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## Information behavior of scholarly community with e-resources: A case study of Sher-e-Kashmir University of Agricultural Sciences and Technology of Kashmir

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### Abstract

The study of faculty members and PhD scholars of Sher-e-Kashmir University of Agricultural Sciences and Technology of Kashmir (SKUAST-K) was conducted to bring about current image about some core issues related to use of both online and offline e-resources. Attempt has also been made to ascertain some significant facts about their search strategy/skills and level of satisfaction. The constituent faculties of the University under study were surveyed through a structured questionnaire distributed among 90 subjects in proportion with their number. The study reveals that majority of the faculty members and PhD scholars of SKUAST-Kashmir are familiar about e-resources like CDROM databases, e-journals, e-books, etc. Scholars preferably use Laptops and mobiles as compared to Desktops for browsing their needed information. As expected, it is divulged that scholars prefer Google search engine mostly for browsing their desired information and 'keyword' or 'subject' searching techniques are applied by them to retrieve precise information. The respondents seem to be less skilled to use the advanced search techniques as a good number of respondents claimed that they have never used Boolean Gates (AND, OR, NOT); Wild Cards (\*; #; \$; etc); Truncation marks (??; #; \*; etc) and the Phrasal Search "----". It calls for speedy implementation of Information literacy programs within the campus. Moreover, the study also reveal that scientists and the PhD scholars of SKUAST-Kashmir are not much satisfied with staff assistance; infrastructure; condition of computers and also face problems like internet connectivity and accessibility of e-resources, which is never encouraging.

### Keywords

Information behavior; Information seeking behavior; Electronic resources; Information needs; Agricultural University; SKUAST

### Introduction

An electronic resource or e-resource "is any cohesive publication in digital form that is being marketed" or "any electronic product that delivers a collections of data, be it text, numerical, graphical or time based, as a commercially available resource" and includes "full text databases, electronic journals, image collections, multimedia products, collections of numerical data" (Lee & Boyle, 2004, p.

5.). The International Coalition of Library Consortia (ICOLC, 1998) (<http://www.icolc.net>) defines e-information (or electronic information) as “a broad term that encompasses abstracting and indexing services, electronic journals and other full text materials, the offerings of information aggregators, article delivery services, etc.” which can be accessed via remote networks from information providers, or locally mounted by a consortium or one of its member libraries. The electronic information resources, commonly known as e-resources are becoming an important component of modern libraries. E-resources started to emerge in 1740s with the invention of semi-mechanised punch card readers. But it took a lot of time to establish its significance and ultimately in 1970s most of the electronic sources were available on a new medium of storage and communication called magnetic tapes. This medium paved a way for their future online mode (**Ravichandra Rao, 2000**). The kinds of e-resources that are available and accessible today are based on physical storage media (CD-ROM, magnetic tapes, audio, video cassettes etc); intranet (locally produced e-resources) and Internet also called online (remotely stored & remotely accessible e-resources). The first ones are much like the traditional ‘paper based publications’ with the exception that they require computer hardware and software for their utilisation (**Jodelis, 2003**). The e-resources have found place in all academic and research libraries of India. The Agricultural libraries of India have also developed rich collection of e-resources both in offline and online mode. The CDROM and Mirror Server based abstracting databases like that of CAB abstracts, FST abstracts, MEDLARIS, CA and the like were the foremost e-resources introduced by them. Nowadays thousands of online e-journals, e-theses, e-books are made available to scientists and the students of agricultural universities on cooperative basis like that of CeRA, KrishiPrabha, CAB e-books, open sources of information, etc. Being an agricultural university Sher-e-Kashmir University of Agricultural Sciences and Technology of Kashmir (**SKUAST-K**) is not an exception to it.

#### **Sher-e-Kashmir University of Agricultural Sciences and Technology of Kashmir (SKUAST-K)**

Sher-e-Kashmir University of Agricultural Sciences and Technology of Kashmir (**SKUAST-K**) was established in the year 1982, and is a multi-campii University. The University is offering Undergraduate, Masters’ and Doctorate degrees in Agriculture, Horticulture, Forestry, Veterinary & AH, Fisheries, Sericulture and Agricultural Engineering. Its Library System comprises of **01** Central Library, **05** Faculty/College Libraries, **05** Research Station Libraries, and **03** KVK Libraries. This library network comprising of **14** libraries spreads across the valley of Kashmir and Division of Ladakh. The library system is one among the richest library systems both by way of its print and electronic information resources. It possess about 20000 journal volumes, 1157 theses, 43000 textbooks, 7000 reference books, 450 advances and reviews, and about 9000 reports in print form. Its electronic collection comprises of 9.45 million bibliographic records and abstract level research articles available as 11 CDROM databases (CABI, AGRICOLA, FSTA, MEDLINE, VetCD, etc.) operable over mirror server with WinSPIRS software, 6000 full text journals relevant to agriculture and allied disciplines available through CeRA, JABS and Open Access Journals, 7500 full text Indian Agricultural, Doctoral Dissertations available as KrishiPrabha, 554 Masters’ and Doctoral Electronic Theses and 225 full text post-prints available as SKUAST-K Institutional Repository; 850 e-books available as CAB e-books; and other important online e-resources like OpenDOAR, OpenDOAB, AGRIS, KrishiKosh, and the like. The Library System is manned by a highly proficient team of library professionals, para library professionals and other supportive staff members. The records and operations of entire Library System stands computerised with Software for University Libraries (SOUL 2.0) used as integrated LMIS for bibliographical description of books, theses and serial

publications; DSpace (Open Source Software) for full text electronic theses database and institutional repository, and an indigenously developed soft solution (developed on MS Access and Visual Basics) for maintaining a Journal Directory, article level indexing database of printed journals and Electronic Accession Register of print books and theses. The library system has placed its WebOPAC on the University website to ensure web appearance of the print form of information resources and offline electronic resources. Links to some important information sources and services have been kept available of library webpage. All online electronic resources have been made accessible from a single platform on “anytime anywhere” basis with EzProxy of OCLC.

Efforts have been made to ensure online access to this invaluable information base through the state-of-the-art ICT infrastructure, establishment of Campus Area Networks, and provision of Internet facility at almost each of these campuses. Four main faculties have well established campus area networks (CAN) comprising of around 525 nodes. The Library System has got its own sub-network comprising of 4 LANs at Four Campii Libraries (1 with 50 nodes at Central Library; 1 with 20 nodes at FVSc Shuhama; 1 with 15 nodes at FOA Wadura; 1 with 5 nodes at FoFy Rangil). The scientists and students avail Internet access on all these nodes, through seven 512 kbps DAMA VSATs, 6 Mbps Leased Lines, 20 Broadband connections and 1 Gbps NKN Line). The Library System is working on the establishment of Inter Campii Library Network (ICLN) to facilitate sharing of resources and speedy communication of information throughout the University.

All official activities, ranging from dispatch to rendering of online information services in all constituent libraries of the system are carried out through computerised mode. The major items in this infrastructure base include 01 Blade Server of IBM make with four blades; 04 Medium End Servers of IBM & HCL brands; 01 Mirror Server of Tulsient make; 80 Desktop Computers; 02 Laptops; 01 Flat Bed Document Scanner; 09 Printers; 03 Barcode Tag Printers; 05 Photocopiers; 01 Digital Camera; 01 Multimedia Projector and 02 plastic film printing machines for library membership cards.

### **Review of Literature**

The literature survey shows that a good number of libraries in India were subscribing to CD-ROM databases and were willing to migrate to online journals for meeting out the demands of their users in late 1990s’ or initial years of twenty first century (Moorthy & Karisiddappa, 2001). The study conducted by Mohamed Haneefa (2005) found that some electronic databases were available in a few special libraries of Kerala; two libraries had separate digital library and only three libraries were participating in library consortia for accessing electronic journals. The survey conducted by Srinivasa Rao and Choudhury (2009) finds that all NIT libraries in India have the facility of 6-16 online journals databases. The study highlights that 85 percent of these libraries have some e-resources on CD-ROMs/DVDs and about 90 percent of libraries obtain audio/video course materials. This study also reveals that south zone of India (with 75% libraries having EIRs) leads the fray as compared to all other zones. Nagaraja, Gangadhar and Vasanthakumar, (2011) stated that it is evident that most colleges only subscribed IEL online through INDEST.

The study conducted by Gowda and Shivalingaiah (2009) in university libraries of Karnataka reveals that electronic resources have created a positive hope among the research community and thus have established an optimistic atmosphere. Verma and Baljinder Kaur (2007) found that users are very

well accepting electronic information resources, and there is a rapid growth in their acceptance & use within the scholarly community (Amritpal Kaur, 2011; Chakravarty & Singh, 2005; Deng, 2010; Haridasan & Khan, 2009; Madhusudhan, 2008; Moghaddam & Talawar, 2008; Naushad Ali & Faizul Nisha, 2011; Kumar & Kumar, 2008; Sasireka, Balamurugan, Gnanasekaran, & Gopalakrishnan, 2011; Singh & Sharma, 2013;). Nicholas, Williams, Rowlands and Jamali (2010) found that academic journals have become central to all disciplines and that the e-format is the prime means of access. Naushad Ali (2005) revealed that 63% of users are utilizing electronic journals regularly. Upon analysing the data the author interpreted that 46% of the library users of IIT Delhi are consulting 2-5 journals and databases in a week. About 17% users use only one e-journal, whereas, 10% of users are browsing more than 6 e-journals in a week. However, 14% users indicated they had never used any e-journals or databases yet. "E-journals are gaining high importance both as a means of rapid desktop access to current research materials and as a way to view back runs at an extended quantity" (Sreekumar & Sunitha; 2006). Thanuskodi (2011) while measuring on a 5 point scale evidenced that among e-resources majority (73%) of users use e-journals and only 46.46% of them use e-books. There is an ever-increasing demand for subscriptions to more e-journal titles in LIS (Madhusudhan, 2008). Moghaddam and Talawar (2008) identified a growing interest in electronic journals among users at IISc. Bhardwaj and Walia (2012) and Hetreck (2002) have pointed out that most users now rely on the use of full text e-journals; e-abstracting and e-indexing databases for academic and research requirements. Among the three categories of e-resources namely, bibliographical databases, full text journals and portals facilitated by UGC-Infonet consortium full text databases and e-journals are most used e-resources followed by bibliographical databases and portals (Gowda & Shivalingaiah, 2009). Jotwani (2014) noticed that e-resources in all IITs are being heavily used as the number of downloads has increased from 32,33,818 to 76,17,691 articles, reflecting a growth of 135% over a period of 8 years (2004-2011). "The quantitative analysis of numbers of downloads of e-resources from databases made available at Jawaharlal Nehru University (JNU) through the UGC-INFONET consortia reflects a continuous increase in number of downloads across all the databases. This indicates that the databases are utilized quite effectively and that the things are improving with the passage of each year. This may be attributed to the training, orientation programme conducted by the library. The authors opine that "membership of the consortia is especially useful for databases, which are used rarely by small group of scholars, however provide exclusive coverage of e-resources (Tripathi & Kumar, 2014). The total usage statistics of the e-resources explored by Kaur and Verma (2009a) shows that there is an increase in their usage, as the total volume of downloads was seen to increase year after year. The discipline wise responses show that the science researchers use the UGC-Infonet consortia most (78.60%) and their counterparts in humanities use it least (38.10%). The percentage of the social science respondents who use the resources is 59.00%. Upon interviewing the respondents the authors explored that the inadequacy of e-resources in the UGC-Infonet consortia in the humanities and social science disciplines is the reason for the comparatively low use of this facility (Gowda & Shivalingaiah, 2009). The disciplinary differences played an important role in the use of e-journals by academic staff and students. The library support services should be planned according to the needs of different groups. (Bonthon et al., 2003). Upon posing a question with multiple answer option Salahudheen, Shibu, and Anas (2011) recorded that many of PG students of faculty of medicine at Aligarh Muslim University were aware of and utilize the major medical databases for their academic & associated purposes. It was quite impressive to note that 93.06% of the respondents mentioned that they are utilizing PubMed resources,

while 41.67% utilize MEDLINE and 25% of them utilize IndiMed for meeting their information requirements. The delivery of information through consortia will ensure better utilisation of electronic databases (Verma & Baljinder Kumar, 2007). E-resources that were frequently used by the Social Scientists at NASSDOC were e-mail [used by 100% faculty members (FM) & 69.76% research scholars (RS)], online databases (88.89% FM and 62.79% RS), CD-ROM databases (88.89% FM and 51.16% RS), and E-journals (100% FM & 72.09% RS) (Haridasan & Khan, 2009). The result of the study conducted in Thapar University by Kaur and Verma (2009) shows that there is an increase in use of e-journals. Ramesh (2012) found that academic institutions in Erode District of Tamilnadu are taking keen interest in using e-resources. E-journals and e-books are the highly used e-resources, followed by abstract level databases & other items on CDs/DVDs (Dhanavandan, Esmail & Nagarajan., 2012). Littleman and Cannaway (2003) having compared the usage of 7880 titles that were available in both print and e-book format at the Duke University libraries revealed that the circulation of e-book titles was more compared to print titles. The study depicts that there is a tendency of using electronic resources more than that of print resources. The Life Scientists of Sambalpur University, India most frequently use e-journals (used by 67.18%) and e-books (by 54.68%) (Sethi & Panda, 2012). Swain and Panda (2009a) have reported that online e-resources are used more as compared to offline CDROM databases by the faculty members of business schools in Orissa. Thanuskodi (2012) observed that 47.78% of respondents want to access only electronic version of information whereas 32.78% users want to read only the printed version of information, but 19.44% respondents want to use both electronic and printed information. World Wide Web, e-journals, CD-ROM databases/Consortia service, E-books, E-theses and Institute's digital archives are the major e-resources used by (60-100%) teaching faculty of engineering colleges of Rajasthan state. The e-groups, OPAC, & video conferencing, etc. were also recorded to be used to some extent (Bhatt & Rana, 2011). Majority (91.67%) of the faculty members are using Internet, 50.00% of users are using CD-ROMs databases and 30.00% are using e-journals, 20.00% are using e-books and only 6.67% of them are using OPAC (Mulla, 2011). The faculty and students of IIT Delhi are of the strong perception that among all electronic information resources and services e-mail, WWW and e-journals are very useful (revealed by 80%-85%) or useful (9%-11%) (Naushad Ali, 2005). Kaur and Verma (2009b) reveals that 100 per cent faculty members, 98.45 per cent research scholars, 80.43 per cent postgraduates, and only 33.03 per cent undergraduates were using the e-resources available at central library of IIT, Delhi. Thus the main users of e-journals were faculty members, research scholars and postgraduates. Out of 589 users having awareness about INDEST Consortium 405 (68.76 per cent) were using it, whereas the remaining 184 (31.24 per cent) were not using the same. "Forty-four (86.27%) libraries report an increase in the use of e-journals and 23 (45.09%) a decrease in the use of print journals" (Amritpal Kaur, 2011, p. 622).

The Libraries in India are slowly and gradually incorporating electronic information resources in their collection. The trend seems to have started by early 2000 and the CD-ROM databases were the first ever electronic information resources finding place in Indian libraries. It is understood that users are very well accepting electronic information resources, and there is a rapid growth in their acceptance & use. Overall the users seem to prefer e-resources over that of print resources. It is evident from the yearly increase registered in the statistics of downloads that the use of e-resources in Indian academic and research institutions is invariably increasing year after year. The e-journals, e-mail and the www are the highest used electronic information resources and day by day the e-books are gradually becoming

popular. The provision of access to bulk of electronic information resources, especially the online e-journals, is gaining momentum and users are seen to use them at an overwhelming rate. The faculty members and research scholars are using e-resources on a comparatively higher rate than students. Even among students the postgraduates are using e-resources more than that of undergraduates. The rate of usage in science stream is higher than humanities and social science, probably due to less availability of e-resources in these streams and low level of their awareness. There is an increasing demand for full text information rather than bibliographic details or abstracts. Even among the electronic information resources the online mode is preferred over that of its offline counterpart.

It is clear from the reviewed literature that a large number of studies about the use of electronic information resources in Indian academic and research institutions have been carried out across a variety of domains of knowledge. However, the investigator could not trace any specific and comprehensive study related to use of e-resources in any of the academic & research institutions in the field of Agriculture and allied disciplines in India. The investigators could find the following studies, which are domain specific and somewhat closer to the topic under study: Rokade and Rajyalakshmi (2006) endeavoured to evaluate electronic information services in agricultural university libraries in Maharashtra; Mahapatra (2012) overviewed the issues and trends with regard to digital content creation and management in agricultural libraries in India; AGNIC: Agriculture Network Information Center has been described by Tripathi (2000); Agricultural libraries in digital era: the changing trends is the topic of a study carried out by Neena Singh (2012); Nabi Hasan (2012) has compiled an inventory of the web-based Agricultural information systems and services under National Agricultural Research System; Veeranjanyulu (2014) has highlighted the aims and objectives of KrishiKosh: an institutional repository of National Agricultural Research System in India; Singh and Joshi (2013) have pilot surveyed the post graduate students at Haryana Agricultural University to ascertain their information literacy competency and impact of instruction initiatives on the same. All of these studies however are providing information about various electronic information sources and services and attempt to picturise the contemporary status of the studied libraries.

Only a few studies about the real use of e-resources in Agricultural libraries were traced. Biradar, Kumar and Mahesh (2009) have made an effort to estimate the use of print form of information sources and the associated services provided by library of Agriculture Science College Shimoga. The findings reveal that 77.22% of respondents visit library every day. About 88% students visit library to read journals and magazines followed by visits to borrow books (87.12%). It was found that a large number of users use books followed by periodicals. The authors conclude that emphasis needs to be laid on subscribing online periodicals through e-consortia. Chandrasekharan et al., (2012), studied CeRA: the e-journal consortium for National Agricultural Research System reveals that the quarterly statistics of full-text downloads from CeRA by member institutes for the period 'January 2008 (10,585 downloads) to March 2011 (1,08,552 downloads)' indicates a substantial increase in its usage. The findings also reveal that during the first year, the usage of CeRA was low but as more workshops were conducted, the usage increased exponentially from July 2009. This increasing pattern shows that awareness and interest among users is increasing year after year and that this e-journals consortium is proving quite useful for the end-users. The authors are of the opinion that CeRA can be used to improve effectiveness of the National Agricultural Research System (NARS) and to identify areas of importance in Agriculture and allied sciences. Francis (2012) has made an effort to evaluate the use of consortium of e-resources in agriculture (CeRA) in context of Kerala Agricultural University" by studying postgraduate and doctoral students. All PG students and research scholars were familiar with the use of digital resources. The students are using Internet based information resources (100%), online journals (91.43), CD-ROM databases (69.29%) and online databases (25.71%). Their preferred location to access the digital information resources is the computer centre and then college and university libraries. CeRA is used by

87.14 per cent students. Besides, 85.71% of students used the Library-subscribed online resources and also 65% of them used offline CD-ROM database resources. About 36.07% of the students were accessing and using CeRA many times a week, 28.68% once in a week and only 10.66% on daily basis. Most of the students (88.52%) preferred to access and use full-text resources of CeRA and among 66.39% of users who requested for articles through DDS of CeRA only 30.33% felt gratified by receiving the same. Majority of the students (63.12%) became aware about and learnt the required skills for accessing and using CeRA resources from curriculum-based 'library and information service' or 'research methodology' courses. While 39.34% students felt that resources available through CeRA were adequate, another 60.66% deemed them 'Somewhat adequate'.

However, not a single study has been carried out till date about the level of awareness and use of electronic information resources among the library users of any of the two State Agricultural Universities of the State of Jammu and Kashmir (India) i.e. "Sher-e-Kashmir University of Agricultural Sciences and Technology of Kashmir or Jammu". The investigator as such has made an attempt to bring forth a picture about the level of awareness and use of e-resources by studying the scientists and the PhD scholars of the university.

## **Problem**

It has become quite obvious that there is an increasing tendency among the faculty and the students for electronic format of information resources as compare to their print counter parts. It is however not economical to build the electronic collection of information as the cost is comparatively higher than print format and it also involves huge investment in terms of establishing the ICT infrastructure required to browse, access, acquire, store, retrieve and share the same. It has been observed in practice that major chunks of the allotted budget is invested on procurement of e-resources and making them operational and usable both through offline and online mode across the library networks. The Agriculture universities are being provided access to full text of a valuable treasure of journal collection comprising of almost 3000 reputed journal titles relevant to the field of Agriculture and allied sciences through Consortium of Electronic Resources in Agriculture (CeRA), which is a resource worth millions of rupees. Besides, some libraries are seen to subscribe to a few online journals and e-book collections of their own, which again involves expenditure worth millions of rupees. A huge amount has also been expended on the development of KrishiPrabha: Indian Doctoral Dissertations Database; E-Granth: Repository of rare documents in the field of Agriculture; KrishiKosh: an Indian agricultural knowledge portal comprising of more than ten million pages from 19,495 documents (Veeranjaneyulu, 2014) and the like.

Thus it is quite imperative that each Agricultural library should study usage of these valuable resources of information at their end on regular intervals of time to see whether these are being used to their optimum or not. This is also very important to maintain a usage statistics to reflect significance of electronic form of valuable information resources to plead the case of their procurement at various decision making platforms, discussion forums and in various administrative and financial meetings. Rational collection of these statistical facts is quite inevitable to envisage and justify the huge annual expenditure accruing on account of procurement of e-resources and prerequisite ICT infrastructure. No such study has been carried out in any of the two state agricultural universities (SAUs) of Jammu and Kashmir and as such the Library authorities are facing problems in pleading their case and justifying the investment in its budget meetings. It is also very important to assess the users' awareness, competence

and satisfaction levels so far as the use of e-resources is concerned; and bring the factual situation into the notice of concerned authorities. Because, this valuable treasure of information resources may go waste if the users are not aware about their availability or are not competent to search and use them to quite efficiently to an optimum level. Thus the investigators have endeavoured to study the use of e-resources available in the SKUAST-K Library System in order to identify the most popular ones among them; see the preferred gadgets used to browse, download and store and preferred places of access. This is also an effort to assess the information searching skills and the present level of user satisfaction.

## **Objectives**

The study was carried out to realise the following objective:

1. To know the frequency at which the users use the electronic information resources;
2. To identify the electronic databases, e-journal portals and e-book collections that are used mostly;
3. To assess the most popular gadget used for browsing, accessing and storing the e-resources;
4. To explore the most preferred access point as well as most widely used platform for browsing the e-resources;
5. To determine the search techniques and browsing skills of users;
6. To estimate the level of satisfaction about with the use of e-resources.

## **Scope**

The Sher-e-Kashmir University of Agricultural Sciences and Technology of Kashmir (SKUAST-K) a multi campii university was studied. Attempt was made to collect data from all the five faculties of the university i.e. Faculty of Agriculture Wadura in district Baramullah; Faculty of Horticulture Shalimar in district Srinagar and Faculties of Veterinary Science and Animal Husbandry Shuhama, Faculty of Fisheries Rangil, & the Faculty of Forestry Benihama in district Ganderbal. The scope of the study was confined to faculty members and PhD scholars of the SKUAST Kashmir only as it was a difficult task to collect data from distant campii of this multi-campii university, whose campii are dispersed all across three districts of the valley of Kashmir.

## **Methodology**

A questionnaire was used to collect data from respondents. In accordance with objectives of the study a set of 10 questions was framed to measure some significant aspects related to use of electronic information resources. The questionnaire was served to a total of 90 subjects making an average sample of 15% from both faculty members and PhD scholars of five faculties of the University i.e. Faculty of Agriculture, Faculty of Veterinary Science, Faculty of Fisheries, Faculty of Forestry and Faculty of Horticulture. The questionnaire was administered to 52 faculty members and 38 PhD Scholars in the month of October 2014. However, only 45 faculty members and 26 PhD Scholars returned the filled out questionnaires, thus a very healthy response rate i.e. 86.53% and 68.42% was achieved, respectively. The percentage and average of data was derived only from responses actually revealed by respondents on printed questionnaires, and the silent and no-opinion responses were kept aside while analysing the data.

The responses of users were cross checked with usage statistics maintained in the Internet browsing labs and the ones made available by service providers providing access to some important information resources like that of CeRA, KrishiPrabha, CAB e-books. The user statistics about offline CD-ROM Abstract databases maintained in the Library were also used for evaluation purpose. The investigators also interviewed the subjects to seek certain clarifications, felt necessary for analysis and interpretation of data.

### Data Analysis and Interpretation

The data was entered on a MS Excel worksheet for framing constituent tables / charts and overall analysis purpose. Tables were tailored in accordance with objectives under study. The tables and charts thus framed along with the interpretation are presented as under:

Table 1: Abstract databases used

S. No.	Particulars	No of Resp.	Percentage
1.	CABI (CAB Abs)	46	64.79
2.	AGRIS	24	33.80
3.	Agricola	23	32.39
4.	Web of Sciences	11	15.49
5.	Current Content	7	9.86
6.	FSTA	6	8.45
7.	Cambridge Scientific Library	5	7.04
8.	MEDLINE	5	7.04
9.	SOIL CD	4	5.63
10.	BIOSIS (Bio Abs)	3	4.23
11.	ISO Standards	3	4.23
12.	CGIAR Virtual Library	2	2.82
13.	Vet CD	2	2.82
14.	ASABE Technical Library	1	1.41
15.	Derwent Biotechnology	1	1.41
16.	IPR CD/DVD	1	1.41
17.	OCLC	1	1.41
18.	PubMed	1	1.41
19.	BIOSIS Preview	0	0.00
20.	India Stat	0	0.00

A question with multiple selection option was posed to seek information about the awareness and used of abstracting databases among a series of 20 databases relevant to Agriculture and allied disciplines. It is evident that majority (64.79%) of the subjects under study were aware and using abstracting database of "Centre for Agricultural and Biological International" popularly known as CABI.

This is followed by AGRIS (33.80) and Agricola (32.39%). Some users (15.49%) were also noted to use Science Direct or Web of Sciences, although the database was not subscribed by the Library System.

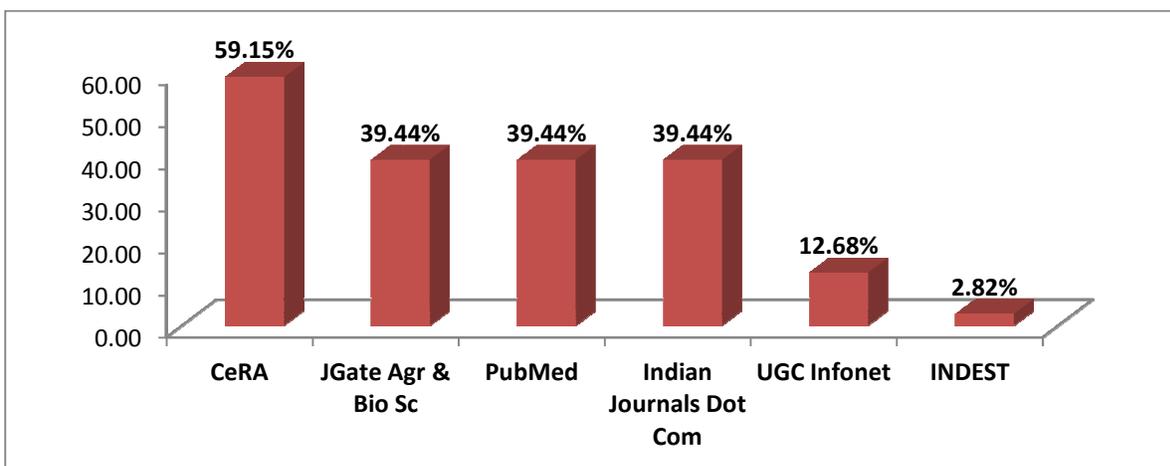


Figure 1: e-Journal portals used

It is clear from figure 1 that majority (59.15%) of users in agricultural science are using CeRA the full text journal collection made freely available to them by ICAR on consortia basis. 39.44% of users are using JGate, PubMed, Indian journals dot com. Only a small percentage of 12.68% of users are using UGC Infonet for ascertaining the required information.

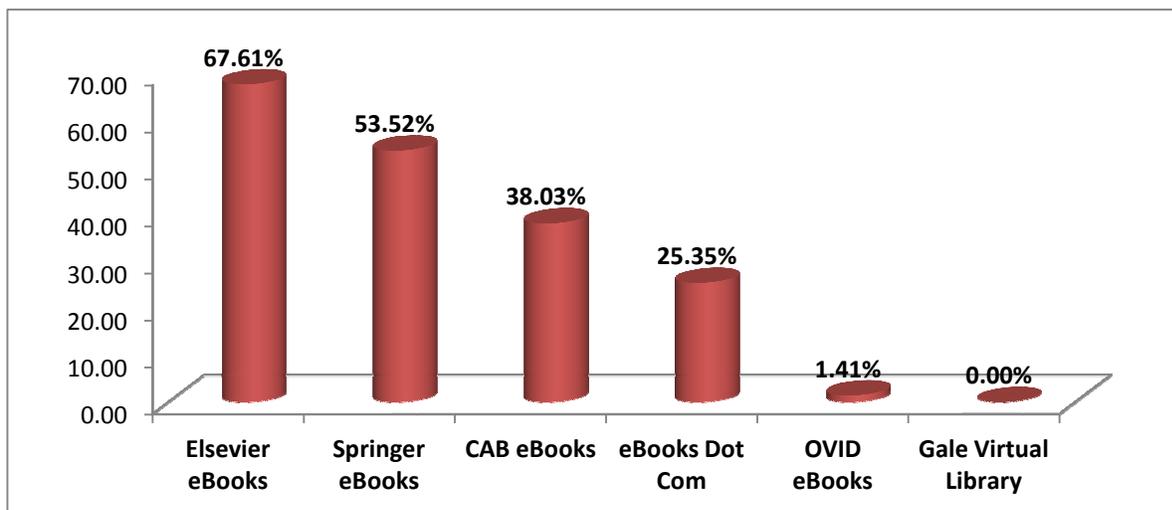
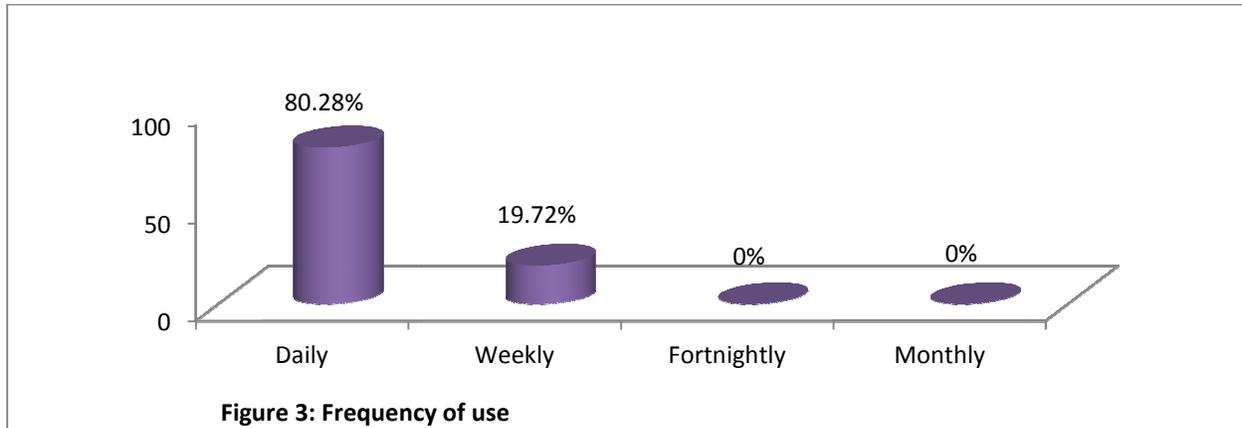


Figure 2: e-Book collections used

It is quite clear from the figure that the 'Elsevier e-book collection' stands out as the most popular collection among all the six options asked for, as it was seen to be used by the highest percentage (67.61%) of users. It is followed by 'Springer', 'CAB' and 'eBooks Dot Com' e-book

collections calculated to be used by 53.52%, 38.03% and 25.35% users respectively. However, it is surprising to see that CAB eBook collection, the only subscribed e-book collection of SKUAST-K, figures at 3<sup>rd</sup> position.



The chart shown as figure 3 reveals that trend of using electronic information resources in the Agricultural University of Kashmir is overwhelming as more than 80% of the users access electronic resources on daily basis followed by almost 20% of users who access it on weekly basis. However, there is no user who uses these resources either fortnightly or on monthly basis.

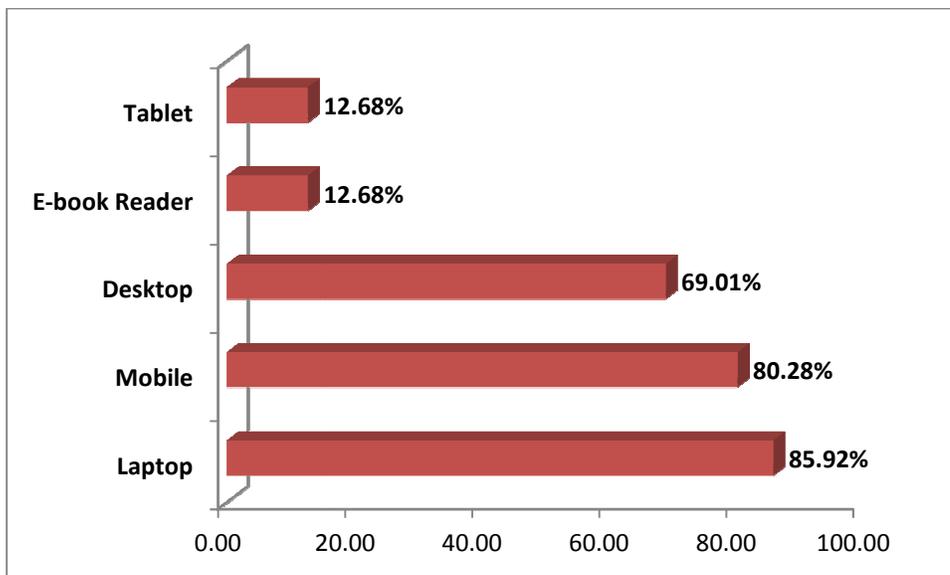
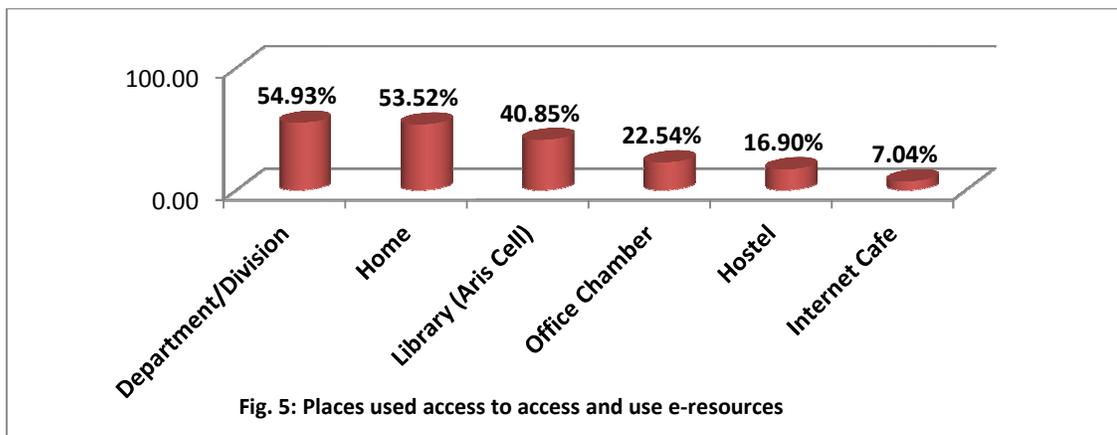


Figure 4: Gadgets used to view, store and use e-resources

While asking about the gadget used to browse, access, view, download or store information for later use, it is interesting to note that most of the users (85.92%) prefer to use 'Laptop' as compared to 69.01% of users who use 'Desktop' for the purpose. Mobile with 80.28% of indications proved to be the

second most popular gadget used to access the e-resources. However, there is very meager number of respondents (9% only) who use Tablets and E-book readers for the same.

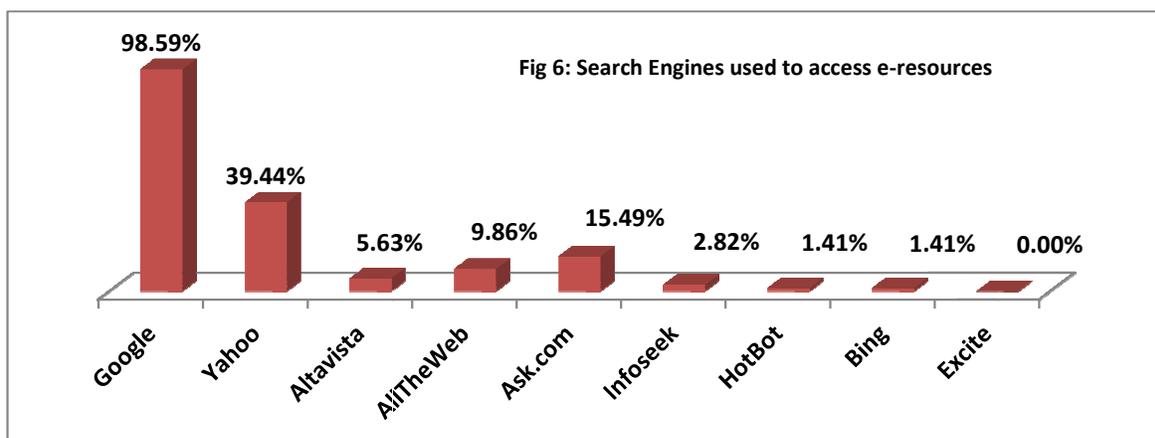


The facts figured above depict that 'Department/Division' is being used most (by 54.93 % of users) as a place of access to use e-resources of library; closely followed by 'Home' as indicated by 53.52 % of users. A good percentage i.e. 40.85 % of respondents reported that they straight way visit the Library for using the e-resources. However, Hostel, Office and Internet Café are being used as an access point by very less number (below 25%) of users.

Table A02 : Platform used to access e-resources

Particulars	Percentage
University Website	59.15
Search Engine	83.10
E-Resource's Homepage	32.39
EZ Proxy (Remote Access)	7.04
Federated Search Platform	2.82

When the users were asked about the e-platform that they use to access electronic information, it is found that most of them (83.10%) predominantly access through Search Engines rather than through University Website and E-Resources' Homepage which is being used by 59.15% and 32.39% of users respectively. Further, the data reflects that the user in the selected University measly use 'Federated Search Tools' and 'EZ Proxy Platform' for gaining access and retrieving the required information.



Majority of the users (98.59%) are using Google followed by Yahoo (39.44%) and Ask.com (15.49%). However, it is also evident from the Figure 6 that 'HotBot' and 'Bing' are least used by the respondents. Excite is not used by any of the users covered in present study.

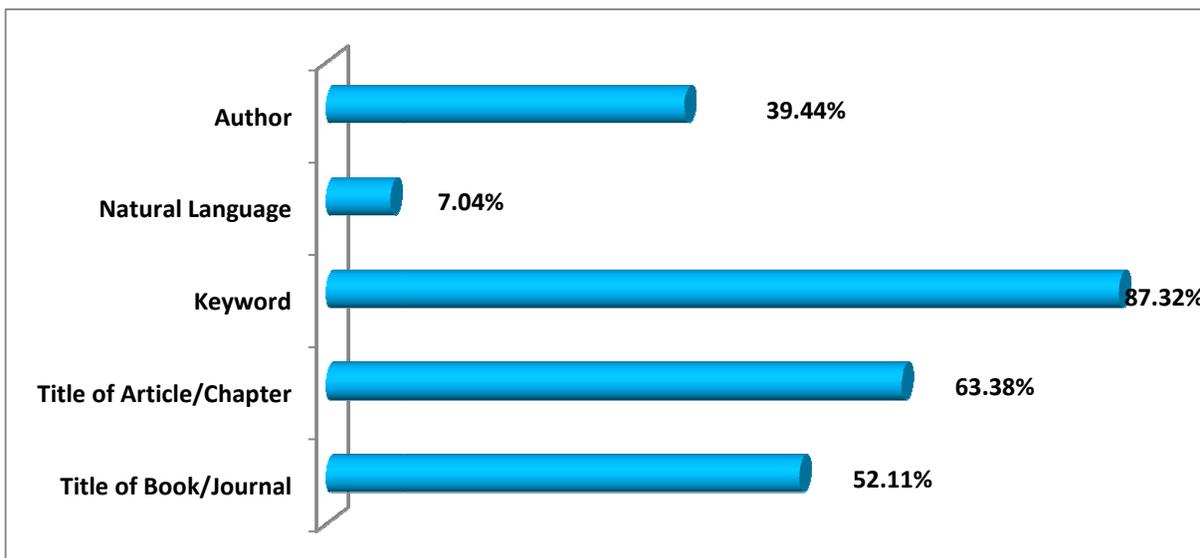


Fig 7: Search approaches used to search & retrieve e-resources

From the data analysis charted above as Figure 7, it is evident that majority of the users (87.32%) apply keywords for searching and retrieving information from e- resources. 63.38% of users are using title of the articles for searching and retrieving documents. Title of journal/book and author are used as search approaches by 52.11% and 39.44% of users for retrieving e-resources of their interest.

Table 2: Advanced Search Techniques

Search Technique	Often	Some Times	Never	Silent
Boolean Gates (AND/OR/Not)	14 (25.93%)	13 (24.07%)	27 (50.00%)	17 (23.94%)
Wild Cards (*; #; \$; etc)	01 (02.13%)	05 (10.64%)	41 (87.23%)	24 (33.80%)
Truncation Marks (??; #; *; etc)	03 (06.67%)	03 (06.67%)	39 (86.67%)	26 (36.62%)
Phraseal Search "----"	01 (02.00%)	12 (24.00%)	37 (74.00%)	21 (29.58%)

The respondents seem to be less skilled to use the advanced search techniques for searching and retrieving relevant e-resources. At an average only a meager 25% of respondents claimed that they use Boolean Gates (AND, OR, NOT) often or sometimes for narrowing or broadening the scope of their search, whereas 50% indicated that they have never used this technique. The respondents seemed to be ignorant about wild card; truncation marks and phraseal search techniques as only an average of 8.68%

reported to have used these techniques often or sometimes and majority that is 82.63% of them have never used them. Some (24% to 37%) of respondents, as indicated in silent column, did not express their opinion.

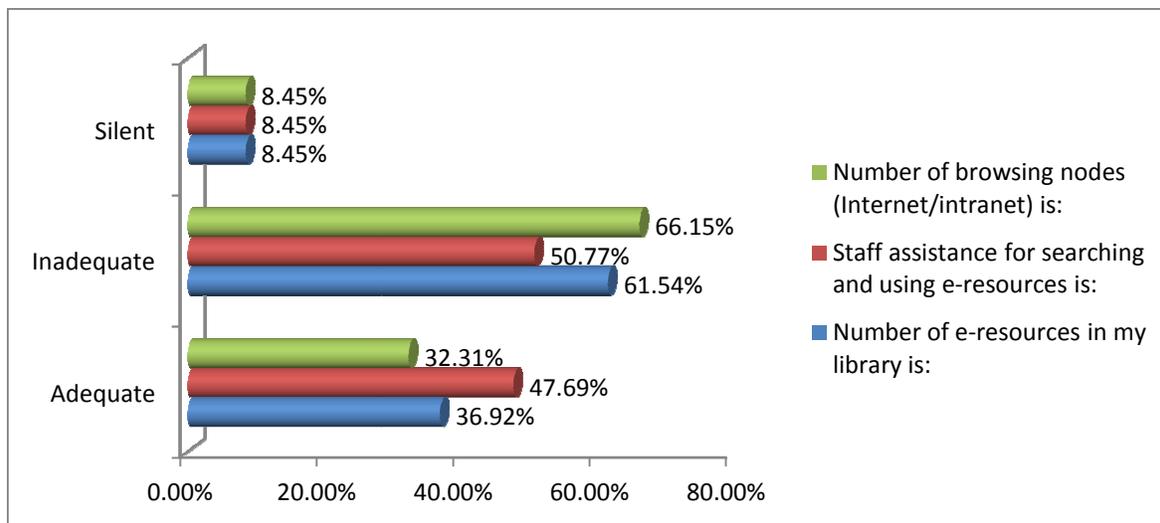


Figure 8: Feelings about e-resources and browsing / staff assistance

It is quite clear from Figure 8 that scientists and the students of SKUAST Kashmir are not much satisfied with number of e-resources, staff assistance and number of browsing nodes, as majority of the respondents (in the range of 50.77% to 66.15%) declared them 'inadequate' and only an average of 38.97% respondents deem it 'adequate'.

Table 20 : Satisfaction level of SKUAST-K Users

Particulars	Satisfied	Not satisfied	Highly satisfied	Silent
Software available for searching/viewing/downloading	36 (52.17%)	27 (39.13%)	3 (4.35%)	2 (2.82%)
Condition of computers	36 (51.43%)	25 (35.71%)	0 (0.00%)	1 (1.41%)
Printing facility	14 (20.29%)	49 (71.01%)	3 (4.35%)	2 (2.82%)
Internet connectivity	38 (55.07%)	26 (37.68%)	5 (7.25%)	2 (2.82%)
Speed of Internet	30 (43.48%)	35 (50.72%)	4 (5.80%)	2 (2.82%)
Accessibility of e-resources	37 (56.06%)	26 (39.39%)	3 (4.55%)	5 (7.04%)

So far as the IT infrastructure facility at SKUAST Kashmir Library Systems is concerned it is understood that majority of the respondents are moderately satisfied about software available (52.17%); condition of computers (51.43%); internet connectivity (55.07) and accessibility of e-resources (56.06%). Only a small percentage (in the range of 4.35% to 7.25%) is highly satisfied. However the situation is not so overwhelming because a good percentage of respondents (in the range of 35.71% to 71.01%) are not satisfied with these facilities at all. It is disappointing to see that 71.01% and 50.72% of respondents are not satisfied with regard to the printing facility and the internet speed, respectively.

## **Findings:**

Majority (64.79%) of the faculty members and PhD scholars of SKUAST-Kashmir, are aware about CABI abstract database and are using it meet their information requirements. About 59.15% of them use 'CeRA' the full text journal collection made freely available to them by ICAR and 67.61% use Elsevier e-book collection. An overwhelming percentage of users (80%) use e-resources on daily basis and the remaining 20% use them on weekly basis. Laptop proved to be the most popular gadget used to browse, access, store and use e-resources as 85.92% of users use it for this purpose and the 'mobile phone' with 80.28% of indications proved to be the second most popular gadget used to access the e-resources. Majority (54.93%) of users prefer to access the e-resources from their 'Department/Division', closely followed by 'Home' as indicated by 53.52% of users. It has been found that most of respondents (83.10%) tend to access e-resources of information through 'search engines' and 59.15% of them access them through University Website and only 32.39% of users tend to access e-resources directly from e-resources' Homepage. Among the search engines, 'Google' happen to be the number one search engine as 98.59% of users search information from Internet through the same and is way behind followed by 'Yahoo' with 39.44% votes. Majority (87.32%) of the users apply keywords/subject terms for searching and retrieving information about e-resources and 63.38% of users are using title of the articles or chapter as a search approach. Title of journal or book and author approaches, are still seen to be used by 52.11% and 39.44% of respondents for the purpose. The respondents seem to be less skilled to use the advanced search techniques for searching and retrieving relevant e-resources. At an average only a meager 25% of respondents claimed that they use Boolean Gates (AND, OR, NOT) often or sometimes for narrowing or broadening the scope of their search results. Scientists and the PhD scholars of SKUAST Kashmir are not much satisfied with number of e-resources, staff assistance and number of browsing nodes made available to them by their library. An average of 53% of respondents, are moderately satisfied about required software; condition of computers; internet connectivity and accessibility of e-resources, which is never encouraging.

## **Discussion**

As per the expectations the faculty members and PhD scholars of SKUAST-Kashmir are using e-resources very well in symbiosis with average usage rate of their usage and national level in India. However, it is not encouraging to see that 40.85% of users do not use a valuable full text journal collection like CeRA. It is surprising to observe that Elsevier and Springer e-book collections, never subscribed by SKUAST-K Library System, outnumbered CAB e-book collection the only subscribed collection. Probably the reason is less popularity of the later as compared the former ones. The library staff needs to promote awareness of its e-resources at a wider scope all across its distant campii. It is encouraging to see that users are using e-resources on daily basis, but efforts need to be made to see for how many hours do they use them at an average in a day and what is the equation between the print and electronic formats so far as the use is concerned. A meager percentage of 40% of respondents using library as a place of access sends an alert to library authorities about the decrease in visits the users are paying to physical libraries. This is creating a gap between print form of information resources and the user, which in no case is acceptable as bulk of information in Indian libraries (and so in libraries

of Kashmir) is still in print format. The SKUAST-K Library System should devise strategies and means to keep hold of its users and attract them to pay physical visits to libraries and use valuable print resources. The fact that users rely on search engines and that too on Google is also not encouraging, as most of the paid information resources are not retrievable through general search engines, which also do not find access to major chunk of information lying in inaccessible layers of deep web. The information literacy programmes need to be conducted in much effective way to promote awareness among faculty members and PhD scholars of SKUAST-K and educate them about advanced search strategies and search techniques, so that they do not rely on basic searches only which often leaves them disappointed even if the information they need has been purchased or subscribed by their library. Efforts need to be made to increase the satisfaction level of users about the number of e-resources, staff assistance and number of browsing nodes. Attention also needs to be given on the software required by users; condition of computers; internet connectivity and accessibility of e-resources on anytime anywhere basis.

### **Conclusion**

The SKUAST-K Library System has made good efforts to enrich its libraries with electronic information resources. The awareness level of faculty members and PhD scholars is good and they are using the e-resources to an encouraging extent. However, the usage of electronic information resources, like that of CAB Abstracts, FSTA, CeRA and CAB e-books seem to be less than expectation and need to be improved. The Library System should make more efforts to promote awareness of users about availability of e-resources and enhance their competence to search and retrieve the specific information they need with utmost economy. Although, the frequency of e-resource usage is quite encouraging, it is alarming to observe that users prefer to use portable devices like Laptops and mobile phones to browse and use the information from places other than libraries. Users of SKUAST-K Library System are not fully satisfied with the number of e-resources, staff assistance and the associated infrastructural facilities provided to them.

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