ISSN: 2347-4688, Vol. 12, No.(3) 2024, pg. 1442-1450

Current Agriculture Research Journal

www.agriculturejournal.org

Analysis of Websites of Indian Agricultural Universities for their Adaptation of Web 2.0 Technology

RENU PANWAR[1], AJEET SINGH NAIN[2]* and SUNIL GORIA[3]

[1]Institute of Library & Information Sc., NIMS University, Shobhanagar, Jaipur.
[2]Dept. of Agrometeorology, College of Agriculture, G. B. Pant University of Agriculture and Technology, Pantnagar, (U. S. Nagar, Uttarakhand).
[3]University Library, Babasaheb Bhimrao Ambedkar University (A Central University), Lucknow, Uttar Pradesh.

Abstract

India is an agrarian country where approximately 65% population is still dependent on agriculture. Agricultural Universities in India has been mandated with preparing trained human resources, conducting need-based research and taking the technologies to farmer's field through extension activities. Website is good source of communication provide crucial information to stakeholders such as students, farmers and a common man. The content on the website and how it has been kept plays a crucial role in fulfilling the objectives of the website. Web 2.0 technology is an important technology of 21st century, which counts on information sharing through participatory approach, interoperability, design keeping in mind user's preferences, and Inter-institutional collaboration. The critical analysis of the websites of Indian Agricultural Universities shows that most appeared feature on the agricultural website was webmail followed by Web OPAC and Search Option. The group-wise analysis of the institutional websites shows that there is large intra-group variation as far as Web 2.0 technology is concerned. The adoption of the Web 2.0 technology on the websites of the Agricultural Universities varied from 0 to 33 %, horticultural and veterinary group websites varied from approximately 7 to 27 % and 0 to 40%, respectively, while deemed-to-be universities adopted 13 to 30 % contents of Web 2.0 technology on the institutional websites. The results show that the websites of deemed-to-be University are comparatively better with Web 2.0 technology, while websites of agriculture and veterinary universities are trailing in the list.

Article History
Received: 24 June 2024
Accepted: 12 November 2024

Keywords
Agricultural University;
Deemed-to-be University;
ICAR;
Web 2.0 Technology;
Web contents.

CONTACT Ajeet Singh Nain nain_ajeet@hotmail.com Dept. of Agrometeorology, College of Agriculture, G. B. Pant University of Agriculture and Technology, Pantnagar, (U. S. Nagar, Uttarakhand).

Doi: http://dx.doi.org/10.12944/CARJ.12.3.35

Introduction

India being an agrarian country primarily emphasizes on the development of agriculture not only to provide food to the hefty size of its population but also to provide employment to the hands of more than 65 percent of its inhabitants.[1] The responsibility of agricultural development in India has been entrusted upon the 48 state agricultural universities, one central university and five deemed to be the universities.[2] The responsibility includes agricultural education to the youth, research for varietal and production technology improvement and transfer of technology to the stakeholder i.e. farmers.

A lot of information is exchanged between the university and users. Making the information available to the user through print medium or telephone is not feasible as information gets changed with every passing day. Therefore, agricultural universities have also adopted web-based technology for providing information to the valuable users. The prospective students use the information available on the university website to find what programmes of the studies are offered and what are the course contents of the particular study programme, what is the ranking of the university and what are the jobs avenues for the students passing a degree from the university. Current students make use of the university website for knowing the lecture schedule, examination schedule, semester results, attendance status, extracurricular activities etc. The prospective faculty may like to visit website to know the job avenues in the university, job conditions, salary, perks and package and other facilities available for the faculties. The existing faculties may use the university web for telephone directory, contact detail, further job avenues, notices, orders, and circulars. The internal and external research community would like to visit the university website for the latest development in their concerned field, facility available in other department / institutions, and status of books in the library. The farming community may seek information related to the latest variety of the crop, latest development in the existing package of practices, weather information, crop advisories, etc.[3]

The contents of the website should be provided in a manner that only relevant and updated information are kept. The content of the website should go through the entire life-cycle process of Creation, Modification, Review and approval, Content Uploading, Publishing, Expiry and Archival as proposed by Indian Institute of Rice Research of Indian Council of Agricultural Research.[4]

The Web has imprinted a strong impression in its relatively short life. It is the best tool to produce information and to share it with a large number of clients/stakeholders so that information could be effectively used by users. The Web has been made available to the public in the year 1993, and ever since it has become a preferred choice for clients/ stakeholders from academic research, extension and for other routine enquiries related to goods and services. The growth of the web has been very impressive in a way the volume of contents is put on the web, its distribution across the globe and the users who are willing to use the contents. The impact of the web on socio-political systems is very well documented, however it changes very fast due to continuous updating of contents.

Web 2.0 technology is an advanced version of website development which puts emphasis on user-friendly content and usability for end-users[5] as compared to its precursor, Web 1.0, Web 2.0 has been constructed keeping in view the requirements of the Internet users of the 21st century. The study in the present case has been conducted to analyze the preparedness of the Websites of Indian Agricultural Universities for the growing demand of the users of 21st Century.

Materials and Methods

Study Material

The websites of all Indian Agricultural Institutions including state agricultural universities, central agricultural universities, state horticultural universities, state veterinary universities, and "deemed-to-be universities" have been considered in the present study. Hereafter, the phrase "Agricultural Institutions" has been used to represent all types of universities and deemed-to-be universities. The "deemed to be Universities" include Indian Agricultural Research Institute (IARI), Pusa, New Delhi, National Dairy Research Institute (NDRI), Karnal, Haryana, Indian Veterinary Research Institute, Izzatnagar, Bareilly, Uttar Pradesh, Central Institute of Fisheries Education, Mumbai, Maharashtra and Allahabad, Agricultural Institute, Allahabad, Uttar Pradesh.

The Horticultural Universities namely Dr Yashwant Singh Parmar University of Horticulture & Forestry, Nauni, Solan, Himachal Pradesh, University of Horticultural Sciences, Bagalkot, Karnatka, Andhra Pradesh and Horticultural University, West Godavari District, Andhra Pradesh; and Veterinary Universities like Guru Angad Dev Veterinary and Animal Science University, Ludhiana, Punjab, Maharashtra Animal Science & Fishery University, Nagpur, Maharastra, Sri Venkateswara Veterinary University, Tirupati, Andhra Pradesh, Tamil Nadu Veterinary & Animal Science University, Chennai, Tamilnadu, UP Pandit Deen Dayal Upadhaya Pashu Chikitsa Vigyan Vishwa Vidhyalaya Evam Go Anusandhan Sansthan, Mathura, Uttar Pradesh, West Bengal University of Animal & Fishery Sciences, Kolkata, West Bengal, Karnataka Veterinary, Animal and Fisheries Sciences University, Bidar, Karnataka, Rajasthan University of Veterinary and Animal Sciences, Bikaner, Rajasthan, and Kerala Veterinary and Animal Sciences University, Thiruvananthapuram, Kerala have been included in the study. Overall, 35 state agricultural universities, one central agricultural university, three horticultural universities, nine veterinary and animal science universities, and five deemed-to-be universities were considered. The complete list of all Indian Agricultural Universities including horticulture and veterinary university was acquired from ICAR website.[4]

Table 1: The contents / features of Agricultural Universities / institutions considered for evaluating the websites for Web 2.0 Technology with their 'category' and 'code values'.

Sr No.	Contents / Features	Code values
1	Interactive Search	'Absent = 0, Present = 1'
2	Adobe Flash Supported File opening	'Absent = 0, Present = 1'
3	Interactive Posting /editing of content (WIKI)	'Absent = 0, Present = 1'
4	Pod casting (Video - Audio posting)	'Absent = 0, Present = 1'
5	E-learning / lectures	'Absent = 0, Present = 1'
6	Blogs	'Absent = 0, Present = 1'
7	Feedback (Form based)	'Absent = 0, Present = 1'
8	Social Networking /Chatting	'Absent = 0, Present = 1'
9	Bookmarks	'Absent = 0, Present = 1'
10	Mobile Alerts (advisories)	'Absent = 0, Present = 1'
11	Webmail	'Absent = 0, Present = 1'
12	RSS (Real Simple Syndication)	'Absent = 0, Present = 1'
13	Online Form submission	'Absent = 0, Present = 1'
14	Web OPAC (Library Search)	'Absent = 0, Present = 1'
15	Book Booking	'Absent = 0, Present = 1'

Adaptation of Web 2.0 Technology on the Websites of Agricultural Universities

The Web 2.0 is a term associated with applications of web that provides facility of sharing information, collectively create contents, designing the contents in way it that suits to user's requirement, and offers flexibility of collaborate on the World Wide Web.[4] Any website which uses Web 2.0 technology allows users to collaborate and interact mutually through social media platform and dialogue in a virtual community as creators of user-generated content.[4] It is in contrast to it predecessor websites where users (consumers) cannot generate contents but are limited to the receiving the contents that were created for them. There are several examples of Web 2.0 technology, which we are using in our day-to-day life (such as social networking sites, wikis, hosted services, video sharing sites, blogs, mashups, web applications, and folksonomies). These features could be important for the students, faculty members and the farmers for enhanced interaction. Therefore, websites of all agricultural universities were checked cautiously for the important features pertaining to the web 2.0 technology. The list of contents / features

pertaining to Web 2.0 technology has been given in the Table 1 with the codes values. The average contents / features related to Web 2.0 technology on websites of all agricultural / horticultural / veterinary university / deemed-to-be university were analyzed using equation – 1. The most featured contents have also been analyzed by arranging all contents in descending order.

Statistical Analysis

The ANOVA technique has been deployed for statistical analysis to evaluate the hypothesis 'Ho: μ1= μ2= ……μn'. In the analysis, the different types of universities such as 'Agricultural University', 'Horticultural University', and 'Veterinary University' were taken as treatments and the Universities in a group has been considered as replications. The hypothesis has been tested on the average / mean content / feature of the University listed in Table 1. The analysis was carried out separately for different groups of parameters.

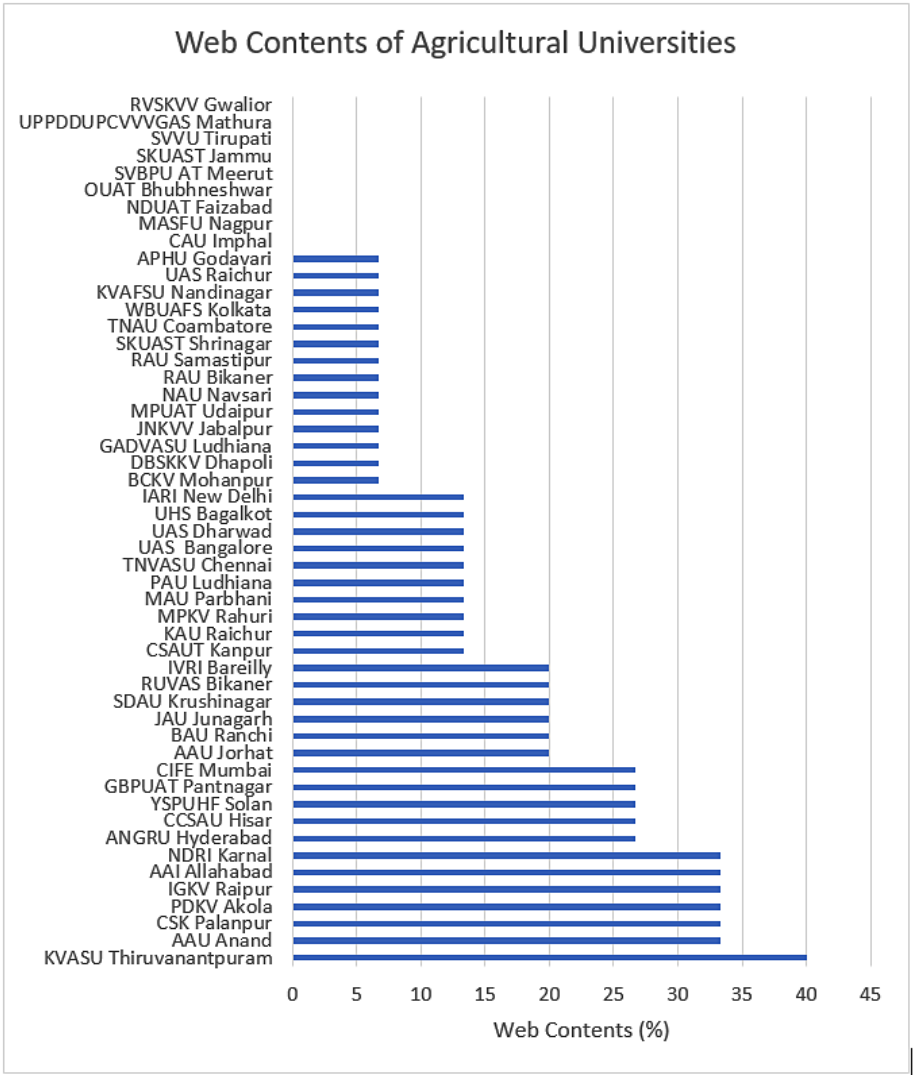

Fig. 1: The contents / features of indidvidual 'agricultural universities / deemed-to-be universities' related to Web 2.0 Technology.

Results

Analysis of Adaptation of Web 2.0 Technology on the Websites of Agricultural Institutions

The 'Web 2.0 is a term associated with applications of web that provides facility of sharing information, collectively create contents, designing the contents in way it that suits to user's requirement, and offers flexibility of collaborate on the World Wide Web. Web 2.0 technology as mentioned above includes 'blogs, wikis, video sharing sites, social networking sites, hosted services, web applications, etc',[5] which are now important and frequently used by the students, faculty members and the farmers for enhanced interaction. The list of contents / features considered in the present study related to Web 2.0 technology has been given in Table 1. Overall, 15 contents were considered in the investigation. The analysis of contents / features related to Web 2.0 technology on websites of all agricultural / horticultural / veterinary university / deemed-to-be university shows that no agricultural institution in the country is pro Web 2.0. The results are shown in the Figure 1.

The website of Kerala Veterinary and Animal Sciences University, Thiruvananthapuram, Kerala, topped the list with 40 % contents. It was closely followed by four state agricultural universities namely Anand Agriculture University, Anand, CSK Himachal Pradesh Krishi Vishwavidyalaya, Palampur, HP, Dr Panjabrao Deshmukh Krishi Vidyapeeth, Krishinagar, Akola, and Indira Gandhi Krishi Vishwa-vidyalaya, Raipur; two deemed-to-be universities namely Allahabad Agriculture Institute, Allahabad and National Dairy Research Institute, Karnal with 33% contents (Figure-2).

There were at least nine Agricultural institutions (CAU, Imphal, MASFU, Nagpur, NDUAT, Faizabad, OUAT, Bhubaneshwar, SVPUAT, Meerut, SEKUAST, Jammu, SVVU, Tirupati, PDDUPCVVV, Mathura, RVSKVV, Gwalior), which did not used any feature of Web 2.0 Technology on their websites.

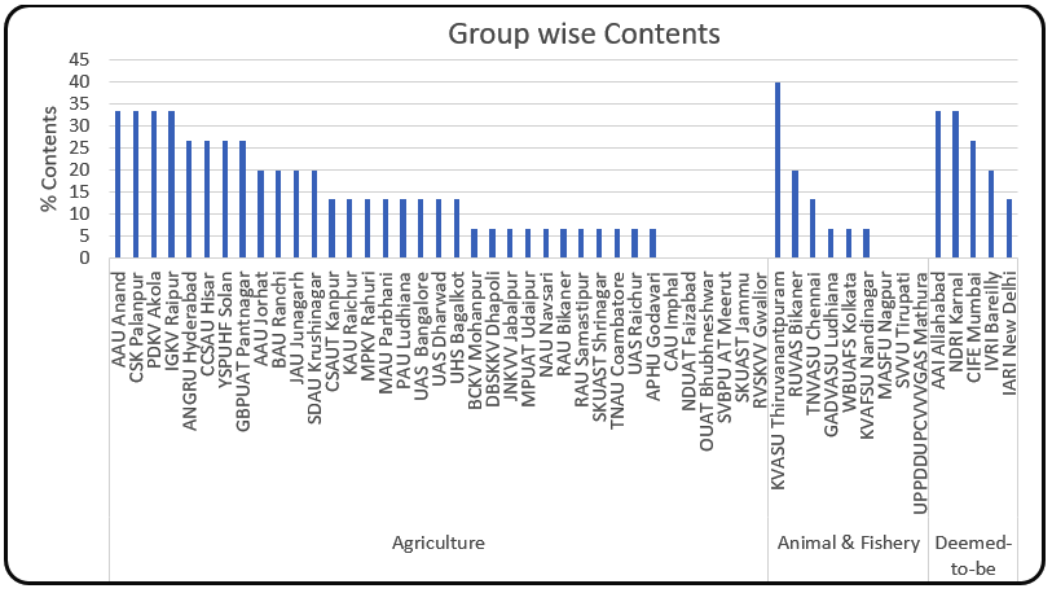

Fig. 2: Group wise listing of the contents of Web 2.0 Technology on the websites of Agricultural Institutions in India.

The group-wise placement of the institutional websites shows that there is large intra-group variation as far as Web 2.0 technology is concerned. For example, the websites of the Agricultural group varied from 0 to 33 % for Web 2.0 technology, and that of horticultural and veterinary group websites varied from approximately 7 to 27 % and 0 to 40%, respectively. However, the websites of deemed-to-

be universities exhibited little more consistency with a range of 13 to 30 % contents on the institutional websites. The results have been depicted in Figure-2.

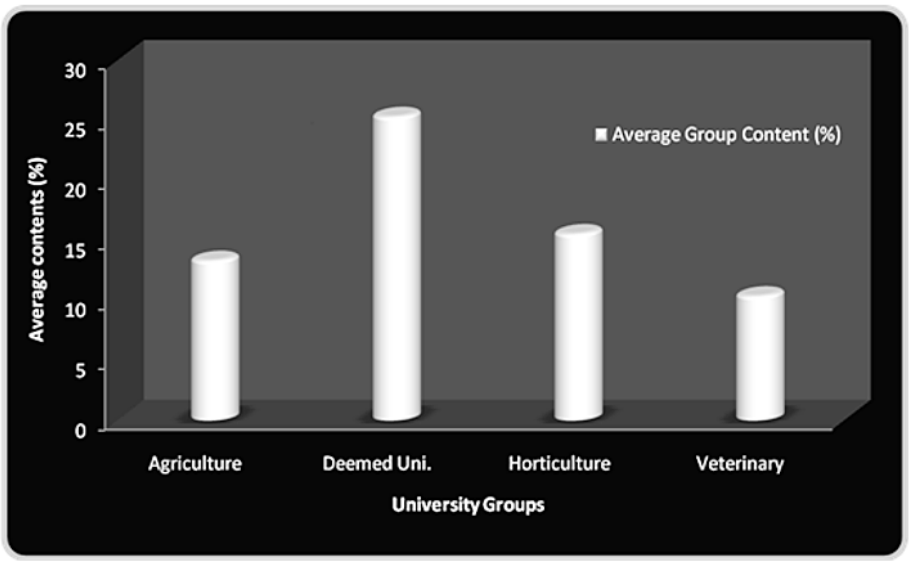

Fig. 3: The display of avereage contents / features pertaining to Web 2.0 Technology on the websites of Agricultural Institutions of different groups (by type).

The average contents / features of the groups were computed as shown in figure 3. The figure indicates that the websites of deemed-to-be universities with an average of 25 % contents are in favor of applying Web 2.0 Technology for its target users. It is followed by the websites of horticultural websites with 16 % contents and Agricultural websites with 13 % contents. The universities of Veterinary group trailed the list with only 10 % contents. The difference in the means of various groups was tested statistically using ANOVA statistical technique which is part of SPSS software. The results are shown in Table 2. On the basis of the statistical results (F = 2.16, P, 0.105), the hypothesis that the means of all groups are similar, can be rejected at 10 % probability level. In other words, it can be inferred from the results that the significant variation in the means of different groups has been observed, thus suggesting the website technology is influenced by the administration of university / deemed-to-be university.

Table 2: The result of statistical Analysis of the websites of the groups of the Universities (by type) for contents related to Web 2.0 Technology.

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	782.455	3	260.818	2.160	0.105
Intercept	6191.533	1	6191.533	51.277	0.000
Trt	782.455	3	260.818	2.160	0.105
Error	5675.062	47	120.746		
Total	16622.222	51			
Corrected Total	6457.516	50			

The arrangement of the contents in descending order suggests that the most preferred Web 2.0 technology feature is “Webmail”, which appeared on approximately 67 percent websites of different agricultural institutions. It is followed by “Library Catalogue Search” with approximately 37 % institutional websites and “Interactive Search” with approximately 31 % institutional websites. There are certain features “Mobile Alerts” and “Blogs”, which did not appear on website of any agricultural university / deemed-to-be university. It on the basis of results can be concluded that the websites of all Indian Agricultural Institutions, are only limited to few Web 2.0 Technology features. The results related to the Web 2.0 Technology have been portrayed in Figure-4.’

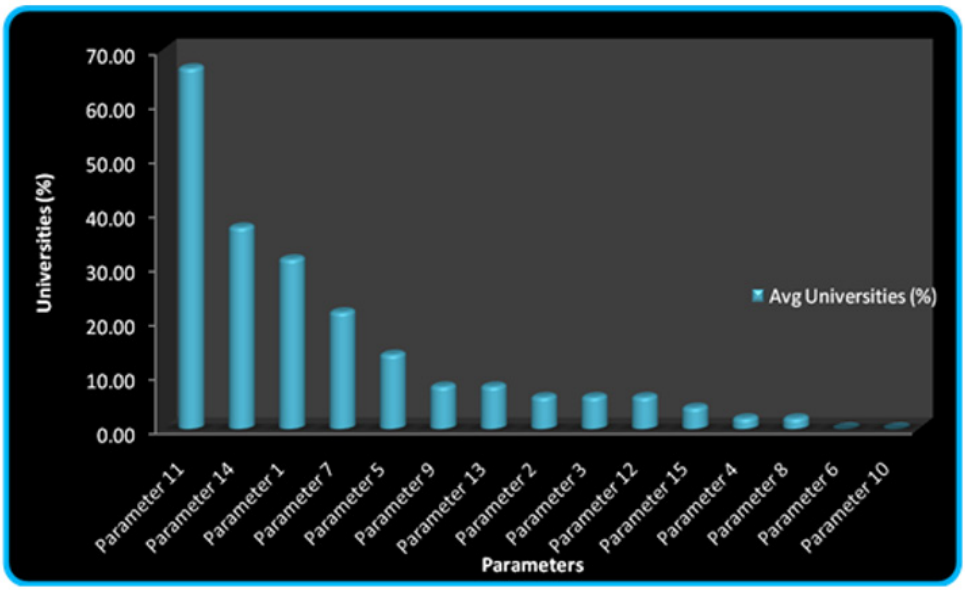

Fig. 4: The parameters relaed to website contents on the different agricultural Institutions pertaining to Web 2.0 Technology.

Discussion

The Internet is now being used extensively for sharing information, operating among different platforms, and design suited to users for enhanced collaboration, which has been made possible through the Web 2.0 technology. Web 2.0 includes many interactive features as listed in Table 1, which could be used by the website administrator of agricultural institutions for enhanced interaction. Analysis carried out considering a total number of 15 contents suggests that the websites of all agricultural / horticultural / veterinary universities / deemed-to-be universities, in general, do not favor the use of the Web 2.0 technology. There are only a few institutions which make use of Web 2.0 technology to a certain extent. However, the website of Kerala Veterinary and Animal Sciences University, Thiruvananthapuram, Kerala, topped the list with only 40 % contents, which suggests the poor adaptation of Web 2.0 technology by Indian Agricultural Institutions. The list of top ten Agricultural institutions as per adaptation of Web 2.0 technology has been given in Figure 1. Indian Agricultural Institution considered webmail as most important feature which appeared on approximately 67% websites. Other Web 2.0 features were not considered so important by the website administrator. The adaptation of other Web 2.0 features like Library catalogue, Blogs, Wikis can enhance the values of the institutional websites.

The average contents / features of the groups indicate that the websites of deemed-to-be universities with an average of 25 % contents, to the certain extents, are in favor of applying Web 2.0 Technology for its target users. The average contents of the other groups were 16 %, 13 %, and 10 % for horticultural, Agricultural and Veterinary universities, respectively. Therefore, it can be concluded that though overall

adaptation of Web 2.0 Technology is poor, there is quite considerable variation among different groups as pointed out by statistical test (F = 2.16, P, 0.105). Looking into the present status of the institutional websites of Agricultural universities / deemed-to-be universities, it can be strongly recommended that the website administrator should make use of Web 2.0 technology.[6,7&8] Web 2.0 technology increases frankness, autonomy and shared intelligence by way of user's participation.[6] The characteristics of Web 2.0 are: 'rich user experience, user participation, dynamic content, metadata, web standards and scalability'.[9]

Conclusion

The study clearly indicates that there is poor adaptation of Web 2.0 technology by Indian Agricultural Institutions. A total number of 15 contents selected for analysis of the websites of all agricultural / horticultural / veterinary universities / deemed-to-be universities, in general, do not favor the use of the Web 2.0 technology. The website of Kerala Veterinary and Animal Sciences University, Thiruvananthapuram, Kerala, which topped the list contains only 40 % contents. Among groups of Agricultural universities, deemed to be Universities with 25% of content on website showed relatively better performance. On the basis of results, it can be concluded that in order to provide good contents to users, Agricultural Universities need to put more contents pertaining to Web 2.0 technologies on their websites. Agricultural Universities can leverage the potential of Web 2.0 to engage students and farmers though training, awareness campaign and suitable contents display, but after careful research and analysis. There are several challenges like internet connectivity, poor digital awareness, lack of quality and up to date contents, flow of information from source to website administrator, unavailability of website administrators etc, the Universities are facing with to keep contents according to Web 2.0 technology. Additionally, Agriculture Universities should consider the requirements of the farmers and students by conducting surveys on the type of contents required by the stakeholders, and the manner it should be represented on website. It will improve the online presence of the universities and will enhance effectiveness in delivering the information.

Acknowledgement

Renu Panwar acknowledge the help and cooperation received from the NIMS university and guidance and help received from ASN and Sunil Goria.

Funding Source

No funding has been availed from any source to complete the study.

Conflict of Interest

There is no conflict of interest among authors. All authors agree and give consent for the publication of the manuscript in the journal "Current Agriculture Research Journal".

Data Availability Statement

This statement does not apply to this article.

Ethics Statement

This research did not involve human participants, animal subjects, or any material that requires ethical approval.

Informed consent statement

This study did not involve human participants, and therefore, informed consent was not required.

Author Contributions

- **Renu Panwar:** Review of Literature, Data collection, analysis and preparation of initial draft
- **Ajeet Singh Nain:** Figure Preparation, Analysis, editing and Finalization of the manuscript
- **Sunil Goria:** Conceptualization of the study, Defining objectives and finalization of the manuscript

References

1. Press Information Bureau (PIB). National Mega Conclave on FPO in the cooperative sector. Published date July 14, 2023, Accessed Date November 2, 2024.
2. ICAR. State Agricultural Universities. https://icar.org.in/state-agricultural-universities. Published date December 15, 2013, Accessed Date June 2, 2024.

3. Goel R Pandey PS. Importance of agricultural websites in the present era. 3rd International Conference on Agriculture & Horticulture, October 27-29, 2014 Hyderabad International Convention Centre, India. https://www.walshmedicalmedia.com/conference-abstracts-files/2168-9881.S1.11-090.pdf. Published date Oct, 2014. Accessed date November 2, 2024.
4. Indian Institute of Rice-Research, ICAR. Website Policy. https://www.icar-iirr.org/website%20Policy.pdf, Published date n.d., Accessed date November 2, 2024
5. Wilson D, Lin X, Longstreet P, Sarker S. Web 2.0: A Definition, Literature Review, and Directions for Future Research. Paper Presented at: A Renaissance of Information Technology for Sustainability and Global Competitiveness. 17th Americas Conference on Information Systems, (AMCIS 2011); August 4-8 2011; Detroit, Michigan, USA.
6. Ergul SE, Cakir H. Effect of Web 2.0 technologies on academic performance: A meta-analysis study. *Int J Tech in Edu & Sc.* 2021; 5(1), 108-127. https://doi.org/10.46328/ijtes.161.
7. Maria GZ. Web 2.0 and Knowledge Sharing. A Literature Review. AI, *Computer Science and Robotics Technology.* 2022;(0), 1–14.
8. Best D. Web 2.0 Next Big Thing or Next Big Internet Bubble? Lecture Web Information Systems. *Technische Universiteit Eindhoven.* https://www.scribd.com/document/4635236/Web-2-0, Published date January 11, 2006, Accessed Date June 24, 2024.
9. O'Reilly T. What is Web 2.0. Design Patterns and Business Models for the Next Generation of Software, http://www.oreillynet.com/pub/a/oreilly/tim/news/ 2005/09/30/what-is-web-20.html. Published date November 30, 2005, Accessed Date June 20, 2024.