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Utilization of Databases in State Agricultural Universities of Jammu and Kashmir (India)

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Abstract: *The aim of this paper is to examine the impact and use of e-databases in State Agricultural Universities (SAUs) of Jammu & Kashmir because a huge amount is invested for the subscription, growth, and management of e-databases. The main* ***purpose*** *is to determine the* ***objective*** *of use of e-databases; and to find out their level of* ***application****, level of satisfaction, problems, and guidance/instructions in accessing of e-databases. To collect research data, questionnaire was administered randomly among 150 faculty members/scientists/Subject Matter Specialists (SMSs) available in two* ***state*** *agricultural universities i.e SKUAST of Jammu, SKUAST of Kashmir and 103 filled in questionnaires were returned. Finally, the researcher selected 100 useable questionnaires for the analysis using statistical technique to derive the result. The study reveals that e-databases such as CABI, AGRIS, AGRICOLA and Vet -CDs were highly used among the faculty members. Most of the agricultural scientists from Faculty of Agricultural Sciences and veterinarians from Faculty of Veterinary Science and Animal Husbandry were satisfied with the available databases at* ***their*** *respective University. The study identifies the importance of e-databases and the role of user initiation program or information literacy awareness to enhance the usage of databases at two agricultural universities each of one is located in two divisions of the state of Jammu & Kashmir i.e Jammu division & Kashmir division.*
Keywords*: Agricultural Scientists, Veterinarians, e-databases, SKUAST, SAUs, Animal Husbandry.*

I. Introduction

Information Management in Agriculture is committed to promote ICT driven technology and information dissemination system for quick, effectual and cost-effective delivery of messages to all the stakeholders in agriculture. Keeping pace with the current knowledge diffusion trends, information is delivering and showcasing technologies, policies and other activities through print and electronic mode. Dissemination and sharing of agricultural knowledge and information through value added information products in print and electronic mode is the hallmark of agencies engaged for growth and development of agriculture. India requires development of e-resources on agricultural knowledge for global exposure; for strengthening e-connectivity among ICAR institutes, State Agricultural Universities and KVKs; for capacity building in agricultural knowledge management and communication; for improving access to information through effective use of ICT in supply chain management, etc.

In higher education, two major shifts have been identified. First shift shows that the higher education is moving away from a teaching to a learning culture whereas the second shift reveals that the revolution in information technology is changing delivery of education. Academic libraries have taken these two shifts into account while planning their services (*Toner* 2008, & *Bennett* 2003)[1,2]. Due to the very slow growth of agricultural universities during the period of 1947-60, the history of agricultural university libraries in India starts with the green revolution, immediately after achieving independence in 1947, the Government of India gave top priority to the development of Agriculture infrastructure for research, education and extension activities in agriculture. Before independence, there were hardly two institutes under Indian Council of Agricultural Research (ICAR), 1929 namely Imperial Agricultural Institute (1905), *New Delhi* and Imperial Veterinary Research Institute(1889), *Izatnagar* and six Government Agricultural Colleges at *Coimbatore, Kanpur, Lyallpur, Nagpur, Sabhor Poona and Naini* (1910). In the first phase of agricultural Development 31 ICAR institutes were created uptill *1957 (Chottey Lal, 1998)*[2a]. During next phase from 1957 to 2013 the number of ICAR institutes went up to 80. State Agricultural Universities (SAU) were also opened from 1960s onward with the first agricultural university was set up at *Pant Nagar* (1960) and today there are 54 Agricultural Universities across India.

Accordingly the number of teachers, and scientists (including Subject Matter Specialists) in the Agricultural University as well as the ICAR institutes increased along with agricultural students. Today there are 50000 scientists and teachers working in the Agricultural Research sector in India with 24800 seats for undergraduate and postgraduate students in SAUs. Under ICAR only four institutes namely: IARI (New Delhi), IVRI (Izatnagar), NDRI (*Kernal*) CIFE (*Mumbai*) are undertaking post-graduate teaching and enroll 1200

students every year. SAUs work under the control of state administration. They are funded up to 90 percent by the ICAR and rest of their budget is met by state government. Since agricultural research, education and extension is the primary responsibility of states, the growth of SAUs has been faster.

The oldest institutes of IARI and IVRI were having libraries for providing information with good collection of Journals, monographs, reports, bulletins and theses. The agricultural colleges were having small libraries with a collection of 10,000 to 20,000 books. With the growth of ICAR Institutes, more libraries were opened and the State Agricultural University Libraries are today playing a vital role in the research and education programme of the agriculture.

In Jammu and Kashmir department of Agriculture came into existence during the pre-independence era. Till the year 1981 there was a single directorate of Agriculture for the whole state. In the year 1981-1982 separate directorates of Agriculture were established for both Jammu as well as Kashmir divisions due to diverse agro-climatic conditions prevailing in these divisions with moderate libraries for providing information. This facilitated formulation of policies and programmes aimed at optimization and rational utilization of land and water resources for sustained agricultural production. During April 1982, the department got bifurcated into two directorates one each at provincial level of Jammu and Kashmir state followed by another bifurcation in the form that all the research schemes of department were transferred to a new organization known as Sher-e-Kashmir University of Agricultural Sciences and Technology (SKUAST), J & K in the month of August 1982. With the SKUAST Act in force, (passed by the State Legislature) the agricultural education, research and extension units were transferred to SKUAST from various development departments viz; Agriculture, Animal Husbandry, Floriculture, Sheep Husbandry and Sericulture of Jammu and Kashmir State. During 1982-83, university has set up its own Library and Information directorate for providing information pertaining agriculture and allied subjects to the agricultural scientists. In the year 1998-99, the territorial jurisdiction of the university was redefined by amending the SKUAST Act under which separate Agricultural University was established for Jammu division and named as SKUAST of Jammu with its territorial jurisdiction extended to the entire Jammu division. Agricultural information system set up has improved considerably since independence in the state of Jammu and Kashmir.

The SKUAST is a symbol of successful partnership between J & K and the rest of India and has now become a leading institution for producing quality human resources, technology and its direct utilization for the agricultural development of the state.

The SKUAST universities (two) has a highly specialized collection of over 60000 documents (*Annual Reports, 2012-13*)[3,4] in the field of agriculture, veterinary sciences, animal husbandry, home science, fisheries, basic sciences, agri-business management, technology & other allied subjects. The library collection as textbooks, monographs, advanced treatises, research publications, reference works, popular works, pictorial works, theses, periodicals, standards, reprints, globes, records, films, microfilms, tapes, cards, maps, other graphic works, CD-ROM, full-text e-databases (CDROM/online databases) of e-resources, is primarily enhanced to the curricular needs of the universities faculties, and to the research and extension activities. All levels of reading material required to serve the user needs are acquired.

II. Electronic Database

A large, regularly updated file of digitized information (bibliographic records, abstracts, full-text documents, directory entries, images, statistics, etc.) related to a specific subject or field, consisting of records of uniform format organized for ease and speed of search and retrieval and managed with the aid of database management system software. Content is created by the database producer (i.e. Thomson Reuters), which usually publishes a print version (Biological Abstracts) and leases the content to one or more database vendors (EBSCO, OVID, etc.) that provide electronic access to the data after it has been converted to machine-readable form (BIOSIS), usually online via the Internet or on CD RoM, using preferably proprietary search software.

An electronic database in which the content is revised and augmented, usually on a regular basis, to provide current information or to add recently published sources and also designs to provide information about a very specific topic, as opposed to a range of topics, usually for limited users.

Most journal databases are updated on a regular basis as new issues are published and indexed. Most databases used in universities are catalogs, periodical indexes, abstracting services, and full-text reference resources leased annually or so under licensing agreements that limit access to registered borrowers and university staff. There are many, many different types of electronic databases in the world today, including statistical databases, image databases, and others. These databases are becoming very significant these days as they are more up-to-date, and can be accessed anywhere, crossing all geographical boundaries. Such electronic databases are very valuable and useful for time-saving while conducting Research & Development, teaching and extension activities.

III. Objectives, Scope and Limitations

E-databases in agricultural universities are making a significant growth as a part of collection. A huge amount is invested in the development of e-databases in the universities. The study offers to identify the acceptance of e-databases in the universities under study along with its advantages, performances, user's satisfaction and barriers faced during the use of e-databases. This study was conducted to seek user's opinion concerning the impact and use of e-databases in SKUAST universities.

The objectives of the study were:

01. To determine the purpose for which e-databases are used by the Faculty of Agriculture (FoA) and Faculty of Veterinary Sciences & Animal Husbandry (FVSc & AH);

02. To ascertain the awareness and use of available e-databases by the Faculty of Agriculture (FoA) and Faculty of Veterinary Sciences & Animal Husbandry (FVSc & AH);

03. To identify the frequently used e-databases by the Faculty of Agriculture (FoA) and Faculty of Veterinary Sciences & Animal Husbandry (FVSc & AH);

04. To find out the problems faced and the types of guidance/instruction got by the Faculty of Agriculture (FoA) and Faculty of Veterinary Sciences & Animal Husbandry (FVSc & AH) while accessing and using e-databases;

05. To ascertain the level of user's satisfaction and recommend appropriate solutions regarding the effective use of available e-databases.

The scope and limitations of the study is confined to the users (Faculty of Agriculture (FoA) and Faculty of Veterinary Sciences & Animal Husbanry (FVSc & AH) of SKUAST Universities regarding the effective use of e-databases from wherever accessible.

IV. Literature Review

Most of the universities provide e-databases to their users to support teaching, extension, research and development. The literature shows that e-databases with their retrieval from network capabilities have been gradually replacing some of their printed counterparts. In order to utilize the growing range of e- databases, agricultural scientists and Veterinarians must acquire and practice the skills necessary to exploit them. The study results showed that the students and faculty are aware of e-sources and also the internet. Even though a majority of the academic community uses electronic information sources for their academic-related work (*Kumar and Kumar*, 2010)[5]. A large number of social scientists are aware of the e-resources (such as e-books, e-journals, e-encyclopedias, e-theses, CD-ROM databases, e-mail, internet and the OPAC) and they use these e- resources for their research work. Many faculty members strongly agreed with the necessity for computer and internet literacy to access information and a majority of social scientists were satisfied with the e-resources available at the NASSDOC library (*Haridasan and Khan*, 2009)[6] and *Kwok* (1992)[7] sampled a group of scientists and examined the use of materials such as CD-ROM databases, online databases, journals, monographs etc. to do research. *Singh and Gautam* (2004)[8] focused on access to information through online or CD-ROM media that has remained a challenging effort for both the user and the intermediary. It further reveals that many of the e-databases are being created and made available today in India for use both within the country and outside. *Swain* (2010)[9] in his study reveals that the majority of students are aware of EBSCO, and Emerald Management Xtra.

Calvert (2000)[10] has evaluated the impact of electronic journals and aggregate databases on interlibrary loan activities. His findings reveal that results are not significant enough to justify searching, borrowing requests in aggregate databases and changing current inter-library loan procedure for searching request before ordering. *Mercado* (1999)[11] has suggests in his study that the library users know how to search and learn critical thinking skills for databases and keyword selection. *Bates* (1996)[12] study found that most humanities scholars made little use of online databases. Scholars appreciated that the databases covered many topics, but complained about the difficulty of their search language and the lack of availability of desired resources. It is interesting to note that scholars regarded themselves as experts in their subjects and did not expect to learn anything new from the databases. *Oladele* (2006)[13] conducted a study on Information seeking and utilization among agricultural researchers in Nigeria. The study demonstrates the level of awareness and the use of agricultural information sources including e-databases among researchers in Nigeria. The empirical findings have described the researchers' scenario as that of being informational deprived, when researchers do not have enough information

to take a wise decision as against the researcher's being as information overloaded, which implies a situation where researcher have too much information and are unable to pick out the right bits from e-databases. Specific training needs of the researchers to seek for appropriate information from different sources should also be identified as a skill-gap.

Singh and Satija (2007)[14] in their survey on Information seeking behaviour of agricultural scientists with particular reference to their information seeking strategies indicates that agricultural scientists seek diverse information from varied sources including e-databases for different purposes thus, making it difficult to maintain support for the idea of a single mode of formal information channel.

Singh and Satija (2008)[15] studied the information seeking behaviour of agricultural scientists working in the ICAR institutes of Delhi and PAU, Ludhiana. Results show that agricultural scientists have expressed great dependence in meeting their information requirement on their institutional library / information centre. Seventy two percent of the respondents for all categories of scientists preferred their library / information centre as the most preferred source. For accessing information agricultural scientists highly depend on the library collection, followed by the personal collection, collection of their supervisors and of colleagues in order of decreasing priority. Study revealed that the preferences agricultural scientists have for information sources varied with characteristics of individual agricultural scientists, nature of information needed, personal knowledge of sources and their accessibility. The most frequently used sources were those databases with good physical, functional and intellectual accessibility.

Naiy and Kaur in Information seeking behaviour of research workers in agricultural fields of West Bengal and ***Kalbarde*** *and Shinde* (2011)[16] in Information seeking behaviour of students at university library of *Mahatma Phule Krishi Vidyapeeth, Rahuri, Ahmednagar (M.S.)* conclude that it is difficult to remove all the barriers perceived by researcher / student / scientist / faculty member for seeking information from different sources be it print, digital or electronic.

Due to the growing number of databases of e-resources, the agricultural universities are interested in subscribing them considering their advantages. The transition from print to electronic has a great impact on the usage of library and research. So far, few studies have already been conducted to identify the impact and use of e-databases at the universities. The J & K has now developed a number of e-databases to meet the ever growing expectations of agricultural scientists and Veterinarians community working in two State Agricultural Universities (SAUs). It is very imperative to know how far agricultural scientists and Veterinarians are making use of existing databases and impact of e-databases on their teaching, extension and research work.

V. Research Methodology

Due to a large number of agricultural universities in India, SKUAST of Kashmir and SKUAST of Jammu were selected for conducting in-depth study. The questionnaire survey was the research method used in the collection of data for the study. Validated questionnaire was tested and administered randomly among 150 Faculty member /scientists/ SMSs from faculty of Agriculture (FoA) and Faculty member /scientists/ SMSs from faculty of Veterinary Science & Animal Husbandry (FVSc & AH) of SKUASTs and 103 were returned the filled in questionnaires. Further, the researcher selected 100 useable questionnaires for the analysis and interpretation using statistical techniques to draw the qualitative and quantitative results.

VI. Data Analysis and Interpretation

To determine the impact and usage of e-databases in SAUs of Jammu & Kashmir, the analysis and description of the study showed that 55 (55%) useable questionnaires were from FoA while remaining 45 (45%) from FVSc & AH. The collected data reveals that highest percentage of respondent's questionnaires i.e. 55 (55%) questionnaires received were from Faculty of Agricultural scientists.

Frequency of visit to the SKUAST library

Table 01. Frequency of visit to the SKUAST library

Frequency	Respondents	
	FoA, N=55	FVSc & AH, N=45
Daily	14 (25.45)	19 (42.22)
2-3 Times in a week	19 (34.55)	16 (35.56)
Once in a Month	16 (29.09)	08 (17.78)
Occasionally	02 (3.64)	01 (02.22)
Never	04 (7.27)	01 (02.22)

(Figures in parentheses are percentage)

For the convenience of the study, the frequency of visit for using e-databases has been classified into five categories as shown in table 01. It is observed that majority 34.55 % of the FoA visited the SKUAST library 2-3 times in a week, whereas 35.56% and 42.22% of the FVSc & AH visited the SKUAST library 2-3 times in a week and daily. Frequency of visit is less because many e-databases are either accessible via IP authentication

or username password and both FoA scientists and FVSc & AH members are using these resources from their respective divisions / desktops /laptops.

Purpose of usage of e-databases

Table 02. Purpose of usage of e-databases

Purpose	Respondents	
	FoA, N=55	FVSc & AH, N=45
To update knowledge	22 (40.00)	04 (08.89)
To consult databases for research/teaching/extension	06 (10.91)	28 (62.22)
To download articles	24 (43.64)	09 (20.00)
All the purposes	03 (05.45)	04 (08.89)

(Figures in parentheses are percentage)

The purpose is crucial for understanding the usage of e-databases. The above data in table 02 shows that 43.64% and 40% of the FoA scientists used e-databases to download articles and to update knowledge respectively, whereas 62.22% and 08.89% of the FVSc & AH members consulted the available e-databases for their research/teaching/extension and to update their knowledge respectively.

Awareness and use of e-databases

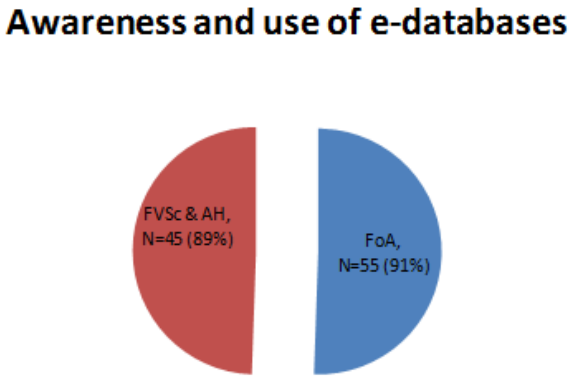

Fig. I. Awareness and use of e-databases

Now, e-databases are mushrooming in agricultural university libraries as fig. I reveals that the majority 91% of the FoA scientists and 89% of the FVSc & AH members were well aware about the available databases and they also used these for their different purposes.

	Databases which are being used by FoA scientists & FVSc & AH members of SKUAST	
S. No	**Name of Database**	**R**
(a)	Agricola	03
(b)	AGRIS	02
(c)	ASABE Technical Library	08
(d)	Biological & Agricultural Index Plus (BAI+)	07
(e)	BIOSIS (Biological Abstracts)	05
(f)	BIOSIS Preview	14
(g)	CABI	01
(h)	CGIAR Virtual Library	15
(i)	Chemical Abstracts	09
(j)	CSA (Cambridge Scientific Abstracts)	11
(k)	Current Contents	10
(l)	Derwent Biotechnology	12
(m)	DIALOG	22
(n)	ERIC	13
(o)	FSTA	06
(p)	ISO Stands on Agricultural Products	20
(q)	ISO Stands on Milk & Milk Products	21

(r)	MEDLINE	19
(s)	OCLC	23
(t)	SOIL CD	17
(u)	WoS (Web of Science)	18
(v)	Vet CD	04
(w)	IPR CD/DVD	16

R=*Rank after computation of mean*.

The SAUs of Jammu & Kashmir are subscribing some internationally prominent e-databases for searching the latest research literature on agriculture and these e-databases have become an important part of agricultural universities. The data regarding the usage of e-databases presented that CABI was the most frequently used e-database followed by AGRIS, AGRICOLA and Vet-CDs respectively.

Reasons for unawareness about e-databases

Table 03. Reasons for unawareness

Reasons	Respondents	
	FoA, N=05	FVSc & AH, N=05
Lack of updated skills	01 (20.00)	02 (40.00)
Exorbitant Cost	01 (20.00)	01 (20.00)
Paucity of time	02 (40.00)	01 (20.00)
Poor Infrastructure / Facility not up to mark	01 (20.00)	01 (20.00)

(Figures in parentheses are percentage)

Table 03 attempts to reveal the reasons that 40% of the FoA scientists were not using e-databases due to paucity of time, whereas 40% of the FVSc & AH members were not using e-databases due to lack of skills.

Table 04. Constrains in using e-databases

Constrains	Respondents			
	FoA, N=39		FVSc & AH, N=28	
	Yes	No	Yes	No
Technical	15(38.46)	24(61.54)	23(82.14)	05(17.86)
Connectivity	28(71.79)	11(28.21)	16(57.14)	12(42.86)
Downloading	14(35.90)	25(64.10)	11(39.29)	17(60.71)
Power backup	18(46.15)	21(53.85)	13(46.43)	15(53.57)
Lack of help	09(23.08)	30(76.92)	12(42.86)	16(57.14)

(Figures in parentheses are percentage)

It is also important to know constrains that are faced by the FoA scientists and FVSc & AH members in using e-databases as mentioned in table 04. The analysis of tabulated data reveals that majority 71.79 % of the FoA scientists had problems due to connectivity while using e-databases, followed by interrupted power supply (46.15%), whereas 82.14% of the FVSc & AH members faced technical problem in using e-databases.

Guidance /Instruction in using e-databases

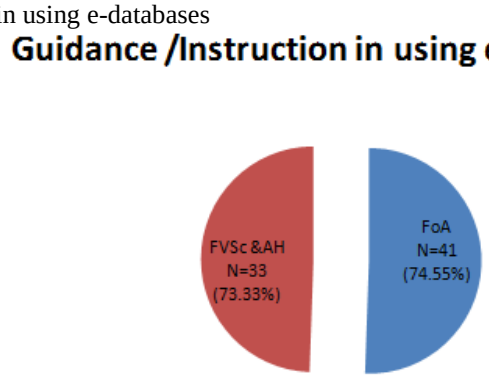

Fig. II. Guidance /Instruction in using e-databases

For maximum utilization of e-databases of SAUs, it is necessary that users should be instructed in accessing and browsing of University e-databases. The fig. II indicates that majority 74.55% of the FoA scientists and 73.33% of the FVSc & AH members got guidance /instruction, while using e-databases.
Satisfaction with e-databases

Fig. III. Satisfaction with e-databases in SAUs of Jammu & Kashmir

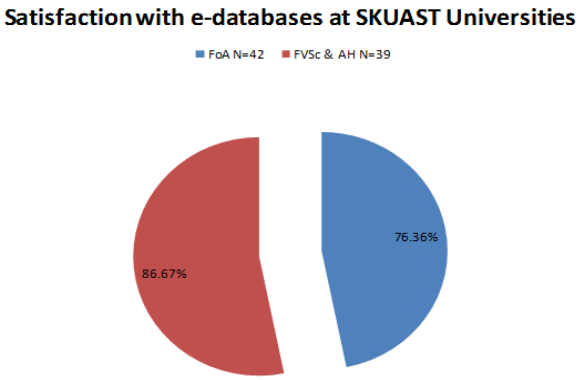

Figure III reveals that majority 76.36% of the FoA scientists and 86.67% of the FVSc & AH members were satisfied with e-databases. This is evident that e-databases were preferred form among the Veterinarians of the universities.

VII. Summary of Findings

The findings of the study conducted on the usage of e-databases among the Faculty of Agriculture (FoA) and Faculty of Veterinary Sciences & Animal Husbandry (FVSc & AH) of SKUAST Universities can be summarized as follows:

Majority of the FoA scientists visited the SAU library 2-3 times in a week and once a month for using the available e-databases whereas FVSc &AH members visited 2-3 times in a week and daily respectively.

A large number of Faculty of Agriculture (FoA) and Faculty of Veterinary Sciences & Animal Husbandry (FVSc & AH) were using e-databases to download articles and for their research/teaching/extension respectively.

The majority of the Faculty of Agriculture (FoA) and Faculty of Veterinary Sciences & Animal Husbandry (FVSc & AH) were well aware about the available e-databases and they also used these for fulfilling their purposes.

The ranking of e-databases indicated that, CABI, AGRIS, AGRICOLA and Vet CDs were highly used databases.

Faculty of Agriculture Scientists were not using e-databases due to paucity of time, whereas FVSc &AH members were not using due to lack of updated skill.

The majority of the FVSc & AH members were satisfied with the available e-databases and these were the preferred resources among the FVSc & AH members of the universities as compare to FoA scientists.

VIII. Conclusion and Recommendations

Agricultural libraries have traditionally helped to preserve the knowledge resources and serve the information needs of the contemporary society. They must quickly respond to emerging new information environment and adapt to new information handling methods and changing information search patterns of user communities. This study will be helpful in reorienting information systems, library services and activities to synchronize them with information seeking behaviour of their users i.e Faculty of Agriculture (FoA) and

Faculty of Veterinary Sciences & Animal Husbandry (FVSc & AH), scientists, SMSs, researchers and students. Greater interface with professional research and ever advancing information technologies, e-databases are required to leverage advantage for developing better information system viz-a-viz libraries and information centres. However, the area of use of e-databases by Agricultural scientists has never been explored earlier in detail in the state of Jammu and Kashmir.

Due to the advancement in technologies, agricultural university libraries moved from traditional to digital environment. To meet the ever-increasing demands of users, agricultural libraries are now subscribing a large number of e-databases. The adequate computer literacy in using the existing databases has become the need of the hour. The study reveals the effective use of available e-databases with a few constraints.

This study, therefore, recommends the following:

Due to the paradigm shift in services offered throughout the world, SAUs (including SKUAST) should subscribe more number of databases of e-resources. More number of networked computers should also be purchased and installed in the varied locations with appropriate packages or software for searching and browsing the needed information.

SAUs including SKUAST should intensify their awareness campaigns concerning the availability of databases of e-resources in the field of agriculture and veterinary science. The use of e-mail alert system, text messages and prizes for those who use a lot of databases of e-resources should be considered as methods of promotion.

SKUAST services are changing to user-centered.

For maximum utilization of databases of e-resources, library should provide orientation assistance to the users through Non-credit course (PGS-501) entitled "Library & Information Services".

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