



Research Article

ACCESSIBILITY, USAGE AND IMPACT OF INTERNET SERVICES ON EXTENSION ADVISORY SERVICES: A STUDY OF EXTENSION PERSONNEL OF CCS HARYANA AGRICULTURAL UNIVERSITY

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Abstract- India has been experiencing major changes in agricultural extension system since the beginning of the 21st century. In current IT based global scenario, when the Information Technology started making inroad into every sector of life in a big way, Information and Communication Technology (ICT) has great potential to revamp agricultural extension also. All the sectors of society in general and agricultural extension in particular can increase their efficiency with appropriate and judicious use of Internet in making two-way contacts with farmers and other institutions using internet. E-Agriculture can revamp the Extension Advisory Service with providing proper training to extension personnel on IT/ICT and its application in agricultural extension.

Extension personnel are very important in agricultural development process. Specifically, the basic role of extension personnel is that it helps in the improvement of those who are involved in primary food production. This is because it involves a shift from the traditional resource based method of production to a new science based method. The science based methods involve the adoption of new varieties, new cultural practices, use of agrochemicals and other capital-intensive inputs. Before these new technologies are adopted, the farmers need to be aware of them and learn how to use them correctly in their farming environment.

The present study has been conducted at Chaudhary Charan Singh Haryana Agricultural University, Hisar, Haryana. The university covers the entire states through its 19 *Krishi Vigyan Kendras*(KVKs) located at district level and headquarter at Directorate of Extension Education at main campus. Census survey of all extension personnel of the university has been taken as the sample of study. The total sample size was 108 respondents (23 at main campus and 85 at outstations). It was found that Internet, the base of ICT can overcome some of these most challenging issues related to advisory services like accessibility, literacy and language barriers, geographic coverage and local focus

Keywords- Internet, ICT, E-Extension, Extension Personnel.

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Introduction

Twenty-first century would be widely acclaimed as the era of Information Technology (IT) for India and most of the developing world. This was the time when the Information Technology started making inroad into the hitherto unreached countries in a big way. India has been experiencing major changes in agricultural extension system since the beginning of the 21st century [1-3]. The reform included both demand and supply side measures. Information and Communication Technology (ICT) has great potential to revamp agricultural extension in a big way [4]. Until ICTs offered farmers a channel for communicating directly with distant technicians and experts, many farmers could wait for long to extension worker to come and provide timely and required information of their concern. Communication is most essential requirement of human being. Communication as an important element of socialization has been widely acknowledged by the social science researchers. In fact, both are the two sides of the same coin. Quick communication is the essence of modern civilization [5].

Internet, the base of ICT, overcomes some of these most challenging issues related to advisory services like-accessibility, literacy and language barriers, geographic coverage and local focus. The internet can play a vital role in this kind of new and fast changing agricultural extension system; as it facilitates the relationship between an organization (the agricultural universities/ICAR institutes,

etc.) and its strategic public (the farmers).

Heeks defined Internet as means of capturing, processing, storing and passing information in digitalized form. But for rapid communication we required; our audiences' strategies, our objectives and then determine which of these tools can bring to bear in an orchestrated effort to meet our objectives. In the last decade, the internet has become a core global communication technology for effective agricultural extension. The organizations that use the internet have greater access to information and can interact in a better way at reduced cost and enhance the benefits of its end users. These benefits of internet are exemplified by the extensive use of eBay for auctions, Amazon for online purchasing, and @agriculture Online for agricultural specific activities [6].

E-Agriculture is an emerging field focusing on the enhancement of agricultural and rural upliftment through effective and user friendly communication. More specifically, e-Agriculture includes the idea, concept, message designing, monitoring and evaluation of creative ways to use internet in the rural conditions, with focus on agriculture. E-Agriculture is a relatively new term and we fully expect its scope to change and evolve as our understanding of the area grows [2].

Some initiatives in India that use internet for agricultural development are: National Agriculture Technology Project, AGMARKNET, Community Information Centres, Warana Wired Village Project by Government of India [6]. Similarly state

governments have also taken initiatives to use internet in various agricultural projects like, *Janmithra*(Rajasthan), *Gyandoot* (Madhya Pradesh), *e-Seva* (Andhra Pradesh), *Bhoomi* (Land Record Computerisation), *Raitha Samparka Kendra Online* (Karnataka), *Rasi, Miyams Karchipular* (Tamil Nadu), *Seva - Automated Milk Collection Centres of AMUL* (Gujarat) and *E-Srinkala* (Kerala)[7].

Internet is changing all the spheres of human lives including agricultural extension. IT based cyber extension will act as agent of change for farming community not only by increasing access to latest information but also sharing this information and their knowledge. Internet as a tool is very much required in agricultural extension especially in the areas like; to expand knowledge resources, to facilitate better information access, to supplement inadequate technical manpower, for stronger research-extension-client system linkage, to develop efficient feedback mechanism, for cost-effective extension delivery, to ensure gender equity in technology transfer process, to empower small and marginal farmers, to develop knowledge managers and to serve the farm stakeholders beyond technology transfer role [8].

Extension personnel are very important in agricultural development process. Specifically, the basic role of extension personnel is that it helps in the improvement of those who are involved in primary food production. This is because it involves a shift from the traditional resource based method of production to a new science based method. The science based methods involve the adoption of new varieties, new cultural practices, use of agrochemicals and other capital – intensive inputs. Before these new technologies are adopted, the farmers need to be aware of them and learn how to use them correctly in their farming environment.

Materials and Methods

Locale of Study: The present study was conducted at CCS Haryana Agricultural University, Hisar Haryana, popularly known as HAU, is one of Asia's biggest

agricultural universities. Farm Advisory Service (FAS) is the major wing of the Directorate of Extension Education. It covers the whole state through it 19 *Krishi Vigyan Kendras* (KVKs) located at each district. The Extension experts of KVKs have direct contact with farmers of their periphery and provide them area and weather specific advice to them on all aspects of agriculture.

Sample: University Extension Personnel serving at Main Campus (Directorate of Extension Education, Associate Directorate (Training) and Agricultural Technology Information Centre) along with Extension Personnel from Outstations (all 19 KVKs) were taken as the sample. The total 23 Extension Personnel were available from Main Campus and 85 from Outstation. The total sample size is 108 respondents. Descriptive Group Statistics (Frequency, percentage, mean, rank order and standard deviation) of all the respondents were computed through SPSS-17 software. Later on, using the code sheet and SPSS, tables were prepared on MS Excel. Independent and dependent variables selected for the present study and the measurements are given in the table below:

Result and Discussion

Internet facilities

[Table-1] illustrates that 91.66 per cent of the total respondents had internet connection in their KVKs/ Departments and remaining 8.33 per cent respondents did not have it. When further analyzed, data revealed that out of total, 99 respondents had internet connection; only 40.40 per cent respondents had internet connection at their office. 59.60 per cent of the respondents 'did not have internet connection at their office'. When further analyzed, the data showed that the situation was comparatively better at main campus as 78.94 per cent respondents had internet facility at their office as compared to 31.25 per cent at outstation.

Table-1 Internet facilities at KVKs/ Departments and office of the respondents (N=108)

Internet facilities at KVKs/Deptt.	Extension personnel				Combined (N= 108)		Total score	Rank order	Mean	Std. Dev.
	Main Campus (N=23)		Out Station (N= 85)		Frequency	%				
	Frequency	%	Frequency	%						
Yes (1)	19	82.60	80	94.11	99	91.66	99	I	1.08	0.27
No (2)	4	17.39	5	5.88	9	8.33	18	II		
Internet connection at office?										
Internet facility at their office	Extension personnel				Combined (N= 99)		Total score	Rank order	Mean	Std. Dev.
	Main Campus (N= 19)		Out Station (N= 80)		Frequency	%				
	Frequency	%	Frequency	%						
Yes (1)	15	78.94	25	31.25	40	40.40	40	II	1.59	0.48
No (2)	4	21.05	55	68.75	59	59.59	118	I		

Internet usage: The findings regarding internet usage explained that more than half (51.85%) of the respondents used the internet 'regularly'. Whereas one- fourth respondents (23.14%) used it 'occasionally' and remaining (11.11%) 'Never used it'. When further asked about internet usage per day at their work place, out of total 89 internet users, almost half (49.2%) devoted 'less than one hour' followed

by 28.18 per cent 'devoted 1-2 hours' and 13.48 per cent 'devoted 3-4 hours' daily on the internet. The findings are in line of a similar study conducted by Kanaujia and Satyanarayana (2003) on the science & technology community to assess the level of awareness and demand of web-based learning environment among science & technology information seekers[9].

Table-2 Internet usage by the respondents (N=108)

S. No.	Internet usage	Frequency	%	Total score	Rank order	Mean	Std. Dev.
1.	Regularly (1)	56	51.85	56	I	1.97	1.27
2.	Occasionally (2)	25	23.14	50	II		
3.	Rarely (3)	8	7.41	24	V		
4.	Never (4)	12	11.11	48	III		
5.	Can't say (5)	7	6.48	35	IV		
Time devoted to internet per day (n=89)							
S. No.	Time Devoted per day(hours)	Frequency	%	Total score	Rank order	Mean	Std. Dev.
1.	< 1 (1)	45	50.56	45	II	1.79	0.98
2.	1 to 2 (2)	25	28.18	50	I		
3.	3 to 4 (3)	12	13.48	36	III		
4.	5 to 6 (4)	6	6.74	24	IV		
5.	> 6 (5)	1	00	5	V		

Contribution of Internet in KVKs/ Departments

[Table-3] depicts that out of total respondents one- third respondents (19.44%) were of the view that 'Internet contributes a lot' in efficient functioning of their KVKs/departments. 24.07% admitted that it 'contributes significantly' and 19.44% admitted that it 'contributes so-so'. Interestingly, 10.18% respondents were of view that internet 'does not contribute' in the efficient functioning of their KVKs/ departments. Further analysis of the data revealed that majority of the

respondents (59.25%) acknowledged the role of internet in the efficient functioning of their KVKs/department. Anderson and Feder (2004) revealed in their study that agricultural extension services included transferring knowledge to farmers, advising and educating farmers in their decision making, enabling farmers to clarify their own goals and possibilities, and stimulating desirable agricultural developments [10].

Table-3 Contribution of Internet in KVKs/departments (N=108)

S. No.	Contribution of internet	N	%	Total score	Rank order	Mean	Std. Dev.
1.	Too much (1)	26	24.07	26	V	2.48	1.25
2.	Much (2)	38	35.18	76	I		
3.	So-So (3)	21	19.44	63	II		
4.	Less (4)	12	11.11	48	IV		
5.	Not at all (5)	11	10.18	55	III		

Impact of internet on Extension Advisory Services (EAS)

[Table-4] shows that almost 60% (59.25%) respondents 'accepted contribution' of Internet in their activities related to extension advisory services. Whereas, 28.70%

of the respondents considered 'limited role' of internet in their extension advisory services and remaining 12.05% observed 'no role' of internet.

Table-4 Impact of internet on Extension Advisory Services (N=108)

Impact of Internet on EAS	Extension personnel				Combined (N=108)		Total score	Rank order	Mean	Std. Dev.
	Main Campus (N=23)		Out Station (N= 85)		N	%				
	N	%	N	%						
Yes (1)	17	73.91	47	55.29	64	59.25	64	II	1.69	0.89
No (2)	2	8.69	11	12.94	13	12.03	26	III		
A Little bit (3)	4	17.39	27	31.76	31	28.70	93	I		

Most lucrative benefit of Internet in Extension Advisory Services

When respondents were asked about the most lucrative benefit of internet in extension advisory services, 'efficient broadcasting of government policies' got the

first rank, followed by 'efficient contact with various people (2nd rank), chance to read various E-magazines/journals/reports (3rdrank)', enhance official efficiency (4th rank). 'Freedom of thoughts' got the last rank.

Table-5 Most lucrative benefit of internet in farm advisory services (N=108)

Most Lucrative Benefit of Internet in FAS	Extension personnel				Combined (N=108)		Total score	Rank order
	Main Campus (N=23)		Out Station (N=85)		N	%		
	N	%	N	%				
Freedom of thoughts (1)	3	13.04	5	5.88	8	7.40	8	VIII
Convenience communication (2)	2	8.69	6	7.05	8	7.40	16	VII
Scope to learn new (3)	3	13.04	15	17.64	18	16.66	54	V
Contact with people (4)	4	17.39	18	21.17	22	20.37	88	II
Reading e-magazines, journals/ reports (5)	4	17.39	9	10.58	13	12.03	65	III
Efficient broadcasting of government policies (6)	4	17.39	24	28.23	28	25.92	168	I
Enhances official efficiency (7)	2	8.69	6	7.05	8	7.40	56	IV
Don't know or Can't say (8)	1	4.34	2	2.35	3	2.77	24	VI

Effects of Internet on 'Extension Advisory Services'

When respondents were asked about the effect of internet on EAS, 'contact to large number of farmers at once' got the first position with 132 scores, followed by 'two-way communication'(60 scores), 'speedy reach to various organizations for

latest information'(154 scores), 'user friendly' (45 scores) and 'cost effectiveness' got the last rank with 13 score. The 'magic multiplier' nature of internet was dully acknowledged by the respondents [10].

Table-6 Effects of Internet on 'Extension Advisory Services' (N=108)

S. No.	Effect of internet on extension activities	N	%	Total score	Rank order	Mean	Std. Dev.
1.	Cost effective (1)	13	12.03	13	V	2.81	1.08
2.	Speedy reach to various organizations for latest information (2)	27	31.76	54	III		
3.	Contact to large number of farmers at once (3)	44	51.76	132	I		
4.	Two -way communication (4)	15	17.64	60	II		
5.	User friendly (5)	9	10.58	45	IV		

Conclusion

In brief, all the sectors of society in general and agricultural extension in particular can increase their efficiency with appropriate and judicious use of Internet in making two-way contacts with farmers and other institutions using internet. E-Agriculture can revamp the Extension Advisory Service with providing proper training to extension personnel on IT/ICT and its application in agricultural extension. Internet, the base of ICT can overcome some of these most

challenging issues related to advisory services like accessibility, literacy and language barriers, geographic coverage and local focus.

Abbreviations:

ICT: Information, Communication and Technology
 ICAR: Indian Council of Agricultural Research
 FAS: Farm Advisor Services

EAS: Extension Advisory Services
ATIC: Agricultural Technology Information Centre
KVK: Krishi Vigyan Kendra
CCSHAU: Chaudhary Charan Singh Haryana Agricultural University.

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Authors Contributions:

1. Anil Malik and Rupender Kumar conducted the field survey and collected information from all the KVKs of the university. They prepared a code sheet to analyse the data.
2. Krishan Yadav guided the Anil and Rupinder in designing questionnaire, Data analysis and report writing.
3. Rajesh covered all the technical aspects of research especially ICT/ Internet related issues and analysis of data.

Ethical approval:

It is certified that this article does not contain any studies with human participants or animals performed by any of the authors.

Authors Statement

1. The article submitted is an original work and has neither been published in any other journal nor is under consideration for publication by any other journal. More so, the article does not contravene any existing copyright or any other third party rights.
2. There is no any conflict of Interest of corresponding authors and all authors for Publication of Article

Conflict of Interest: None declared

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