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Usage of e-resources by the Users of the Agricultural University Libraries in India

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USAGE OF E-RESOURCES BY THE USERS OF THE AGRICULTURAL UNIVERSITY LIBRARIES IN INDIA

by

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Abstract: This paper, a part of author's doctoral research, examines the various e-resources to which the users of Agricultural Universities in India have access and how frequently these resources are being used by the agricultural scientists, researchers, students. Data collected through a structured questionnaire from 242 users and 20 Librarians from 20 State run Agricultural Universities in India constitute the database for the present investigation. Additionally, the study also investigates the membership of various consortiums availed by the users and whether the respondents have access to some of the key e-resources of other institutions including frequency of usage of subject gateways, blogs and wikis in the domain of Agricultural Sciences.

Key words: Online Resources, learning resources, agricultural libraries, databases, abstracting resource, subject gateways, e-resources, consortiums, networks, agricultural science blogs, wikis, use studies, agricultural libraries, etc.

Introduction

The utilization of e-resources is at an all-time high in this era of information technology. In any traditional library, electronic resources are invaluable research tools that complement print-based resources. E-resources have surpassed print resources in importance and utility. As the definition of library evolves over the period of time they provide users with a completely new environment, new resources, and new services. E-resources make up the majority of a library's collection in the modern digital era. As a result, the goal of any electronic resource collection is to provide users with a specific, comprehensive, and timely dissemination of information service. In addition to the advantages, electronic resources are useful research tools that complement traditional library print resources. Electronic resources give users access to information that might otherwise be

unavailable to them due to their geographical location or financial situation. Electronic resources also enable access to up-to-date information because they are continuously updated. Electronic resources provide vast links to investigate additional resources or relevant material through their various search capabilities. Furthermore, electronic resources are convenient to use because users can access library content from the comfort of their own homes. For these reasons, electronic resources are regarded as a valuable teaching, research, and training resource. As a result, most libraries and universities today offer electronic resources for higher education and research, and the Agricultural University libraries are no exception to that.

Review of Literature

Several studies have been conducted to know the utilization of e-resources by the users of Agricultural Universities. Bakkiaraj,J., Sathiyamurthy , M.G. and Esmail, S.Mohamed,. (2012) on their study found out that e-journals are the most popularly used e-resources than any other e-resources. They also found that the lack of IT knowledge was the major shortfall in using the e-resources. Similarly, Mtega, Wulystan & Dulle, Frankwell & Malekani, Andrew & Chailla, Angella. (2015) identified sources of e-resources used by the researchers and staff of five out of seven agricultural zones in Tanzania, They also assessed their information literacy levels and the factors influencing their usage of e-resources which showed that usage of e-resources from popular agricultural databases remained low. The factors which limited the access to e-resources include poor institutional ICT infrastructure, limited funds for e-resources and low information literacy levels. The authors recommended for the improvements to ICT infrastructure and budgets, as well as developing electronic institutional repositories to improve extension staff access to research outputs, creating a sustainable link between agricultural researches and farming activities. Parmar, Seema. (2019) in her paper, studied the utilization of e-resources of two reputed Universities namely CCS Haryana Agricultural University (CCSHAU) and Lala Lajpat Rai University of Veterinary and animal Sciences (LUVAS) and found out that the utilization of e-resources was not as per expectation with a few recommendations to increase the utilization by arranging more awareness workshops for students of both the universities. It was recommended to organize a few programs like interesting lectures, competitive activities related to resources may be organized by libraries and personal interaction may be made with users, etc.

In addition to that it was also suggested for the Teachers to increase their frequency of visiting and using library resources and guide their students to use useful resources for their studies.

Sample Responses

Keeping the objectives of the study in mind, an attempt was made to gather opinions of librarians and users of 20 Agricultural Universities in India. A total of 420 questionnaires were mailed to 20 and 400 librarians and users respectively to their respective institutions. Out of which 242 filled-in questionnaires constituting a response rate of 60.5 % were received. Concurrently, all the 20 librarians responded to the research endeavor. Gender wise distribution of Sample respondents is depicted in **table -1**.

Two different sets of questionnaires were structured-one for librarians, and the other for the users comprising of students, research scholars and faculty members. A few common questions were featured in both the questionnaires with a view to arrive at some solid and meaningful findings based on comparative analysis of the resultant responses.

Table-1: Sample Respondents

Respondents	Questionnaire Distributed	Questionnaire Received	% Of Response
Librarians	20	20	100
Users	400	242	60.5
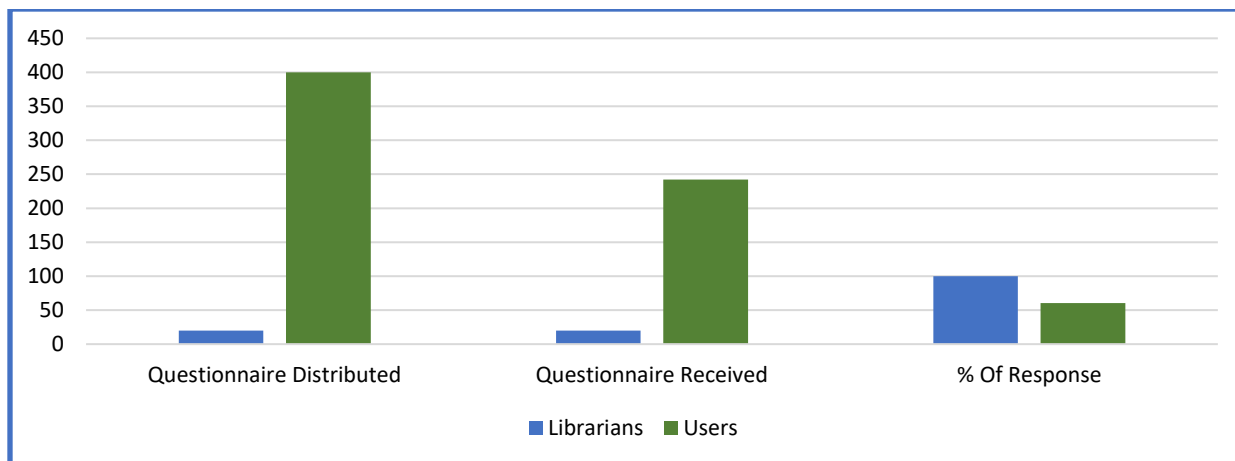
Fig-1: Sample respondents

Table-2 Sample Respondents (Gender wise)

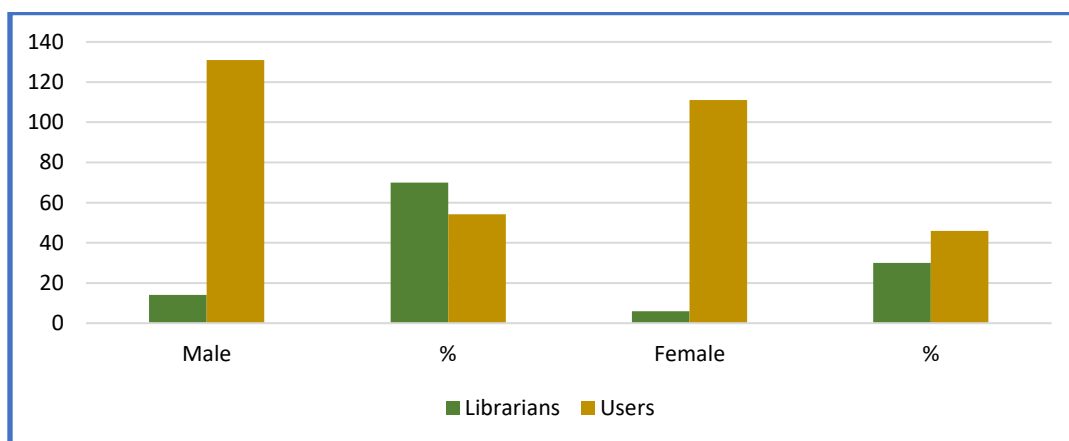| Respondents	Male	%	Female	%	Total	%
Librarians	14	70.00	6	30.00	20	100
Users	131	54.13	111	45.87	242	100

Figure-2: Sample respondents (Gender wise)

Table 2 (figure -2) shows that, 14 male librarians (70%) and 6 female librarians (30%) responded to the survey whereas, 131 male users (54.13%) and 111 female users (45.87%) sent back their filled in questionnaires.

Table-3: University Wise Distribution of Respondents (Users)

Sl No	Name of the Ag. University	Questionnaire Distributed	Questionnaire Received	Male	Female
1	BAU, RANCHI	20	14	8	6
2	CCS HAU, HISAR	20	15	7	8
3	KAU, KERALA	20	15	9	6
4	NAU, GUJURAT	20	13	6	7
5	RVSKVS GWALIOR	20	15	8	7
6	SDAU, GUJURAT	20	14	8	6
7	SKUAST, JAMMU	20	15	6	9
8	UAS, BANGALORE	20	10	6	4
9	ANAND AGR. UNIV.	20	10	5	5
10	ASSAM AGR. UNIV.	20	10	7	3
11	BIDHAN CHANDRA VISWAVIDYALAY	20	10	6	4
12	GBPUAT, PANTNAGAR	20	10	8	2
13	IGKV, RAIPUR	20	16	9	7
14	JAU, GUJARAT	20	10	4	6
15	JNKVV, MP	20	11	5	6
16	MPKV, MAHARASTRA	20	06	3	3
17	MPUAT, RAJASTHAN	20	09	4	5
18	OUAT, BBSR, ODISHA	20	18	10	8
19	TNAU, TAMILNADU	20	10	7	3
20	YSPA UNIV., SOLAN	20	11	5	6
	TOTAL	400	242	131	111

It is evident from Table -3 (figure -3) that highest number of 18 questionnaires (out of 20) were collected from OUAT, Bhubaneswar, while the lowest number of 06 questionnaire (out of 20) were received from MPKV, Maharashtra respectively.
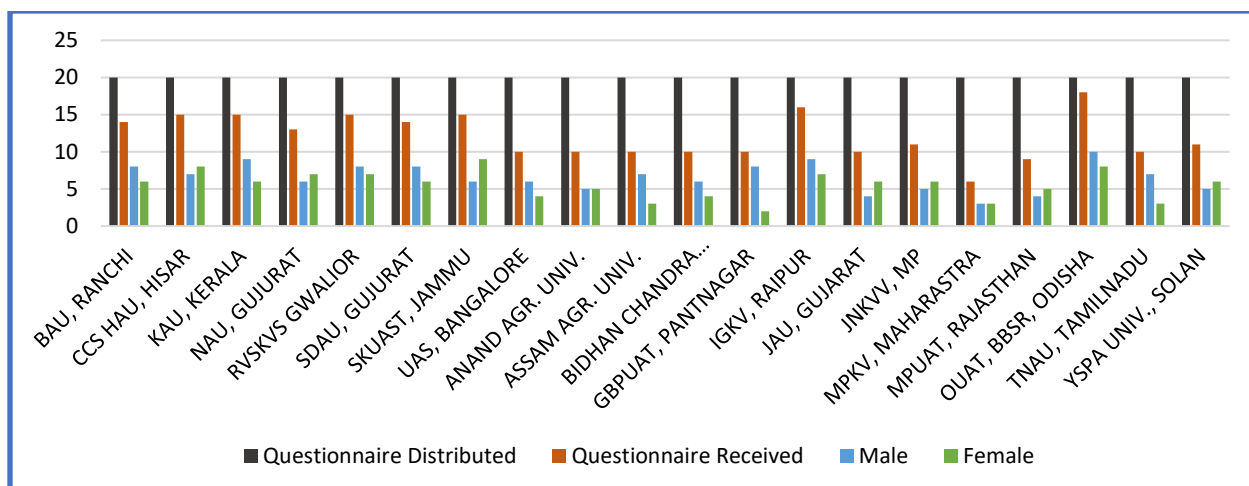
Figure-3: University wise distribution of respondents (users)

The data thus collected from questionnaires were scrutinized, tabulated, and processed through SPSS package for appropriate chi-square test and Kolmogorov–Smirnov statistic, where required in the process of analysis of data and subsequent interpretation of results.

ANALYSIS OF DATA COLLECTED FROM LIBRARIANS

Databases and abstracting resources

Availability of databases and abstracting resources signifies the qualitative growth of libraries. Respondents were asked to mention if some key e-databases are available in their respective libraries to cater to the basic academic and research needs of users. Answers to this question are depicted in table-4.

Table-4: Databases and abstracting resources

Databases & Abstracting Resources	Total response		Gender			
			Male		Female	
	Yes (%)	No (%)	Yes (%)	No (%)	Yes (%)	No (%)
AGRICOLA	20(100)	00(0.00)	14(100)	00(0.00)	06(100)	00(0.00)
BIOSIS Previews	07(35.00)	13(65.00)	04(28.57)	10(71.43)	03(50.00)	03(50.00)
CAB ABSTRACTS	20(100)	00(0.00)	14(100)	00(0.00)	06(1000	00(0.00)
SCOPUS	12(60.00)	08(40.00)	08(57.14)	06(42.86)	04(66.67)	02(33.33)
WEB OF SCIENCE	10(50.00)	10(50.00)	06(42.86)	08(57.14)	02(33.33)	04(66.67)
BIOLOGICAL	06(30.00)	14(70.00)	03(21.43)	11(78.57)	03(50.00)	03(50.00)

ABSTRACTS ARCHIVE						
FOOD SCIENCE SOURCE	06(30.00)	14(70.00)	04(28.57)	10(71.43)	02(33.33)	04(66.67)
FSTA	04(20.00)	16(80.00)	03(21.43)	11(78.57)	01(16.67)	05(83.33)
BIOLOGICAL & AGRICULTURAL INDEX PLUS	08(40.00)	12(60.00)	05(35.71)	09(64.29)	03(50.00)	03(50.00)
CAB ABSTRACTS ARCHIVE	16(80.00)	04(20.00)	11(78.57)	04(28.57)	05(83.33)	01(16.67)
NTIS	02(10.00)	18(90.00)	02(14.29)	12(85.71)	00(0.00)	06(100)
AGRIS/CARIS	06(30.00)	14(70.00)	03(21.43)	11(78.57)	03(50.00)	03(50.00)
WAICENT (The World Agricultural Info. Center of FAO)	04(20.00)	16(80.00)	03(21.43)	11(78.57)	01(16.67)	05(83.33)
BIOSIS (Biological Abstracts)	08(40.00)	12(60.00)	05(35.71)	11(78.57)	03(50.00)	03(50.00)
Cambridge Scientific Abstracts (CSA)	04(20.00)	16(80.00)	03(21.43)	13(92.86)	01(16.67)	05(83.33)
Current Contents	06(30.00)	14(70.00)	02(14.29)	12(85.71)	04(66.67)	02(33.33)
Derwent Biotechnology	08(40.00)	12(60.00)	05(35.71)	09(64.29)	03(50.00)	03(50.00)
DIALOG	06(30.00)	14(70.00)	03(21.43)	11(78.57)	03(50.00)	03(50.00)
ERIC	04(20.00)	16(80.00)	04(28.57)	12(85.71)	00(0.00)	06(100)
MEDLINE	06(30.00)	14(70.00)	04(28.57)	12(85.71)	02(33.33)	04(66.67)
$\chi2$ =218.349			p=0.000			

Null hypothesis (H_0): There is no significant difference of opinion between the categories of respondents

Alternative hypothesis (H_1): There is a significant difference of opinion between the categories of respondents

As $p < 0.5$, H_0 is rejected and H_1 is accepted. Hence, chi-square output corroborates with the findings that there is a significant difference of opinion between male and female respondents.
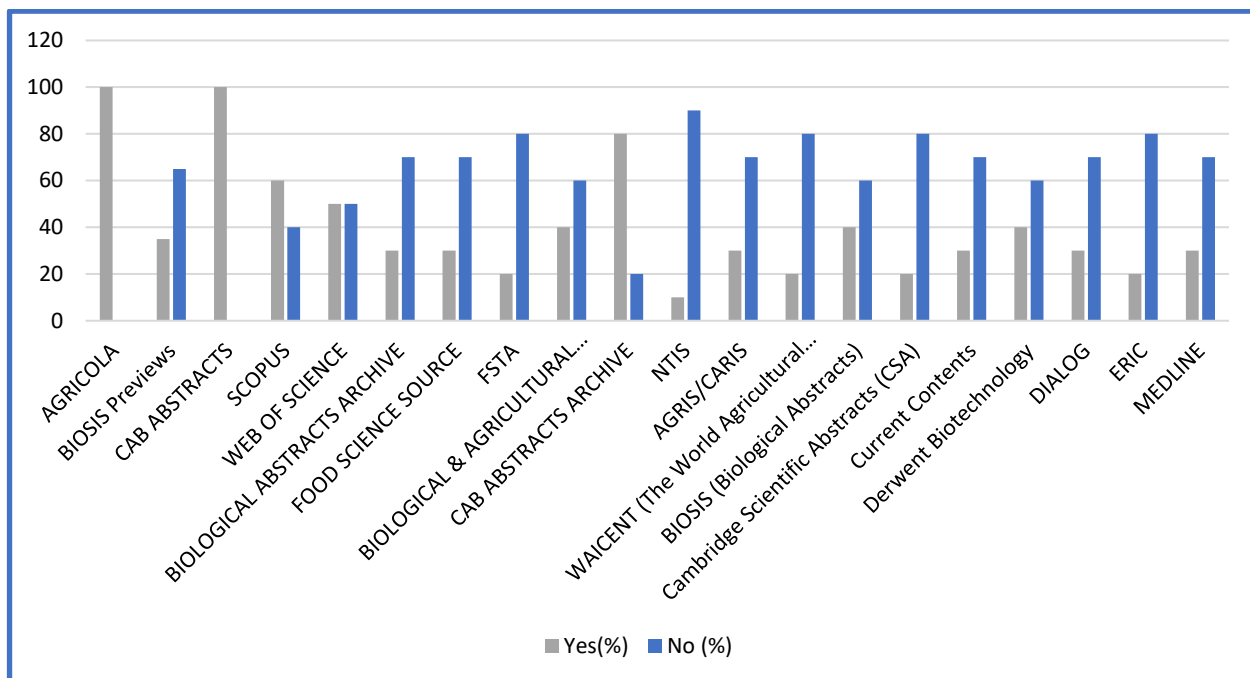
Figure-4: Databases and abstracting resources

Table -4 and figure-4 show that two major e-databases like AGRICOLA, CAB ABSTRACTS are available in all libraries of agricultural universities in India as evident from cent percent opinions of the respondents. Concurrently, majority of respondents opine in favor of availability of other databases like CAB ABSTRACTS ARCHIVE (80%), and Scopus (60%). However, half of the respondents indicate about availability of Web of Science in their respective libraries. Nevertheless, databases like Eric, Cambridge Scientific Abstracts (CSA), FSTA, WAICENT (The World Agricultural Info. Center of FAO), and NTIS are found less. Hence, librarians of all agricultural universities should find ways and means to enhance their e-resources to satisfy information needs of their respective users' community.

Subject Gateways

Subject gateways bear key features of the world information landscape that help in directing Internet users to desired information. These sources are primarily available online and often linked up with other relevant and related sites for additional information pertaining to searches on specific areas. Respondents answer on availability of main subject gateways in the field of Agricultural sciences and allied disciplines as depicted in table- 5.

Table- 5 Subject Gateways

Subject Gateways/Hubs/Portals	Total response		Gender			
			Male		Female	
	Yes (%)	No (%)	Yes (%)	No (%)	Yes (%)	No (%)
AGRIGATE	12(60.00)	08(40.00)	08(57.14)	08(57.14)	04(66.67)	02(33.33)
BIOME	09(45.00)	11(55.00)	05(35.71)	09(64.29)	04(66.67)	02(33.33)
NOVA Gate	06(30.00)	14(70.00)	03(21.43)	11(78.57)	03(50.00)	03(50.00)
SOCIG/INTUTE	07(35.00)	13(65.00)	04(28.57)	10(71.43)	03(50.00)	03(50.00)
$\chi 2 = 8.112$			p=0.919			

Null hypothesis (H_0): There is no significant difference of opinion between the categories of respondents

Alternative hypothesis (H_1): There is a significant difference of opinion between the categories of respondents

As p > 0.5, The null hypothesis is accepted. Hence, chi-square output corroborates with the findings that there is no significant difference of opinion between male and female respondents.
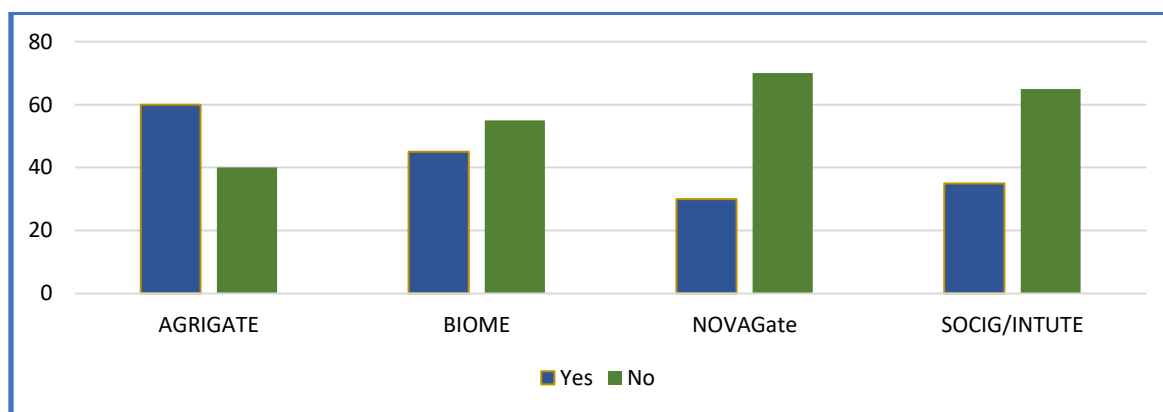

Figure-5: Subject Gateways

Table 5 and figure- 5 reveal that majority of respondents primarily use AGRIGATE as evident from 60% of the opinions of the respondents; followed by 45% of the respondents use BIOME. However, the use of subject gateways like NOVA Gate and SOCIG/INTUTE are found less than expected. Hence, librarians of respective agricultural university libraries must find some ways and means to augment the use of all subject gateways to supplement teaching, learning and research programs.

Access to key e-resources of other institutions

In addition to subscribed e-resources of own institution, the users need to explore the e-resources of other institutions for catering to their compressive academic and research needs. The answers to such inquisition elicited from the respondents are depicted in **table -6.**

Table -6: Access to key e-resources of other institutions

E-Resources of other institutions	Total Response		Gender			
			Male		Female	
	Yes (%)	No (%)	Yes (%)	No (%)	Yes (%)	No (%)
ICAR, New Delhi	09(45.00)	11(55.00)	06(42.86)	08(57.14)	03(50.00)	03(50.00)
Univ. of Agricultural Sciences, Bangalore	08(40.00)	12(60.00)	06(42.86)	08(57.14)	02(33.33)	04(66.67)
IARI, New Delhi	08(40.00)	12(60.00)	05(35.71)	09(64.29)	03(50.00)	03(50.00)
NAL, USA	04(20.00)	16(80.00)	02(14.29)	12(85.71)	02(33.33)	04(66.67)
CGIAR Virtual Library	05(25.00)	15(75.00)	04(28.57)	10(71.43)	01(16.67)	05(83.33)
OCLC	07(35.00)	13(55.00)	05(35.71)	09(64.29)	02(33.33)	04(66.67)
SOLID CD	04(20.00)	16(80.00)	04(28.57)	09(64.29)	00(0.00)	06(100)
Vet CD	05(25.00)	15(75.00)	04(28.57)	09(64.29)	01(16.67)	05(83.33)
IPR CD/DVD	04(20.00)	16(80.00)	02(14.29)	12(85.71)	02(33.33)	01(16.67)
$\chi2$ =22.265			p=0.989			

Null hypothesis (H_0): There is no significant difference of opinion between the categories of respondents

Alternative hypothesis (H_1): There is a significant difference of opinion between the categories of respondents

As p > 0.5, The null hypothesis is accepted. Hence, chi-square output corroborates with the findings that there is no significant difference of opinion between male and female respondents.
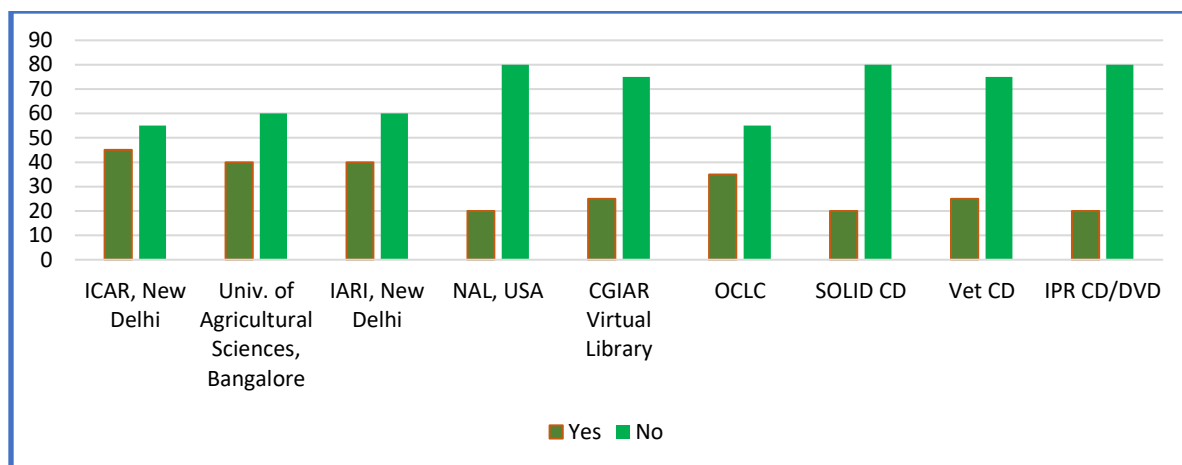
Figure-6: Access to key e-resources of other institutions

It is found from the table-6 (figure -6) that users keep using mostly e-resources of ICAR, New Delhi (45%); followed by Univ. of Agricultural Sciences, Bangalore; and IARI, New Delhi. However, the use of e-resources of other prominent Agricultural universities is comparatively found less.

Membership of Consortiums

A library enriches its resources through resource sharing by getting membership of various consortiums in nominal prices. The investigator wanted to know from the respondents if they have the membership of key agricultural consortiums/networks. The resultant responses are depicted in **table-7.**

Table 7: Membership of Consortiums/Networks

Consortiums/Networks	Total Response		Gender			
			Male		Female	
	Yes (%)	No (%)	Yes (%)	No (%)	Yes (%)	No (%)
OCLC	10(50.00)	10(50.00)	07(50.00)	07(50.00)	03 (50.00)	03(50.00)
Agriculture & Rural Development Consortium	17(85.00)	03(15.00)	12(85.71)	02(14.29)	05(83.33)	01(16.67)
Food, Agriculture and Natural Resources Policy Analysis Network (FANRPAN)	18(90.00)	02(10.00)	12(85.71)	02(14.29)	06(100)	00(0.00)
UGC-INFONET Digital Library Consortium	10(50.00)	10(50.00)	07(50.00)	07(50.00)	03(50.00)	03(50.00)

Indian Digital Library in Engineering Science and Technology	11(55.00)	09(45.00)	08(57.14)	06(42.86)	03(50.00)	03(50.00)
National Knowledge Resource Consortium (NKRC)	17(85.00)	03(15.00)	13(92.86)	01(7.14)	04(66.67)	02(33.33)
Consortium for e-resources in Agriculture (CeRA)	20(100)	00(0.00)	14(100)	00(0.00)	06(100)	00(0.00)
Indian Digital Library in Engineering Science and Technology (FORSA)	14(70.00)	06(30.00)	10(71.43)	14(100)	04(66.67)	02(33.33)
Health Science Library and Information Network	12(60.00)	08(40.00)	08(57.14)	06(42.86)	04(66.67)	02(33.33)
$\chi2 = 69.992$			p=0.002			

Null hypothesis (H$_0$): There is no significant difference of opinion between the categories of respondents

Alternative hypothesis (H$_1$): There is a significant difference of opinion between the categories of respondents

As $p < 0.5$, H$_0$ is rejected and H$_1$ is accepted. Hence, chi-square output indicates that there is a significant difference of opinion between male and female respondents.
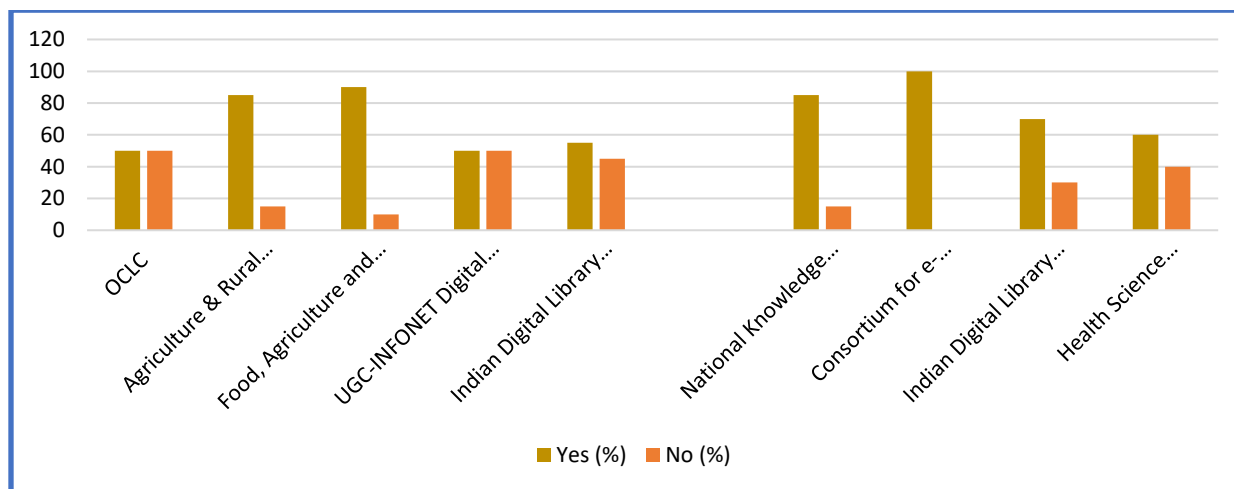

Figure-7: Membership of Consortiums/Networks

It is found from table -7 (figure 7) that all the agricultural university libraries by default are the members of Consortium for e-resources in Agriculture (CeRA) as opined by all respondents

(100%); followed by Food, Agriculture and Natural Resources Policy Analysis Network (FANRPAN) (90%); Agriculture & Rural Development Consortium (85%); National Knowledge Resource Consortium (NKRC) (85%); and Indian Digital Library in Engineering Science and Technology (FORSA) (70%) respectively. Concurrently, more than half of the libraries have membership of Health Science Library and Information Network (60%), Indian Digital Library in Engineering Science and Technology (55%). However, just half of the libraries have membership of OCLC and UGC-INFONET Digital Library Consortium. The opinions of male respondents to that of their female counterparts are identical as evident from the chi-square output.

Frequency of Use of Agricultural Science Blogs

Blogs on specific subjects carry pertinent information on research activities and latest trends of the subject. The opinions of respondents on use of agricultural science blogs are depicted in **table-8.**

Table -8: Frequency of Use of Agricultural Science Blogs

	Daily	Weekly	Fortnightly	Monthly	Never
Agricultural blogs	n (%)	n (%)	n (%)	n (%)	n (%)
http://www.blog.agroprima.com	08(40.00)	07(35.00)	02(10.00)	02(10.00)	01(5.00)
http:// www.tinyfarmblog.com	04(20.00)	03(15.00)	05(25.00)	04(20.00)	04(20.00)
http://www.greatgardeninfo.com	05(25.00)	04(20.00)	02(10.00)	05(25.00)	04(20.00)
http://www.agriculturetoday.com	12(60.00)	04(20.00)	01(5.00)	02(10.00)	01(5.00)
http://www.sugarcaneblog.com	06(30.00)	03(15.00)	04(20.00)	05(25.00)	02(10.00)
http://www.biotechview.blogspot.com	04(20.00)	05(25.00)	06(30.00)	03(15.00)	02(10.00)

http://www.agrobiosolution.blogspot.com	12(60.00)	02(10.00)	01(5.00)	02(10.00)	03(15.00)
http://www.horti-tech.blogspot.com	07(35.00)	04(20.00)	04(20.00)	04(20.00)	01(5.00)
Kolmogorov–Smirnov statistic (D)=0.5 p=0.27					

Null Hypothesis (H_0): Sample follows given distribution

Alternative Hypothesis (H_1): Sample does not follow given distribution

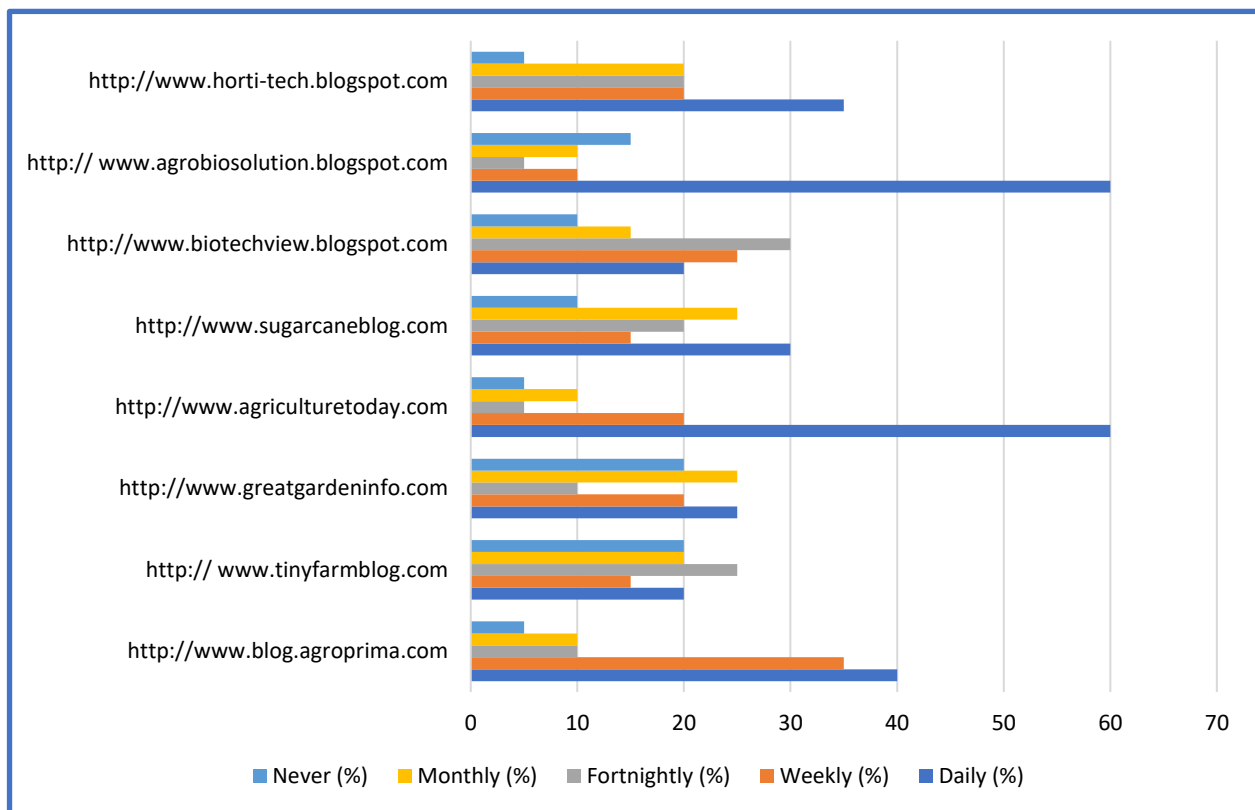$p > 0.05$, H_0 is accepted. Kolmogorov–Smirnov test indicates that Sample follows given distribution

Figure-8: Frequency of Use of Agricultural Science Blogs

Table-8 (figure-8) reveals that, two prominent Agricultural Science Blogs like**,** http://www.agriculturetoday.com and http:// www.agrobiosolution.blogspot.com are used daily

as opined by 60 % of the respondents. The other blogs are less frequently used as the opinions of respondents are scattered. Hence, librarians of respective agricultural university libraries must try to acquaint and apprise the users' community regarding the usefulness of agricultural science blogs.

Frequency of Use of Wikis

Unlike blogs, wikis also carry much valuable information on research activities and trends of a specific subject. The opinions of respondents regarding frequency of use of wikis are depicted in **table -9.**

Table-9: Frequency of Use of Wikis

	Daily	Weekly	Fortnightly	Monthly	Never
Agricultural Wikis	n (%)	n (%)	n (%)	n (%)	n (%)
http://en.wikipedia.org/wiki/Agriculture	11(55.00)	04(20.00)	02(10.00)	02(10.00)	01(5.00)
http://en.wikipedia.org/wiki/Agricultural science	12(60.00)	04(20.00)	01(5.00)	01(5.00)	02(10.00)
http://en.wikipedia.org/wiki/Agribusiness	11(55.00)	05(25.00)	02(10.00)	01(5.00)	01(5.00)
http://en.wikipedia.org/wiki/Agronomy	09(45.00)	07(35.00)	01(5.00)	01(5.00)	02(10.00)
http://en.wikipedia.org/wiki/Animal_husbandry	10(50.00)	02(10.00)	02(10.00)	03(15.00)	03(15.00)
http://en.wikipedia.org/wiki/sustainable_ agriculture	11(55.00)	03(15.00)	01(5.00)	02(10.00)	03(15.00)
http:// www.agrobiosolution.blogspot.com	09(45.00)	02(10.00)	04(20.00)	03(15.00)	02(10.00)

http://www.horti-tech.blogspot.com	05(25.00)	07(35.00)	04(20.00)	02(10.00)	02(10.00)
Kolmogorov–Smirnov statistic (D)= 0.875		p=0.004			

Null Hypothesis (H_0): Sample follows given distribution

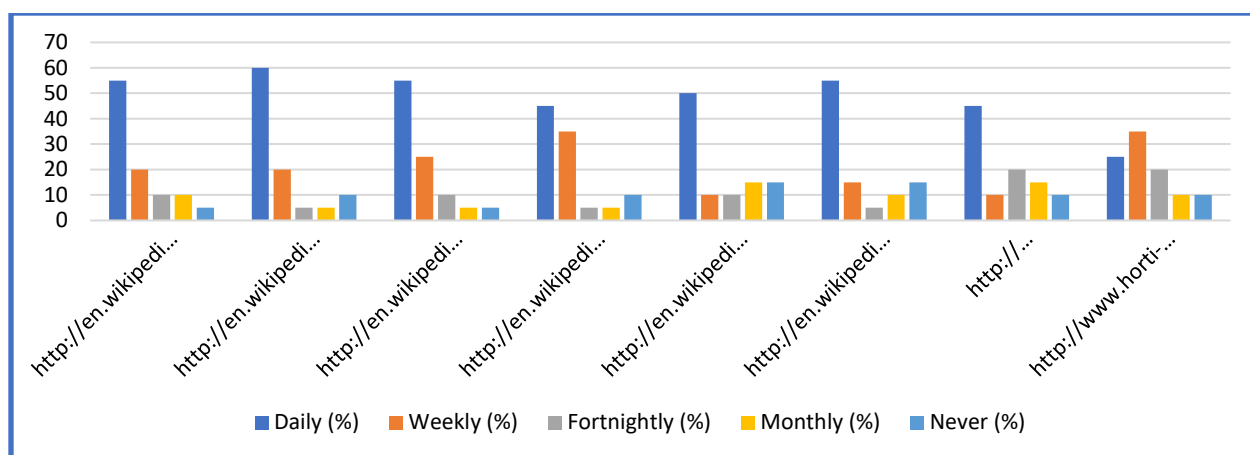Alternative Hypothesis (H_1): Sample does not follow given distribution
$p < 0.05$, H_0 is rejected

Figure-9: Frequency of Use of Wikis

Table 9 (figure -9) shows that http://en.wikipedia.org/wiki/Agricultural science is used daily as opined by 60% of respondents; followed by http://en.wikipedia.org/wiki/Agriculture; http://en.wikipedia.org/wiki/Agribusiness; and http://en.wikipedia.org/wiki/sustainable_ agriculture (55% each). The use of http://www.horti-tech.blogspot.com (25%) is found less. The varied opinions of respondents regarding usage of wikis are corroborated with the Kolmogorov and Smirnov test. Therefore, librarians of respective agricultural university libraries must take care of to augment the usage of key wikis available in the field of agricultural sciences for the benefit of their respective users.

Conclusion

Based on the above analysis it can safely be inferred that, though there has been a fair use of library and information resources by the users of agricultural university libraries in India in terms

of usage of e-databases, subject gateways, e-resources of other institutions, there are certain areas which are needed to be appraised to the users through information literacy campaigns and user education programs.

ICAR being the apex body, under which the State Agricultural Universities are functioning, spends Lakhs of rupees for collection development and procurement of e-resources under the Library Strengthening Grant. So it is the duty of the librarians to utilize the money by procuring the e-resources wisely and also making proper use of those resources by developing suitable information literacy campaigns and user education program.

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