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FINDINGS, SUGGESTIONS AND CONCLUSION

5.1 Introduction

The title of the study, “Information Use Pattern by Teachers and Students of Agricultural Science Colleges in Karnataka”, highlights major findings amongst the agricultural faculty members and students in 16 prominent agricultural colleges in the state of Karnataka. The scientists are gathering information from the decades, but the way of search and gathering information has undergone a tremendous change during the recent years. During late 1980s and the early 1990s many new interesting technologies have emerged radically and revolutionized the way in which people searched for and gathered information. Therefore, there was a profound shift in electronic resource usage by scientists in the mid-1990s. Studies have revealed that the use of electronic information resources has improved the quality of research work and inspired new ideas, which can be attributed to the increase in the popularity and usability of the internet having all the resources contained in it. About 60 per cent of the researchers feel that the use of electronic information resources has made it easier to keep up-to-date information in their field, and greatly saved their working time (Guru, 2010).

The trend in use of electronic journals in the latter half of the 1990s and upward and World Wide Web has propelled the growth of electronic forms of communication. The electronic journals have totally altered the way scholarly communication is disseminated throughout the world. Many interesting studies conducted over time on faculties, scientists, researchers and students have shown that journals and articles continued to be valued resources. Researchers have revealed that
journal articles are highly important to their work, more than any other information sources. A few other studies have revealed that the quality of information that a scientist gets from refereed journals has greatly resulted in their improved performance (Guru, 2010).

Information seeking behaviour is a broad term encompassing the ways through which individuals articulate their information needs, seek, evaluate, select and use information (Singh and Satija, 2007). Information seeking is thus a natural and necessary mechanism of human existence (Marchionini, 1995). Academic libraries are the nerve centers of their institutions and support teaching, research, and other academic programs (Thanuskodi, 2009). These libraries play a fundamental role in teaching and learning atmosphere for the research community. Today, development in computing and telecommunications has made it possible for the library staff to provide their users with a wide range of text, image and sound resources around the world. Use of electronic media has brought many changes to the way libraries collect, store, retrieve, disseminate information and serve their users. With the help of different electronic resources such as e-books, e-journals, etc. academic libraries fulfill information needs of their users. The situation in academic libraries in India is the same as that of academic libraries the world over; however, Indian libraries must provide maximum information with limited resources (Thanuskodi, 2009).

Now-a-days, e-journals have been regarded as important library resources and many libraries all over the world have already replaced print journals with e-journals (Islam and Chowdhury, 2006). According to Patra (2006), e-journals are an established component in the life of academic and research institutions. E-journals are becoming popular and more effective with the growth and expansion of the Internet (Islam and
Consequently, librarians obviously are interested in electronic journals as means of providing information to their customers. Shrinking budget of libraries, new modes and formats of information products and services contribute to the confusion and uncertainty is expressed by librarians when they are attempting to provide the best to their users.

India is essentially an agrarian society and basically depends on agricultural outputs. It is therefore essential that the technology thrust should lay greater emphasis on the transfer of scientific and technological information from the research institutes to its actual users. Libraries and Information Centers are playing a very important role in providing information to the users by building print and electronic collection. In India, direct application of computerized information systems to the agricultural community is not feasible in the present conditions. (Annon 1993).

An understanding on the use pattern of e-journals helps the librarians to make the best purchasing decisions for their institutions and to know what strategies can be employed to increase accessibility and usage of e-journals. In addition, it would also help to identify factors which need to be considered by publishers of electronic journals to improve the services and contents to serve best to both users and authors. A review of literature revealed that there is no complete knowledge about information use pattern by agricultural community. Moreover, there is lack of a comprehensive study in this field. Furthermore, the previous study in India has limited focus on agricultural colleges and none of them studied all of the variables together like the present study. Having this in mind, carrying out the user studies in a broad range in agricultural colleges such as the present study seems to be a great necessity.
5.2 Issues Studied and Analyzed

The research study was conducted on the use of information resources at 16 agricultural college libraries by faculty members and students. The important issues studied and analyzed by the researcher includes, personal information about the respondents, purpose and use pattern of library information resources, awareness and familiarity with the use pattern of printed information resources, awareness and familiarity with information resources, access and use of information resources. It also includes the use of information resources, advantages and disadvantages of information resources, satisfaction with subscribed information resources, importance of information resources, dependency on usage of information resources, format preference of information resources, problems while accessing and using information resources, and necessity of users' training for effective use of information resources.

5.3 Methodology Adopted

For the purpose of data collection, a well-structured questionnaire was designed and distributed to 2516 members identified as faculty members or students in the sixteen agricultural colleges across Karnataka out of which 2064 questionnaires were received with a response rate of 82.03%. The filled questionnaires were organized, coded and analyzed using SPSS. The data was interpreted in the light of the objectives and hypotheses stated in the first chapter. In analyzing and interpreting the data, different statistical tests like Frequency, Percentage, Mean, Standard deviation and $\chi^2$ (Chi-square) test were adopted. Tables, charts and graphs were used to make the presentation clear and simple. The detailed interpretation of data was presented in chapter 4; the summary of findings is presented in the succeeding section.
5.4 Summary of Major Findings

The salient findings that could be drawn from the study are elaborated below with specific headings as per the format in the survey questionnaire of the study.

5.4.1 Use of Information Resources

- It is interesting to note that 955 (46.27%) of respondents prefer to visit the library on a weekly basis, out of which 91 (33.58%) are faculty members and 864 (48.19%) are students.

- As high as 2012 (97.48%) of respondents main purpose of visiting the library is for book borrowing, of which 258 (95.20%) are faculty members and 1754 (97.82%) are students.

- Regarding the information use of conventional and electronic resources in academic work, the respondents most preferred are in the order of priority is (1) Books 1068(51.74%), (2) Internet 844(40.89%), (3) Journals 541(26.21%), (4) Reference sources 566(27.43%), (5) e-journals367(17.78%), (6) Databases 426(20.64%), (7) Annual Reports 144(6.97), (8) Leaflets 336(17.78%), (9) e-books 321(15.26%), (10) Agricultural Conference Proceedings 198(9.59%), (11) Pamphlets 213(10.32%), (12) Research Thesis 121(5.86%), (13) Agricultural Blogs 137(6.64%), (14) Patents 193(9.34%) and (15) Technical Reports 96(4.65%).

- In total, the use of information resource among the respondents in the library is for examination with 834 (40.01%). Among the faculty members the purpose is more of Teaching/Seminar with 270 (99.63%) responses, followed by research, article writing, proposal writing, examination and others. On the
contrary students are considered, the priority is for examination with 798 (44.51%) responses, followed by teaching/seminar, article writing and others.

5.4.2 Use of Printed Information Resources

- Out of the total 2064 respondents, only 15 (05.53%) of faculty members and 12 (00.66%) of students do not use printed information resource in their college library.
- As high as 176 (68.75%) of the faculty members have been using the printed information resources for more than five years, followed by three to five years, between one and two years and less than a year.
- Regarding the information use of conventional printed resources in academic work, the respondents most preferred are in the order of priority and ranking are (1) Books 869(42.66%), (2) Journals 467(22.93%), (3) Reference sources 900(44.18%), (4) Annual Reports 209(10.13%), (5) Leaflets 546(26.80%), (6) Agricultural Conference Proceedings 163(7.90%), (7) Pamphlets 154(7.50%), (8) Research Thesis 164(7.95%), (9) Technical Reports 86(4.17%) and (10) Patents 43(2.08%) (11).
- It is interesting to note that 962 (47.23%) of respondents use printed information resource for examination to a large extent and 946 (46.44%) respondents do not use the same for scientific information.
- The priority among respondents for the use of printed information resources are; (1) Examination 962(47.23%), (2) Assignments/Seminar 431(21.16%) (3) Writing 269(13.21%), (4) Teaching 269(13.21%), (5) Scientific information 178(8.74%) and (6) Research 746(36.62%).
5.4.3 Use of E-Resources via Internet

- As far as the computer proficiency skill is concerned, 976 (47.29%) respondents have rated as Good, followed by Average, Expert, Below Average and Beginner levels.

- As high as 1952 (94.57%) of total respondents are users of Internet and remaining 112 (05.43%) are not using internet.

- Among the internet users, 992 (50.82%) respondents have rated as Expert users, followed by Good, Average, Below Average and Beginner levels.

- The preferred location for using the Internet is computer lab with 1246 (63.83%) respondents.

- The priority of usage of location is (1) Computer lab 1246(60.90%), (2) Library 1021(49.47%), (3) ARIS 293(14.20%), (4) Cyber café 369(19.19%), (5) Hostel428(20.74%), (6) Department 320(15.50%)and (7) Home279(13.52%).

- Only 648 (33.20%) respondents are using the Internet between 3 and 5 years.

- Only 675 (34.58%) respondents are using Internet at least 1 to 2 hours per week.

- As high as 1130 (54.75%) respondents feel the institute facilities to access e-resources are adequate to a greater extent.

- The priority of Internet use pattern among respondents are; (1) Email activity 763(36.97%), (2) Information Resource 499(24.18%), (3) Entertainment 499(24.18%), (4) Proposal Writing 601(29.11%), (5) PPT Presentation 323(15.64%), (6) General Activity439(21.27%), (7) conference/Seminar/Workshop 266(12.89%), (8) Teaching 266(12.89%), (9) OPAC Access 276(13.37%),
Research Work 263(12.74%), Discussion Group 108(5.23%),
Journal Submission 230(11.14%) and Online Submission 196(9.90%).

- The priority of search engine use pattern among respondents are (1) Google 1410(72.23%), (2) Yahoo 1244(60.27%), (3) Rediff 436(21.12%), (4) Bing 593(28.73%), (5) MSN548(26.56%), (6) info seek 320(15.15%), (7) AltaVista 212(10.27%), (8) Lycos 244(11.82%), (9) open text 86(4.17%) and (10) web crawler 107(5.18%).

- The most preferred and ranked science website among the respondents is http://www.pubmedcentral.nih.gov/ and 633 (332.43%) respondents use this website most frequently and highly. The least preferred and ranked science website among the respondents is http://www.beyondpesticides.org/.

- The challenges faced by respondents in using internet, on the raking of the reasons based respondents rating are (1) Overhead Information 610(29.55%), (2) Low-End System 529(25.26%), (3) URL Changes 284(13.76%), (4) Power Cuts 468(22.67%), (5) Irrelevant Information 206(9.98%) and (6) Low Speed Internet Connectivity 311(15.06%).

5.4.4 Use of E-books

- As high as 1089 (52.76%) respondents are aware about the e-book subscription in their college library and remaining 975 (47.24%) are not aware about the same.

- Only 417 (38.29%) respondents are satisfied with the level of e-book resource availability in their libraries.
Only 450 (41.32%) respondents are moderately satisfied with the level of e-book subscription available in their libraries.

Only 510 (46.83%) respondents are satisfied to a greater extent with the level of e-book use and importance in their work.

5.4.5 Use of E-Journals

As high as 1548 (75.00%) respondents are aware of the e-journal subscription and use in their college library and remaining 516 (25.00%) are not aware about the same.

The most preferred use of e-journals among the respondents is Subject Update with 1050 (67.83%).

As low as 410 (26.49%) respondents prefer to use the e-journals in a fortnightly basis and 554 (35.79%) respondents use the same very rarely.

As high as 1305 (84.30%) respondents prefer to use the Author for searching e-journals and the least used search tool is ISSN with 307 (19.83%) respondents.

Only 519 (33.53%) respondents are satisfied with the level of e-journal availability in their libraries.

It is interesting to note that 678 (43.80%) respondents feel that the e-journals in their libraries are highly important in their academic work.

Only 545 (35.21%) respondents are moderately satisfied with the level of content availability in the subscribed e-journals in their libraries.

The priority of preferred format use of using e-journals among respondents are (1) PDF, (2) HTML, (3) MS Word, (4) SGML and (5) ASCII (Table 40).
As high as 894 (57.75%) respondents ‘strongly agree’ and find that e-journals are equivalent to print journals.

About 1003 (64.79%) respondents ‘strongly agree’ on using electronic format in case they have access to both print and electronic versions of journals.

As high as 934 (60.34%) respondents ‘agree’ for the support of transition from print to e-journals only.

As high as 383 (77.69%) respondents who are not using the e-journals have cited the reason that ‘It is difficult to read on screen’.

5.4.6 Use of Databases

As high as 1349 (65.36%) respondents are aware of the database availability and its use in their college library and remaining 715 (34.64%) are not aware about the same.

The priority of preferred database use among respondents are; (1) FAO, (2) Agricola, (3) Cabi online database, (4) Horticulture online database and (5) Agriculture economics database.

5.4.7 Use of Agricultural Blogs

Only 797 (38.61%) respondents are aware about the availability of agricultural blogs and remaining 1267 (61.39%) are not aware about the same.

As high as 778 (97.62%) of respondents use agricultural blogs in their academic work and remaining 19 (02.38%) do not use in their academic work.

The most used agricultural blog is http://agrobiosolution.blogspot.com with 301 (37.77%) respondents using it once in a week and the least preferred agricultural blog is http://www.horti-tech.blogspot.com with 307 (38.52%) respondents never use this blog in their academic work.
5.4.8 Use of Agricultural Wikis

- Only 952 (46.12%) respondents are aware about the availability of agricultural wikis and remaining 1112 (53.88%) are not aware about the same.

- The most used agricultural wiki is http://en.wikipedia.org/wiki/Agricultural_science with 438 (46.01%) respondents using it once in a fortnight and the least preferred agricultural wiki is http://en.wikipedia.org/wiki/Animal_husbandry with 447 (46.95%) respondents never use this wiki in their academic work.

5.4.9 Role of Library in Promoting Information Resources

- On the importance and role of library in promoting information resources by providing inputs to the users, the order of preference among the respondents are: (1) Well organized and arrangement of Information resources at library, (2) Library training/orientation, (3) Assistance from library staff in handling information resources and (4) Well organized home page of library with link to e-resources.

5.5 Findings in Relation to Hypotheses

The Hypotheses stated in chapter 1 under section 1.8 which reads as H1 to H8.

The Hypotheses H1 to H8 have been proved and found valid in chapter four.

5.6 Suggestions

Based on the findings of the study, the following suggestions are offered:

- In view of shrinking budget, rapidly increasing and dramatically decreasing cost of technology and explosive growth of electronic information sources, it has become not only essential but also more useful, economical and effective
for Agricultural college libraries to make the best use of Information Technology in routine activities of the library and its services to users.

- The dawn of Information Technology eventually has had an impact on each and every aspect of library and therefore librarians and higher authorities of the Agricultural science colleges need to have a long term planning and well defined planning for IT implementation in order to get higher benefits and to minimize the barriers while using the Information Technology applications.

- Implementation and maintenance of all Information Technology applications in the Agricultural science college libraries require heavy investments. Therefore, the library professionals should mobilize their funds by undertaking projects from national and international organizations, running self-financed courses and hiring manpower. Further some special grants should be made available from different funding agencies to implement user needs Information resources for libraries.

- Agricultural science college libraries need to restructure their budget policies by allocating a part of their annual budget for training their library professionals and users.

- Agricultural science college libraries shall adopt a hybrid collection development policy in order to fulfill the demand of the users, as it is needed.

- All Agricultural science college libraries should concentrate on consortia based procuring online databases of journals, books, patents, thesis/projects and others to save the precious time of the users.

- Agricultural science college libraries need to have good infrastructure facilities to exploit new technology, while some of them need to develop multimedia work station, V-Sat, Voice input device, video conference so on.
The Agricultural science college libraries should have user group mail so that, the new arrivals can be sent to all user at a time.

Agricultural science college libraries should eliminate the existing barriers and become the members for library consortia to crack down the library budget.

There is an urgent need to involve Karnataka state Agricultural library professionals in the implementation of Information Technology in the library. The involvement is at the planning, execution and just application level. It improves their morale and motivation for successful implementation of Information Technology in Agricultural science college libraries.

The process of digitizing the Agricultural library Resources must be done as early as possible and they shall prefer to purchase the appropriate digital library software, which has already been in use successfully in other libraries in Western countries and also in some research libraries in India.

Agricultural science college libraries shall emphasise on need-based, value added users services through automated library, campus wide LAN, Wi-Fi and also with web based services.

It was found that; majority of Agricultural libraries seems to be less accessed to various networks. Hence research libraries need to make rigorous efforts to access various networks like CeRA, FAO database, INFLIBNET, ERNET, NICNET, DELNET, I-NET, GIAS SIRNET, INDONET and others in order to provide access to a wide range of information sources and services to users.

Virtual private network is suggested for all Agricultural science college libraries to link the library with off campus users and professionals.

Karnataka Agricultural science college libraries need to plan a separate network to offer consultancy and advisory services by the way of sharing their
Information Technology and professional expertise and experiences to other Agricultural libraries in specific and other libraries in general.

- In the context of digital environment, the existing rare and valuable documents must be digitized in a phased manner for preservation and for future use.
- All Agricultural science college libraries must have consortia of online databases to save the budget, which can be utilized for other purposes.
- Agricultural science libraries should bring CD publications for new arrivals, internal bibliographic database, Library/Institutional reports and others.
- The Agricultural science college libraries should create in-house database for documents other than journals and books. It may be patents, standards reports and other sources.
- All Agricultural science college libraries shall safe guard their information resources by implementing electronic surveillance security systems. It may be video cameras, closed circuit television, electronic security systems, etc.

5.7 Directions for Further Research

Based on the present study, the following areas are identified for further research.

- The present study was conducted only agricultural science college faculty members and students. A comparative study could be undertaken on agricultural and other colleges to understand the information use pattern.
- A study can be planned with different methodology as such as transaction log analysis for getting better picture of using e-journals by the agricultural community.
- The effect of e-journal usage on scientific output among the agricultural community can be another area for the future study.
• Study on the use of information use at regular intervals to enable better collection development on cost-effective basis can be conducted.

• A longitudinal research is desirable so that the emerging pattern and trend in the information use pattern can be further explored.

5.8 Conclusion

The present study provided insight into the information use pattern by the agricultural science student and faculty belonging to sixteen agricultural science colleges in Karnataka which has not been explored much by the researchers earlier. A well-structured questionnaire with an information interview approach has provided comprehensive information on several aspects of information resources usage such as awareness, purpose, use pattern, dependency and so on. On par with other research findings, the present research also supports the trend that was seen in the review of literature that acceptance of information resources has been increasing and the overall attitude towards its use among the respondents has shown a positive approach. This was apparent in the high proportion of users, the high frequency of use and high importance accorded to information resources. There are also some concerns that need to be aptly dealt with, such as the facilities for accessing the information resource being user friendly and better internet services for quicker and faster access. Further, the usage of these resources can be increased if users are motivated to use these services in the library by providing them help in searching and downloading the information. In addition, the library should continue to provide support for information resources, as users are also using a lot of them for their research purpose and also some users are uncertain about the transition from the information resources. The survey also tried to serve as a benchmark on the use of information resources in
agricultural science colleges. The findings of the present study certainly enable the agricultural science college libraries to evaluate and realign resources and services according to users' requirements effectively.

The study indicates that the agricultural scientists seek diverse information from varied sources for different purposes thus making it difficult to maintain support for the idea of a single mode of formal information channel. However in view of the above, it may be concluded that the work culture of the individual needing information, the importance placed on getting it, the facilities available for seeking it, the knowledge about these facilities, the judgment of their value, the probability of getting what is wanted, are the factors that may affect information seeking behaviour.