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Constraints faced among scientists in agricultural universities during use of ICT

Priya Pallavi, Dr. Niva Bara, Dr. BK Jha and Pankaj kumar

Abstract
Education is one of the eminent field in the world of ICT. Three agricultural universities namely, Birsa Agricultural University, Ranchi, Dr. Rajendra Prasad Central Agricultural University, Pusa, Samastipur and Bihar Agricultural University, Sabour, Bhagalpur were selected for the research purposively. The study was aimed to find out the important constraints faced in these agricultural universities by the scientists while using ICT tools. The sample comprised of 20 scientists from each of the universities, therefore the total sample size was 60. Data collection was done through questionnaire, observation, group discussion and interaction techniques. Respondents were questioned to enlist the constraints encountered by them during the use of ICT tools. Constraints were categorized into three type's i.e., technical, social-economic & psychological and ergonomical. The responses were marked as regularly, occasionally and never. The scoring was given as 2, 1 and 0 against each response respectively. The results obtained from the study indicated that absence of conducive environment and insufficient internet facility as the top most constraints faced among scientists in using ICT tools.

Keywords: Constraints, regularly, ergonomical, scientists, questionnaire

Introduction
ICT (Information and Communication Technology) has been proved to be a benchmark in the overall growth and development of any country. In every field of human development, it's been considered as an significant growth factor. For fulfilling the needs of every hours, whether at home or at work place, it is of immense importance. UNESCO (2002) [6] implicit ICT as the means to enhance and extend teaching- learning methods at all levels of education. It comprises of storage, recovery, conversion and transmission of facts, information and knowledge. (Ifueko Omoigui Okauru, 2011) [15]. In almost every field we can find the incorporation and involvement of technology to find solution of problems.
The application of ICT in education fits further substitute in attentive teaching-learning process. The world is progressing rapidly into electronic media, documents, files etc. The role of ICT in training is also increasing day by day (Sharma, V. 2020) [16]. Conventional ICT tools like T.V., Radio and Telephone, have already proved their potential and efficacy in the development of rural areas. Modern days ICT tools involve internet, laptop and wireless communication technology, along with prominent software that can process text, sound and video into electronic media. It is usually assumed that ICTs can develop the instructional process, therefore making tremendous contributions in teaching-learning field. Updated current information can be achieved through the use of modern of communication tools, with the help of Information and Communication Technologies (ICT) tools. The agricultural sector also include an enormous role of ICT in every areas of growth and development as well as in education sector like in universities and research. But due to inadequate access to technology, higher education system in India tends to suffer a lot. It is unfortunate that instead of the massive contributions of ICT in agricultural universities, there are yet lots of constraints faced during its usage. Lack of digital content, infrastructural challenges, inadequate time, lack of teaching responsibilities, and contextualized means are constraining researchers from utilizing the full potential of technology (Sharma, A. 2021) [17] The present study focus on the constraints faced by scientists during the use of ICT tools in the state agricultural universities of Bihar and Jharkhand

Materials and Methods
Three agricultural universities i.e. Birsa Agricultural University, Ranchi, Dr. Rajendra Prasad Central Agricultural University, Pusa, Samastipur and Bihar Agricultural University, Sabour,

Bhagalpur were selected for the purpose of study. Respondents comprised of twenty scientists from each of the selected university. Thus the total respondents were sixty. For the purpose of study, ICT tools selected were Internet/web services, Mobile map technology, Digital storytelling/video, Radio/community Radio, Video conferencing, Tele conferencing, Digital Library, Expert system, Kiosks, Kisan call centre, Satellite Tele communication (SATCOM), Interactive Multimedia Compact Disc (IMCD), Geographical information System (GIS) and different Agricultural Apps. The research design was ex-post facto, since the phenomenon had already been occurred. Questionnaire was developed and pretested. For data collection different methods like observation, interaction and group discussion techniques were used. Statistical tools like mean, frequency and weighted mean were used for data analysis and interpretation. With the help of weighted mean score, rank was given to each of the constraint.

Constraints faced in using ICT tools

Constraints refers to obstacles or any sort of hindrance. Respondents i.e., scientists were asked to specify the constraints faced by them during the use of ICT tools. The constraints were divided into three types as technical, social-economic & psychological and ergonomical. Technical constraints comprised of insufficient internet access, read only content, inability to download full articles, free and paid online services access, network issues in mobile, unwanted service in mobile, trustworthiness of the content and insufficient technical skills while Social-economic and psychological constraints include absence of favorable environment for e-learning, social responsibility to spend time with relatives, unfavorable approach of elders, financial problem and lack of awareness of ICT among relatives and friends whereas ergonomical constraints comprised of eye pain, back ache, head ache and hand pain.

The constraints encountered by the scientists were categorized on the following basis

Type	Score
Regularly	2
Occasionally	1
Never	0

This procedure is modification of the procedure followed by Massey and Dhillon (2015) [18].

Weighted Mean

If there are total n observations, x1, x2, x3……xn with respective weights w1, w2, w3…wn, then the weighted mean is given by,

$$xw = \frac{\sum wx}{\sum w}$$ …….. (Rangaswamy, 2002) [19]

Ranking

Ranking means assigning of some position, in which mathematical or ordinal values are interchanged by their rank when the data are arranged. This order arrangement of values is known as ranking, and the ordinal number indicating the place/position in the ranking is called rank. To be more precise, rank *r* means, with respect to the character under study, the value stands rth, so that (r-1) value have the character to a greater degree than the next value (Goon *et al.*, 1999) [20].

Results & Discussion

The constraints were categorized into three parts i.e. technical, socio-economic & psychological and ergonomical constraints.

Table 1 shows the constraints faced during the use of ICT among scientists. The top most constraint was absence of favourable environment for e-learning, ranked I followed by insufficient internet facility (II), head ache (III), absence of technical skill (IV) and back ache (V). Less awareness of ICT among relatives and friends and trustworthiness of the content together obtained rank VI followed by read only content and cannot download full articles, which jointly obtained rank VII and problems in accessing free and paid online facilities, ranked VIII. Social responsibility to spend time at home, unwanted service activation in mobile and low network on mobile phones ranked IX, X & XI. The constraints among least rank are monetary problem (XII), unfavourable approach of elders at home & eye pain (XIII) and hand pain ranked (XIV) respectively.

In spite of earnest efforts by government and private sector, internet facility is still an issue. We can see the presence of non-relevant content. The trustworthiness of which is often doubted. The authentic and valid contents are unavailable at many of the websites. Also they demand money for complete content. There has been excess of facts, information and literature, which reveals side effects on the users of ICT. Still in teaching, research and extension, we can observe the effect of use of ICT as the ergonomical constraints obtained lowest rank, therefore giving a hope for its future scope in field of education.

Conclusion

The current study emphasised the prevailing condition of constraints encountered by scientists of agricultural universities during use of ICT. It is revealed from the findings of the study, that there are many obstacles faced by them in everyday of life. The most important constraint was absence of favourable environment for e-learning ranked I followed by insufficient internet facility (II), head ache (III), low technical skill (IV), back ache (V) and read only content(VI).

There is still a large scope to exploit the huge potential of ICT in educational institutes. The modern technologies challenge traditional concepts of instructional methods, i.e. teaching-learning methods. To overcome these challenges, there must be new technologies, tools, proper training methods for teaching, learning and research at all educational institutions

The accessibility of Internet services was not very adequate due to numerous constraints related with them. The present study suggests that university must look at this matter from time to time to exploit the fullest advantage of Internet service and facility. There must be training programmes organised regularly, which can be online as well as offline, to create a proper learning environment in the institutes. Proper broadband connection or Wi- Fi must be facilitated at each and every department and office. Computer must be well equipped with every researcher and proper training must be provided so that they can become very technical and pro in practicing it. This will definitely create a better academic environment at agricultural universities.

Table 1: Constraints faced among scientists during the use of ICT in agricultural universities

Sl. No.	Constraints	BAU, Ranchi Weighted Mean score	Dr. RPCAU, Pusa Weighted Mean score	BAU, Sabour Weighted Mean score	Total weighted mean score	Rank
A.	**Technical constraints**					
1	Insufficient internet facility	1.25	1.1	1.25	1.20	II
2	Read only content	1.10	1.00	1.10	1.06	VII
3	Inability to download full articles	1.1	1	1.1	1.06	VII
4	Problems in accessing free and paid online facilities	1.05	1	1.09	1.04	VIII
5	Insufficient network in cellular phones	1.00	0.80	1.00	0.93	XI
6	Undesirable service activation in mobile	1.00	0.95	1.00	0.98	X
7	Trustworthiness of the content	1.11	1.01	1.10	1.07	VI
8	Absence of technical skill	1.20	1.05	1.20	1.15	IV
B	**Social-economic and psychological constraints**					
9	Absence of favourable environment for e-learning	1.25	1.20	1.25	1.23	I
10	Social responsibility to spend time at home	1.00	1.10	1.00	1.03	IX
11	unfavourable approach of elders at home	1.10	1.05	1.10	0.75	XIII
12	Less awareness of ICT among siblings and friends	1.11	1.01	1.10	1.07	VI
13	Financial Problem	1.00	0.45	1.05	0.83	XII
C	**Ergonomical constraints:**					
14	Eye pain	0.70	0.85	0.70	0.75	XIII
15	Back ache	1.10	1.05	1.10	1.08	V
16	Head ache	1.15	1.25	1.15	1.18	III
17	Hand pain	1.00	0.50	0.45	0.65	XIV

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