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MOBILIZATION Society was established in 2003 as a non-profit professional society aimed at sensitizing and mobilizing development partners and community for sustainable development. The Society, during these ensuing years has successfully mobilized researchers, academicians, planners, grass root mobilizers and student and created conducive intellectual atmosphere for introspective deliberations and conducted National seminars/workshop to address the emerging problems experienced by the agrarian mass. Presently the Society has more than 1650 Life Members. The recognition of the Society in the efforts for strengthening the forum for scientific communication is growing among the related professionals and concerned agricultural stakeholders rapidly. The Society works on following objectives-

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3. To facilitate close and reciprocal linkage among the institutions for sustainable rural development.
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ABOUT THE JOURNAL

Journal of Community Mobilization and Sustainable Development (print ISSN 2230 – 9047; online ISSN 2231 – 6736) is published by Society for Community Mobilization for Sustainable Development twice a year. The Journal of Community Mobilization and Sustainable Development has NAAS rating 5.67 and Journal ID J158. The Journal of Community Mobilization and Sustainable Development, is also available on our website www.mobilization.co.in and it has been registered with www.indianjournal.com for national and global abstracting and indexing. MOBILIZATION envisages reorienting the young professionals and researches for imbibing the values of community participation in research, training and extension efforts.

The aim and scope of the journal are:

1. Sharing the relevant experiences and issues related to agriculture and allied fields at the grass root level and global forum to create the necessary academic and development climate.
2. Sensitizing the different stakeholders about the knowledge and innovation management system in pluralistic agri-rural environment.
3. Developing network among the related partners for convergence of their efforts for sustainable academic development of extension education discipline.

Editorial

Informatization is a recent trend in agriculture that seeks to modernize traditional farming methods by utilizing advanced information and communication technologies (ICTs). Agricultural informatization serves as a long-term stimulus for agrarian development by responding to the farmers' needs in an efficient time-precision framework and eventually leading to significant increases in productivity and sustainability. There have been numerous technological advancements in agricultural information technology, such as rapid communication tools, the Internet of things (IoT), smart networks for agro-advisory, interactive media, remote sensing, drones, big data analytics, and computational facilities, among others. The most recent addition to this is blockchain, a Distributed ledger technology (DLT) comprised of unalterable, digitally recorded data in packages called blocks that are linked (chained) to the next box using a cryptanalytic signature. Though the concept of blockchain was initially developed to address the need for a more decentralized financial system (along with cryptocurrencies), this technology is now finding innovative applications in various fields of agriculture. The most important one is supply-chain management, in which traceability is critical to ensuring food safety and increasing customer retention and satisfaction. The blockchains in the supply chains provide immutable data records of a product from the farm to the consumer's hands, making it easier to identify forged products quickly, reducing the mediators and having a traceability account for the product. It can increase consumer trust in the products they buy while also providing an opportunity to reward producers with a higher price for their products. Though the potentials of blockchains are notable, the technology is not fully proofed of flaws, particularly those related to data storage, scalability, and privacy, which require further research.

I am delighted and privileged to announce to our readers that our current issue of the MOBILIZATION journal (July-September 2022) is ready to enlighten you with the most insightful research findings from multidisciplinary fields. It covers topics like e-learning, value chain analysis, analytical study of extension and advisory services, educational psychology and attributes, stress and uncertainty among Indian farmers, communication linkage mechanism, sociological aspects of health conditions, impact assessment, gender studies, farmer's knowledge about green technology, nutrition-led extension studies, differential use pattern of ICT tools, water use and economics, perception towards agriculture as profession, awareness and usage of information and communication technologies (ICTs) in academic activities, agri-tech start-up and entrepreneurship in agriculture, field experimental research, fisheries and aquaculture, climate change and vulnerability assessment etc. I am confident that this issue will provide you with a fascinating intellectual experience because it is a collection of strategic and action-oriented research findings from various fields.

The commitment and contribution of the editorial team deserve special mention. I am grateful to them for their perseverance in the drafting process and timely publication of the journal. Finally, I'd like to thank you, the contributors and readers of Mobilization Journal, for your interest in the journal. I encourage you to keep sending us your valuable research findings, ideas, and feedback for the continued improvement of our journal.

J.P. Sharma
Chief Editor



Awareness and Usage of Information and Communication Technologies (ICTs) by the Faculty Members in the Academic Ambience of Indian State Agricultural Universities

Surya Rathore^{1*} and Manmeet Kaur²

¹Principal Scientist (Extension Information Systems), ICAR–National Academy of Agricultural Research Management, Rajendranagar, Hyderabad-500030, Telangana

²Assistant Professor, Department of Agricultural Extension & Communication, College of Agriculture, Swami Keshwanand Rajasthan Agricultural University, Bikaner-334006, Rajasthan

ABSTRACT

This study aimed at finding out the awareness and usage of ICTs by faculty members of State Agricultural Universities (SAUs) in India. Data were collected from 327 faculty members with the help of semi-structured questionnaires along with Focused Group Discussions. All the university teachers were aware of interactive white board, computer/laptop, LCD projector, television, Wi-Fi and mobile/smartphone but as far as the usage is concerned, only Wi-Fi was being used by all the teachers under study whereas majority of the teachers reported to have been using interactive white board, computer/laptop, projector, television, mobile/smart phone and e-library for teaching- learning. The majority of the faculty members agreed that ICT had become a significant factor for carrying out administrative and academic activities.

Keywords: ICTs, India, Agriculture Education, SAUs

INTRODUCTION

Indian Agriculture education system is among one of the largest education systems in the world. A huge number of learning institutions around the globe have used information and communication technologies (ICTs) as an integral part of the teaching-learning process. As a developing country, India's usage of ICTs in higher education institutions is just getting started, and progress will take time.

The pandemic occurrence like COVID–19 has taught us the importance of digitisation which enables accomplishing a task with less or almost no contact. The same is expected in a safe teaching-learning situation from school to higher education. The new – normal has brought drastic changes in the functioning of Universities (Rathore *et al.*, 2021), be it teaching, research or extension education. ICTs have become an essential component of higher education, and digital tools have been integrated into agricultural higher education for

many purposes like administration, maintaining records, research, education *etc.* (Rathore *et al.*, 2020). Applying ICT such as the internet, the world wide web, and electronic resources are widely accepted academic help for students and teachers alike (Murugesan, 2013).

The very term ICT refers to those technologies that provide us access to information using telecommunications. It has an added advantage compared to Information Technology (IT), as it focuses on communication technologies. Examples include the internet, cell phones, wireless networks, other communication media and the like. A vast number of learning institutions worldwide have used ICTs as an integral part of the teaching and learning process (Friedman *et al.*, 2009).

Student-teacher education has undergone rapid development and transformation due to the availability of novel technologies and the emergence of challenges in the field of education. This has resulted in the

*Corresponding author email id: suryarathore@gmail.com

advancement and redesigning of teaching procedures to make students ready for the future challenges which can be posed by the temples of higher education (Auerswald and Magambo, 2006). In terms of administrative, teaching, and learning methods, ICTs have a significant impact in Universities and agricultural universities are no exception.

The development of ICT in India still has a long way to go. According to the ICT development Index 2017, India ranked 134th in terms of ICT usage when compared to other countries. Many factors are responsible for the awareness and attitude of an individual towards ICT. Some of them are socio-cultural factors, lack of knowledge, the pace of change, *etc.* The internet penetration in rural India is still shallow, and leading state agricultural universities were established in rural areas of India. In this scenario, there is a need for the most basic infrastructure and internet connectivity in the agricultural universities of India to promote quality higher agricultural education.

ICT is becoming more and more necessary and valuable for our academicians as they are the ones who are always in search of recent and timely information. More than print resources, electronic documents are now used and preferred. Our students, too, are pretty tech-savvy and use electronic aids like the internet for most of their academic work. Teachers, too, use many electronic tools to make their classes more effective and provide more informative and varied experiences to their students (Murugesan, 2013).

In this line, the present study attempts to analyse the awareness and usage of ICTs by the faculty members of State Agricultural Universities of northern states. Based on the findings, efforts have been made to deliver purposeful suggestions for improving the awareness and usage of ICT tools in the teaching-learning process. In other words, this study aims at finding out the perception of state agricultural university teachers towards ICT, their awareness, usage and frequency of use of ICT tools.

MATERIALS AND METHODS

The selection of universities was purposive, *i.e.* those Universities were selected which responded to our online questionnaire hosted on ICAR – NAARM, Hyderabad website within a month. Thus, 10 State

Agricultural Universities from the four northern states of Madhya Pradesh (03), Gujarat (03), Rajasthan (03) and Jammu & Kashmir (01) constituted the sample of the study. The selection of colleges was also purposive based on their response to the online questionnaire. Thus, 20 Colleges from 10 SAUs of northern India formed the sample, out of which 327 faculty members were randomly selected as respondents for the study.

A mixed-methods approach was used for data collection from a sample of 20 colleges representing 10 SAUs of the four northern states of the country, namely Rajasthan, Gujarat, Madhya Pradesh and Jammu & Kashmir. Concerted efforts were made to select colleges from different verticals of agricultural sciences. Data were collected through an online questionnaire hosted on the ICAR – NAARM website. Data were also collected through personal distribution of the questionnaire at the designated Colleges of the universities and informal observation by the investigator. A Likert type rating scale was prepared based on an intensive review of literature and expert suggestions for data collection from respondents.

RESULTS AND DISCUSSION

The descriptive data of the socio- demographic profile of respondents were presented in Table 1. It is revealed from the table that the majority of the respondents (78.90%) were female and had PhD educational qualification (77.37%), further 41.59 per cent of

Table 1: Socio-demographic profile of respondents (n=327)

Characteristics	Frequency	Percentage
Gender		
Male	258	78.90
Female	69	21.10
Age in years		
Less than 40	136	41.59
Between 41 to 53	108	33.03
Above 53	83	25.08
Educational Qualification		
Ph.D.	253	77.37
Non-Ph.D.	74	22.63
Family Background		
Rural	155	47.40
Urban	172	52.60

respondents belonged to the less than 40 years age group and around half of the respondents (52.60%) were from rural background.

ICT is a crucial factor for an institution’s administrative and academic activities, as depicted in Figure 1. It shows that almost 60 per cent of the teachers of State Agricultural Universities strongly agreed that ICT had become a significant factor for carrying out administrative and academic activities of the colleges. In contrast, the remaining 39.76 per cent just agreed to this statement. Only two University teachers partially agreed to this statement. Rathore *et al.* (2017) found that the majority of the agricultural

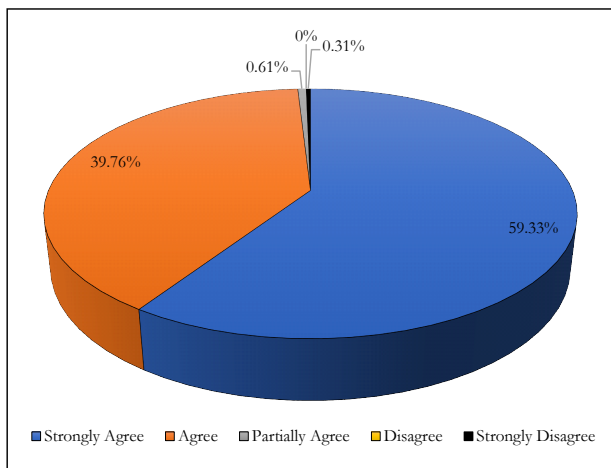


Figure 1: Perception of University teachers towards ICT as an essential factor for administrative and academic activities

universities use ICT only for result declaration, admission and exam notification as far as administrative and academic activities are concerned. For constant monitoring of teaching-learning activities of the Universities, Closed Circuit Television (CCTV) were an integral part of universities like Jawaharlal Nehru Krishi Vishva Vidhyalaya (JNKVV), Jabalpur and Rajmata Vijayaraje Scindhia Krishi Vishvavidhyalaya (RVSKVV), Gwalior in Madhya Pradesh and Anand Agricultural University, Anand (Gujarat).

It is evident from Table 2 that all the university teachers under study were aware of interactive whiteboard, computer/laptop, LCD projector, television, Wi-Fi and mobile/smartphone. Still, as far as the usage is concerned, only Wi-Fi was used by all the teachers under study. In contrast, most teachers reported using interactive whiteboard, computer/laptop, projector, television, mobile/smart phone, and e-library for teaching-learning. ICT has enabled the teaching – cum- learning qualities to newer heights, *i.e.* source of knowledge, motivation, nurturing lifelong learning habits, establishing online learning, as a tool for research, means of interaction, improving the delivery of library services, which offer access to academic databases along with e-resources (Nallusamy *et al.*, 2015).

Mendhe and Dhandore (2014) conducted a study on faculty and scientists of India. They stated that most faculty and scientists preferred to use e-journals and e-

Table 2: Distribution of Teachers according to awareness and usage of ICT tools (n=327)

Category	Awareness of ICT		Usage of ICT	
	Frequency (Yes)	Percentage	Frequency (Yes)	Percentage
Interactive white board	327	100.00	260	79.51
Computer / Laptop	327	100.00	311	95.11
Projector	327	100.00	305	93.27
Television	327	100.00	213	65.13
Video conference	294	89.91	165	50.46
Teleconference	262	80.12	98	29.97
E-Portfolio	163	49.85	65	19.88
Wi-Fi	327	100.00	327	100.00
Digital student report card System	245	74.92	131	40.06
Virtual class rooms	261	79.82	115	35.17
Mobile / Smartphone	327	100.00	310	94.80
E-Library	295	90.21	245	74.92

Table 3: Distribution of Teachers according to usage frequency of ICT tools (n=327)

Category	Never	Occasionally	Monthly	Weekly	Daily
Interactive whiteboard	20.00	25.00	5.00	5.00	45.00
Computer / Laptop	5.00	0.00	0.00	0.00	95.00
Projector	5.00	35.00	0.00	5.00	55.00
Television	35.00	10.00	0.00	20.00	35.00
Video conference	50.00	45.00	5.00	0.00	0.00
Teleconference	70.00	25.00	5.00	0.00	0.00
E-Portfolio	80.00	5.00	10.00	5.00	0.00
Wi-Fi	0.00	10.00	0.00	0.00	90.00
Digital student report card System	60.00	25.00	5.00	10.00	0.00
Virtual class rooms	65.00	25.00	0.00	0.00	10.00
Mobile / Smartphone	5.00	5.00	0.00	0.00	90.00
E-Library	25.00	25.00	5.00	0.00	45.00

mails followed by e-books, e-database and e-research reports. An e-portfolio is an electronic platform that collects evidence related to an individual’s learning journey. These portfolios can be specific to an academic area or lifelong learning of an individual. Writing samples, research projects, videos, photos, observation by mentors and peers work as proof of evidence. In the present study, only 49.85 per cent of respondents were aware of e-portfolio and still significantly less (19.88%) were using it. More than half were not even aware of the very term “e-portfolio”. The possible reason could be that e-portfolio is not very commonly used by the majority of the agriculture faculty.

It is concluded from Table 3 that Wi-Fi was the only technology that all the teachers used understudy. Still, as far as the frequency of usage was concerned, computer/laptop, Wi-Fi and mobile/smartphones were used by more than 90 per cent of the respondents daily, whereas 80 per cent had never used e-portfolio. A majority of the teachers’ understudy had never used teleconferencing, digital report card and virtual classrooms. To use ICTs to their fullest extent, it is deemed essential to possess different ICT gadgets such as mobiles, tablets, personal computers, laptops, internet connections *etc.* It is well known that virtual classroom is an online real world learning environment. This is a synchronous method of teaching learning especially meant for those universities which have less number of teachers to teach the courses. It is recommended that newly formed universities like

Jodhpur Agricultural University and Nanaji Deshmukh Veterinary Science University (NDVSU), Jabalpur who were facing problem of faculty crunch should be tech savvy and make use of virtual classrooms. A very good example is that of Professor Jayashankar Telangana State Agricultural University, Hyderabad which is on with its journey to virtual classrooms.

CONCLUSION

The results consider ICT an essential factor for carrying out administrative and academic activities in SAUs in India. Cent per cent of university teachers understudy was aware of interactive whiteboard, computer/laptop, LCD projector, television, Wi-Fi and mobile/smartphone. Still, as far as the usage is concerned, only Wi-Fi was used by all the teachers under study. In contrast, most teachers reported using an interactive whiteboard, computer/laptop, projector, television, mobile/smart phone, and e-library for teaching-learning. As the frequency of usage was concerned, computer/laptop, Wi-Fi and mobile/smartphones were used by more than 90% of the respondents daily, whereas 80% had never used e-portfolio. The majority of the teachers under study had never used teleconferencing, digital report card, and virtual classrooms. We can conclude that faculty members of SAUs in India are aware of ICT tools and have above average usage of all the ICT tools. Therefore, ICT plays a vital role in the teaching-learning process of students and faculty members of agricultural universities. At the same time, there is a need to

promote teleconferencing, digital report card and virtual classroom system in the SAUs. Thus, it is a much needed intervention that students as well as faculty should be trained in the art of making judicious use of ICTs in the present era.

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