South Asian Journal of Agricultural Sciences

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Utilization of information and communication technology (ICT) tools by teaching staff in agricultural education

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Abstract
Information Communication Technology (ICT) consists of a distinct set of technological tools and resources to create, disseminate, store and manage data and information. Conventional ICT tools like T.V., radio and telephone have already established their credibility and effectiveness in promoting the developmental schemes in rural and backward areas. The modern ICT tools are computers, internet and wireless communication technology in addition of powerful software's which can process and integrate sound, text and video into electronic media. ICT has the ability to prepare learners for a rapidly changing world scenario. They may use ICT as a tool to identify, analyze, exchange and present information as per their need. Information and communication technology (ICT) in education is the method of education that use information and communication technology to support, improve, and optimize the delivery of information. Information and communication technology can lead to improved student learning and superior teaching methods. The findings regarding utilization of ICT tools by the teachers may help the administrators and policy makers for formulating effective implementation strategy and policies regarding. The paper aims to study extent utilization of ICT tools by teaching staff in Agricultural Education. The data were collected through Questionnaire. Frequency, percentage, mean, standard deviation and Garrett rank analyses have been used in the analysis. Results of the study revealed that one third (38.00%) of Agriculture University teachers used ICT tools at medium extent and the most extent utilization ICT tool by teachers was Internet/ web services. Hence internet was highly used by teachers (92.00%) for gaining knowledge and majority (94.00%) of the teachers preferred internet more due to saves time.

Keywords: Utilization, ICT tools, teachers, purpose, preference and agricultural education

Introduction

Information Communication Technology (ICT) is defined as a worldwide network in which individuals are connected via the use of ICT tools such as cell phones and technology such as computers to share information and knowledge. The advancement ICT has resulted in changes that have an impact on many elements of our society and are becoming increasingly crucial in our everyday lives. Education has reaped the greatest benefits from technological improvements. The first-hand technologies challenge traditional teaching and learning methodologies and materials, and have fundamental implications for traditional teaching and learning methods by reshaping how teachers and learners gain access to knowledge. Computes, the Internet, and wireless communication technologies, as well as strong software that can analyze and integrate sound, text, and video into electronic media are examples of current ICT tools. Universities and cultural organizations across India are rapidly recognizing the importance of reforming education via the use of modern ICTs. The National Policy for ICT in Education, which is currently being developed, emphasizes the importance of including ICT as a subject in the curriculum as well as reinforcing the overall teaching and learning process. In India, EDUSAT (Educational Satellite) and other TV and radio channels are used to distribute content to open and distance education systems. However, ICT has yet to play a substantial role in the content delivery.

Traditionally, teaching and learning have been carried out in a classroom or laboratory setting. People have become more aware of the limitations of this methodology in recent years, and have begun to look into integrating computers into teaching and learning. Teachers have begun to use learning management systems, e-learning, and discussion boards, among other things. To improve the learning environment these tools allow students to study information at their own pace, increase teacher contact, and contribute to learning resources.

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In education, information and communication technology (ICT) is a technique of instruction that uses technology to enhance, improve, and optimize the transmission of information. Information and communication technologies can help students learn more effectively and teachers teach more effectively. ICT is frequently associated with advanced technologies. However, ICT also includes commonplace technology like radio, television, and the telephone. In today's networked society, technology is frequently integrated, and we combine several technologies. We use the internet, satellite, and videoconferencing to communicate with people who may be located in different parts of the world. One can transcend the effects of location, time, and distance by utilizing ICT.

Material and Methods
Research Design
In the present investigation, Ex-post facto research design was used. This design was considered as appropriate because the phenomenon has already occurred. Ex-post facto research is the most systematic empirical enquiry in which the researcher does not have control over independent variables as their manifestation has already occurred as they are inherent and can't be manipulatable.

Sampling Technique
The study was conducted in University of Agricultural Sciences, Dharwad (UASD), Karnataka, India. UAS, Dharwad includes five colleges' *viz*., College of Agriculture Dharwad, College of Agriculture Vijayapur, College of Agriculture Hanumanmatti, College of Community Science Dharwad and College of Forestry Sirsi which were selected for the study. From a total of 209 population size, a sample of 100 teachers from all five colleges were selected as respondents by following proportionate random sampling method.

Data collection procedure and period enquiry
The study was based on primary data. The primary data was collected with help of pre-tested structural schedule by personal interview method. Taking into consideration the various existing factor e.g. time and extent of available amongst the respondents, it was decided to adopt personal interview method along with schedule for the purpose of collection of data. A detailed schedule was prepared for collection of needed information. The schedule was developed in the light of the objective of the present study. The schedule was pre-tested in the sampling population to the extent of about 5 percent of the total respondents and modified according to the need of study. The purpose of study was clearly explained to the respondents at the time of data collection.

Analysis of data and statistical tools applied
Information was arranged in tabular forms and interpretation and analysis were done usually in terms of frequency, percentage, mean, standard deviation and Garrett raking.

Frequency: This measure was used to know the distribution pattern of students and teachers for each variable wise and to categorize the data.

Percentage: Percentage was used for making the simple comparison. For calculating percentage, frequency of particular cell was multiplied by 100 and divided by total number of observation or respondents. For example out of 90 respondents, 50 respondents used internet as source of information, percentage will be-

Percentage (%) = 50/90X100 = 55.56%

Mean: The arithmetic mean is the sum of the score divided by their number. This measure was used to categorize the dependent and independent variables into low, medium and high categories.

Standard deviation: This measure was used to categorize the dependent and independent variables into low, medium and high categories.

Rank order: was given according to the frequencies and percentages of respective categories. The category having the highest frequencies and percentage was ranked first and the next highest was given second rank and so on. The ranks were donated by Roman numerals as I, II, III etc. Ranks order simplifies the specific positions of the categories under the table.

Result and Discussion
Overall level utilization of ICT tools by teachers
Table 1 and Fig. 1 showed that 38 per cent of teachers utilized ICT tools in agricultural education at medium level followed by 32 per cent and 30 per cent low and high level respectively. The possible reason behind this might be lack of time to use ICTs, because they might be busy with teaching activities, research projects official and other corporate activities. Another reason might be the lack of ICT infrastructure at individual level in the departments. Regular virus problems, low speed of internet, poor maintenance of system, power cut, presence of old systems, lack of LCDs in all class rooms were several other factors influencing the use of ICTs in teaching learning process.

Table 1: Distribution of teachers based on their overall utilization of ICT tools in Agricultural Education

n=100

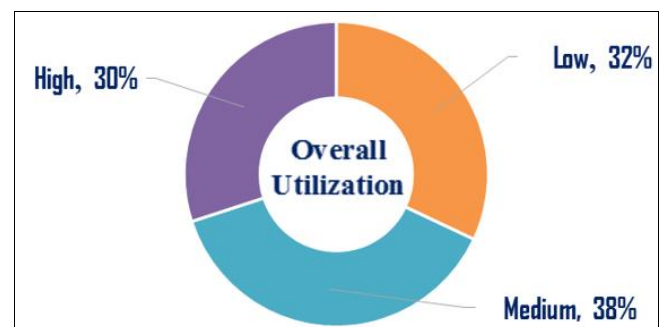| SI. No.	Category	Frequency	Percentage
1	Low (< 30)	32	32.00
2	Medium (30-36)	38	38.00
3	High (> 36)	30	30.00
Mean = 33.06		SD = 7.99	

Fig 1: Distribution of Teachers based on Overall Utilization of ICT tools in Agricultural Education

Frequency of utilization of ICT tools by teachers in Agricultural Education

Table 2 and Fig. 2 revealed that, out of 15 selected ICT tools the most frequently used ICT tool by teachers was Internet/ web services which was ranked first (99.50%) followed by MS Word (98.00%) ranked II, Email (95.00%) ranked III, MS Excel (83.00%) ranked IV, MS PowerPoint (82.50%) ranked V, YouTube (72.75%) ranked VI, Agricultural web portals (59.25%) ranked VII, Wikipedia (56.75%) ranked VIII, Online thesis repositories (41.50%) ranked IX, Analytic package SPSS (32.00%) ranked X, CeRA (Consortium for e-Resources in Agriculture) (30.25%), MOOCs (Massive Open Online Courses) (24.75%) ranked XII, m-Stat (19.75%) ranked XIII, Geographical Information System (GIS) (18.25%) ranked XIV, and Kiosks (13.25. However the overall frequency of utilization was 55.10 per cent.

The reason behind this might be that, the internet has caused a different sort of revolution. It has not only made an infinite amount of knowledge available to us, but it has also facilitated various activities that we had to project outside of our houses. It has practically brought the entire globe to four fingertips. It has also enabled immediate communication across continents at a low cost, which is a huge boon to students, teachers, researchers, and others who require frequent communication. Sharing and looking for knowledge on the internet has become as simple as opening a book. One can E-mail, send text, images and even video chat to any part of the world over internet.

Microsoft Word is a graphical word processing program allows users to type and save documents. Along with this, it also provides tools to insert pictures, edit photos, draw objects etc. It can be said that there is a range of options available in Microsoft Word. Perhaps no other computer software has as great impact on education as Microsoft word. Hence Email is important for communication because it allows users to send information in letter format, and email can replace traditional mail options. Emails can be more beneficial for communication because they can often include text, documents and multimedia, like photos and videos.

Table 2: Distribution of teachers based on frequency of utilization of ICT tools in Agricultural Education

n=100

| SI. No.	ICT Tools	Average Index (%)	Rank
1	Internet/ web services	99.50	I
2	MS Word	98.00	II
3	MS Excel	83.00	IV
4	MS PowerPoint	82.50	V
5	Analytic package SPSS	32.00	X
6	m-Stat	19.75	XIII
7	Geographical Information System (GIS)	18.25	XIV
8	Kiosks	13.25	XV
9	Email	95.00	III
10	MOOCs (Massive Open Online Courses)	24.75	XII
11	Wikipedia	56.75	VIII
12	YouTube	72.75	VI
13	Online thesis repositories	41.50	IX
14	CeRA (Consortium for e-Resources in Agriculture)	30.25	XI
15	Agricultural web portals	59.25	VII
	Overall index	55.10	
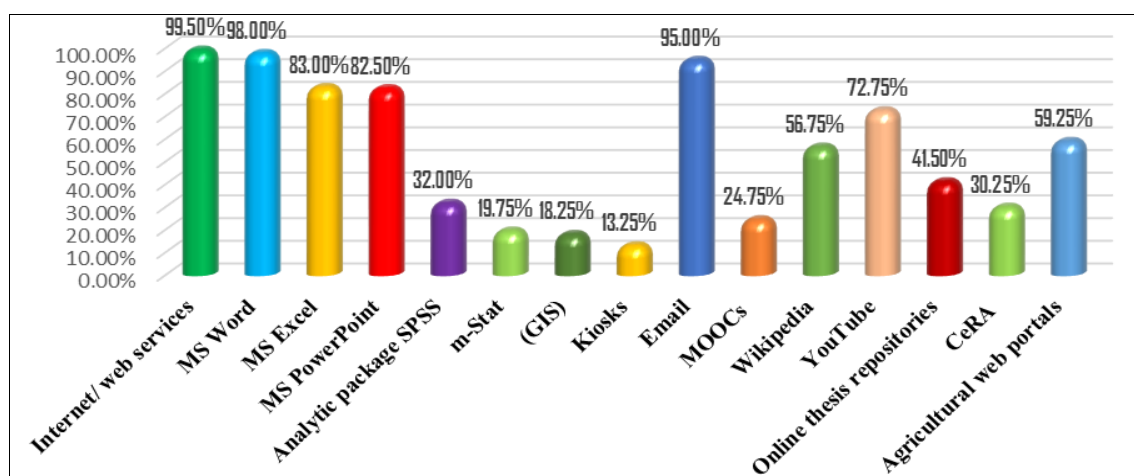
Fig 2: Distribution of Teachers based on their Frequency of Utilization of ICT tools

Purpose of utilization of ICT tools by Agriculture University teachers

Table 3 indicates the purpose of utilization of ICT tools, with respect to gaining knowledge majority (92.00%) of teachers used Internet/ web service followed by YouTube (78.00%), Email (74.00%), Wikipedia (58.00% and agricultural web portals (54.00%). For the purpose of getting reviews an equal per cent (18.00%) of the teachers used MS Word and Email followed by Wikipedia (12.00%), CeRA (Consortium for e-Resources in Agriculture) (10.00%) and Agricultural web portals (8.00%).

For research information purpose majority (72.00%) of the teachers used MS Word followed by online thesis repositories (30.00%), CeRA (Consortium for e-Resources

in Agriculture) (20.00%) and MOOCs (Massive Open Online Courses) (14.00%). For the purpose of making presentation nearly cent per cent (98.00%) of the teachers used MS PowerPoint followed by MS Word (12.00%) and MS Excel (6.00%). With respect to data analysis purpose nearly cent per cent (96.00%) of the teachers used MS Excel followed by analytical packages SPSS (62.00%) and m-Stat (38.00%).

Table 3: Distribution of teachers based on the purpose of utilization of ICT tools

n=100

SI. No.	ICT tools	Purpose of Utilization				
		Knowledge f (%)	Reviews f (%)	Research information f (%)	Presentation f (%)	Data analysis f (%)
1	Internet/ web services	92 (92.00)	2 (2.00)	11 (11.00)	0	0
2	MS Word	0	18 (18.00)	72 (72.00)	12 (12.00)	0
3	MS Excel	15 (15.00)	0	4 (4.00)	6 (6.00)	96 (96.00)
4	MS PowerPoint	7 (7.00)	4 (4.00)	4 (4.00)	98 (98.00)	0
5	Analytic package SPSS	11 (11.00)	0	0	0	62 (62.00)
6	m-Stat	19 (19.00)	2 (2.00)	4 (4.00)	4 (4.00)	38 (38.00)
7	Geographical Information System (GIS)	31 (31.00)	0	12 (12.00)	0	10 (10.00)
8	Kiosks	48 (48.00)	0	0	0	0
9	Email	74 (74.00)	18 (18.00)	8 (8.00)	0	0
10	MOOCs (Massive Open Online Courses)	41 (41.00)	2 (2.00)	14 (14.00)	0	0
11	Wikipedia	58 (58.00)	12 (12.00)	10 (10.00)	0	0
12	YouTube	78 (78.00)	4 (4.00)	12 (12.00)	0	0
13	Online thesis repositories	48 (48.00)	4 (4.00)	30 (30.00)	0	0
14	CeRA (Consortium for e-Resources in Agriculture)	33 (33.00)	10 (10.00)	20 (20.00)	0	0
15	Agricultural web portals	54 (54.00)	8 (8.00)	8 (8.00)	0	0

Note: Multiple responses are possible
(Figures in parenthesis represent percentage)
f = Frequency

Preference of Agriculture University teachers fort utilization of ICT tools
Data in Table 4 presents the preference of utilization of ICT tools by teachers with respect to saves time nearly cent per cent (94.00%) of the teachers preferred to use internet/web service followed by Email (74.00%), MS Excel (71.00%), and analytical packages SPSS (51.00%) and online thesis repositories (48.00%). Preference due to easy to operate about (27.00%) of the teachers preferred to use MOOCs (Massive Open Online Courses) followed by MS Excel (24.00%), YouTube (23.00%) and MS Word and kiosks (19.00%). Whereas preference for utilization of ICT tools due to effectiveness majority (78.00%) of the teachers preferred to use YouTube followed by online thesis repositories (30.00%), MS Word (22.00%) and CeRA (Consortium for e-Resources in Agriculture) (20.00%).
Preference for utilization of ICT tools due to need based majority (78.00%) of the teachers preferred to use YouTube followed by an equal per cent (73.00%) used MS Word and MS PowerPoint, m-Stat (34.00%) and online thesis repositories (30.00%). Furthermore due to attractiveness a good number (42.00%) of the teachers preferred to use YouTube followed by analytic packages SPSS (38.00%), MS PowerPoint (34.00%) and Email (23.00%).

Table 4: Preference of Agriculture University teachers for utilization of ICT tools

n=100

SI. No.	ICT tools	Preference of ICT tools				
		Saves time	Easy to operate	Effective	Need based	Attractive
1	Internet/ web services	94 (94.00)	16 (16.00)	11 (11.00)	22 (22.00)	9 (9.00)
2	MS Word	25 (25.00)	19 (19.00)	22 (22.00)	73 (73.00)	2 (2.00)
3	MS Excel	71 (71.00)	24 (24.00)	4 (4.00)	6 (6.00)	15 (15.00)
4	MS PowerPoint	13 (13.00)	12 (12.00)	4 (4.00)	73 (73.00)	34 (34.00)
5	Analytic package SPSS	51 (51.00)	8 (8.00)	2 (2.00)	6 (6.00)	38 (38.00)
6	m-Stat	39 (39.00)	13 (13.00)	4 (4.00)	34 (34.00)	17 (17.00)
7	Geographical Information System (GIS)	31 (31.00)	18 (18.00)	8 (8.00)	34 (34.00)	10 (10.00)
8	Kiosks	16(16.00)	19 (19.00)	14 (14.00)	53 (53.00)	17 (17.00)
9	Email	74 (74.00)	18 (18.00)	8 (8.00)	44 (44.00)	23 (23.00)
10	MOOCs (Massive Open Online Courses)	41 (41.00)	27 (27.00)	14 (14.00)	36 (36.00)	5 (5.00)
11	Wikipedia	17 (17.00)	12 (12.00)	10 (10.00)	68 (68.00)	9 (9.00)
12	YouTube	12 (12.00)	23 (23.00)	78 (78.00)	17 (17.00)	42 (42.00)
13	Online thesis repositories	48 (48.00)	12 (12.00)	30 (30.00)	35 (35.00)	11 (11.00)
14	CeRA (Consortium for e-Resources in Agriculture)	11 (11.00)	10 (10.00)	20 (20.00)	33 (33.00)	17 (17.00)
15	Agricultural web portals	18 (18.00)	14 (14.00)	8 (8.00)	68 (68.00)	8 (8.00)

Note: Multiple responses are possible, (Figures in parenthesis represent percentage)

Conclusion

On the basis of findings and observations made, it may be concluded that 38.00 per cent of Agriculture University teachers utilized ICT tools at medium extent followed by 32.00 per cent and 30.00 per cent with low extent and high extent of utilization respectively. Out of 15 selected ICT tools most utilized ICT tool by teachers was Internet/ web services ranked first (99.50%) followed by MS Word (98.00%) ranked II, Email (95.00%) ranked III. Majority of teachers utilized selected ICT tools for the purposes of gaining knowledge, while most of the teachers prefers to use ICT tools to save time followed by need based.

References

1. Aboh CL. Assessment of the frequency of ICT tools usage by Agricultural Extension agents in IMO state, Nigeria. Journal of Agricultural Social Research. 2008;8(2):25-29.
2. Agwu AE, Uche-Mba UC, Akinnagbe OM. Use of Information Communication Technologies (ICTs) among researchers, extension workers and farmers in Abia and Enugu states: implications for a national agricultural extension policy on ICTs. Journal of Agricultural Extension. 2008;12(1):37-49.
3. Brady M, Fellenz M, Brookes R. Researching the role of information communication technology (ICT) in contemporary marketing practices, Journal of Business and Industrial Marketing. 2008;23(2):108-114.
4. Kaur A, Manhas S. Use of Internet services and resources in the engineering Colleges of Punjab and Haryana (India) - A study, The International Information and Library Review. 2008;40:10-20.
5. Madhusudhan M. Use of UGC Infonet – Journals by the Research Scholars of University of Delhi. Library Hi Tech. 2008;26(3):369-386.
6. Mulimani MN, Gudimani SB. Usage of internet by students and research scholars of Karnatak University Library: a survey. Paper presented In 6th International CALIBER-2008, held at University of Allahabad, Allahabad, on February-March, c2008.
7. Nwizu SC. Analysis of ICT usage in information generation and dissemination by distance education (DE) participants: Implications for the attainment of the Millenium Development Goals in Nigeria. In Boucouvalas. M., and Aderinoye, R. (Eds.) Education for Millennium Development: Essays in Honour of Professor Michael Omolewa; c2008, 2.
8. Obaje MA, Camble E. Use of CD-ROM database by staff and students in the University of Jos Library. The Information Scientist: An International Journal of Information and Communication Technology. 2008;51:7-8.
9. Pecay RKD. YouTube integration in science classes: Understanding its roots, ways and selection criteria (Report). The Qualitative Report. 2017;22(4):1015.
10. Saka KA, Abdulrahman AB. Use of computer among library staff in four universities of technology libraries in Northern Nigeria. The Information Scientist: An International Journal of Information and Communication Technology (ICT). 2008;52:60.
11. Sharma A0 Information communication technology utilization pattern by university teachers. Indian Journal of Extension Education and Rural Development. 2017;25:142-145.
12. Yebowaah FA, Plockey FDD. Awareness and use of electronic resources in university libraries: A case study of university for development studies library, Library Philosophy; c2017.