent respondents were know the use of MS Windows and can run it without any others assistance followed by use of computers and its peripherals (85.00%) and use of modern ICTs (58.33%). Internet skills give a good picture of the respondent's readiness towards ICTs. Majority of the respondents have knowledge of safe use of e-mails (98.33%), working knowledge of internet explorer (95.00%), knowledge of online

technologies for better communication (91.67%) etc. With respect to software literacy, less than half of the respondents were good at software literacy. About 59 per cent respondents know the use of file compression but have less knowledge about LMS (43.33%), interest to learn more about ICTs (46.67%). There is dire need to upgrade the software literacy of the respondents and this can do through proper awareness and trainings. The motivational component of the e-readiness gives a good picture that although respondents have low software literacy but there motivation is high which be better utilize. The table shows that 85 per cent respondents agree that as ICTs are speedy transfer tools and highly demanding in their job, so they can learn more about it if need arises. Again about 74 per cent respondents suggested that despite the distractions they can motivated to learn ICTs learn despite online distractions (68.33%). So it can be summarized that respondents have enough accessibility and availability of ICTs in their working place, basic ICTs skills and high motivation. The areas which need attention are internet skills and software literacy skills. So, now it should be responsibility of the concerned organization that these two areas should be get attention to update the respondents' knowledge and skills.

CONCLUSION

e-readiness is a measure of preparedness in terms of physical, mental, infrastructural, motivational, literacy etc. This preparedness may be at individual level or state/government level. e-readiness index shows that where the individual/govt. is at best and where is the lacking and thus highlights the strong and weak points so that actions can be made accordingly. Through this study, it was also found that the components like basic ICT skills, internet skills and motivational factors are quite good in comparison to availability, accessibility and software literacy applications. So there is a need to focus on these missing areas so that ICTs can be better utilized in agricultural extension system.

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