Library Waves
Volume 4, No. 2 (2018)
ISSN 2455-2291

Access to Information Resources by Biomedical Scientists in India in Digital Era

***Dr Prabhat Ranjan and **Dr Surya Nath Singh**

*****Librarian, Jagat Taran Girls Degree College, Allahabad (UP) India;
Email: prabhatranjan21@gmail.com
******Former Director (Library and Information Services), National Institute of Virology (ICMR), Pune (MH) India; E-mail: singhsnniv@gmail.com

---

Abstract

This research article discusses how electronic resources are replacing traditional prints, due to online presence of resources on the World Wide Web in different formats including animations and video. The present study is aimed to explore the status of prints and electronic resources in terms of searching information, reading and writing. The study was proposed at 95% confidence level and 5% confidence interval. It was found that use of electronic is not only preferred for searching (97.9% of respondents) and writing (81.1% of respondents), but for reading (55.2% of respondents) also. Most (83.6%) of the respondents opined that electronic has minimised use of print. Online resources are preferred by most (96.5%) of the users. Easy search, time save, platform to vast information, user friendly, less cost was found very positive for the electronic resources. It was revealed that biomedical scientists in India need not training or orientations to access electronic resources.

Keywords: Information Access, Information Seeking Behaviour, Electronic Resources, Print Resources, Online Resources, Biomedical Information.

1. Introduction

Current information society is based on quick, pinpointed, and proper retrieval of information, which is mainly possible in electronic format. The study reports the developments of mechanism to integrate information resources for biomedical scientists in India. A single networked personal computer screen is the tool of enormous information available on the Internet. Electronic devices have a number of unique features to provide access to the integrated resources for the end users through one stop search interface than the traditional prints for access of information resources despite the fact that use of prints has not been completely abolished, as is being considered by information professionals as well as majority of users. It is also an undisputed fact that texts for reading are still continued without any additional effort despite origin of audio-visual and other digital resources due to various reasons. On the other hand electronic resources, technologies, techniques and devices need extra information literacy and also needs updation due to out datedness with time, whereas papers are used till its existence. Biomedical information and its communication to the proper users at the proper time are more important as everything is directly related to life and death. Biomedical scientists constitute a community of active users of information that are information creator at the same place information consumer. Libraries now popularly known as Knowledge Resource Centres (KRCs) are important information intermediary with its extended role of information reservoir, needs such studies to serve them better. The present paper is an outcome of such needs.

1.1 Objectives

- To know the status of print for searching information, reading and writing in biomedicine in India.
- To ascertain usefulness of some features available in electronic exclusively in biomedicine.
- To find out the present status of offline electronic biomedical resources.
- To find out the reading habits of the biomedical scientists in India to read entire documents on screen.
- To ascertain the various orientation programs needed to use electronic resources by the biomedical scientists in India.

1.2 Scope and Limitations

The study includes biomedical scientists from 51 institutes under Indian Council of Medical Research (ICMR), Council of Scientific & Industrial Research (CSIR), Department of Biotechnology (DBT) and Department of Science & Technology (DST) and some autonomous institutes under Ministry of Health & Family Welfare and Ministry of Science & Technology of the Union Government of India. The institutes and scientists are selected comprehensively for the concerned various biomedical subjects viz. biology, biochemistry, biotechnology, bioinformatics, medicine, immunology, serology, tissue culture, vector control, etc.

2. Review of Literature

It seems that application of data storage devices for communicating the information has less impact on growth of the electronic resources as compared to the Internet as **King** (2007) envisaged that only 17% of users were using electronic in 1977 at the time, when Internet was not supplemented with electronic data storage devices. At further stage (1977-2007), which included the period of Internet expansion, percentage of individual that preferred electronic was reached up to 75%. Studies in late 20th century and in present century disclosed that use of electronic is more frequent for serials especially journals than non-serials. Use of e-books were limited in early of 21st millennium due to availability of less e-books and digital copyright management (**Snowhill,** 2001; **Roesnita & Zainab,** 2005; **Safley**, 2006), where journals and databases were moving towards electronic format at steep rates in university libraries (**Ming-der Wu & Shin-Chuan Chen,** 2011; **Nikkar & Mooghali**, 2010) and other places. Print only journals were being obsolete after subscription of ScienceDirect online database in Duke University Chemistry Library (**Vaughan,** 2003).

Use of e-books also increased gradually (**Velde & Ernest,** 2009; **Rowland, *et al*.,** 2008; **Hannigan;** 2007; **Folb, *et al*.,** 2011). Some studies show that students having experience of e-books still preferred print textbooks (**Woody, *et al*.,** 2010; **Walton,** 2007; **Ebrary**, 2008; **Hannigan**, 2007; **Rowland *et al*.,** 2008). E-books were used more frequently by medical students than the faculty members (**Folb, *et al*.,** 2011). Students in technology and medical sciences found using more electronic books than students in history and languages (**Slater,** 2009; **Ming-der Wu & Shin-Chuan Chen,** 2011). It is interesting to note that electronic resources sometimes also support use of print. Penetration of e-books increased sales of print books by a publisher, where it had a strong market of e-books (**Velde & Ernest,** 2009). **O'Hara & Sallen** (1997) found reading was preferred in print in last decade of 20th century; but for writing, electronic was being used more extensively. **Qunking** (2004) had found the

same for reading that people take prints for reading after searching in electronic. Reading on screen was found cursory in nature by (**Qunking**, 2004; **Hannigan**, 2007; **Nicholas, Huntington & Jamali,** 2008).

Users liked the convenience of electronic resources because of their availability online without time and space limitations. Ease of use, easy availability, search possibilities in databases, ability to save and print the information - are the main reasons to use the electronic as revealed by (**Rogers**, 2001; **Monopoli, *et al*.,** 2002; **Roesnita & Zainab,** 2005). 'Access to journals from home' was found noticeable advantage of e-journals by **Tenner & Yang** (1999). Lack of knowledge about different electronic resources, less reliability, and information overload are some issues creating problems to the users to access electronic resources some times (**Chauhan, *et al*.,** 2012; **Roesnita & Zainab,** 2005). **Sami & Iffat** (2010) stated that perceived usefulness (PU) and perceived ease-of-use (PEOU) has a direct effect on its users, which in turn has a direct effect on the attitude towards computer use and intention to use. **Arif & Ameen** (2011) determines that the perceived usefulness of the information resources is much influential to the users as compared to perceived ease to use them.

Computer literacy affects the use of electronic resources in libraries irrespective to subject backgrounds (**Emwanta & Kenneth,** 2013). Studies confirm training are required to maximise the use of libraries by (**Seena & Pillai**, 2014; **Mestri,** 2013; **Talab & Tajafari,** 2012; **Parmeshwar & Patil,** 2009; **Hussain,** 2007; **Pujar & Sangam,** 2007; **Nikam & Prabodhini,** 2007; **Jowker & Dehghani,** 2006; **Biradar & Sampath Kumar,** 2005). Irrespective to these findings, students in physical sciences in Oklahoma University do not need training having a high degree of information literacy (**Brown**, 1999). Internet was found most popular information sources at starting of millennium as well as today (**Hewiston,** 2002; **Vicente, *et al*.**, 2004; **Umesha & Chandrashekhara,** 2013). Search engines play a major role in information retrieval. **De Groote, *et al*.** (2014) found that Google was used more frequently than the MEDLINE database in the colleges of medicine, nursing, pharmacy, dentistry, public health and applied health sciences in United States. Users attract towards search engines due to huge results presented for each search, not due to simplicity in search (**Umesha & Chandrashekhara,** 2013).

3. Research Methodology

An online survey was organised and carried out to know about experiences as well as views of biomedical scientists in India in respect to use of electronic and print. The survey was proposed at 95% confidence level and ±5% confidence interval. An online questionnaire was structured to fulfil the needs of the study. Total 279 questionnaires were requisite according to Morgan Formulae for the study from the total population of 1013 respondents, where 313 valid questionnaires are received crossing the proposed limits of numbers of received questionnaire. However, number of total questionnaires received is somewhat larger than the number of valid questionnaires received. SurveyMonkey online software was used for questionnaire distribution and collection as well as creating master sheet. The results were compared on the basis of designation levels of the scientists into three groups. Total 702 questionnaires were delivered to biomedical scientists only against total expected 1013 population of Indian biomedical scientists due to various obstructions. Some of such obstructions included unavailability of email IDs on the website of institutes, no space in inbox of email IDs, transfer or retirement of scientists from the institutes, filter settings within the mail inboxes and settings in the institutes email services.

4. Data Analysis and Results

The result based on the factors/variables viz. Demographic Structure of the Respondents, Opinion if E-Resources Minimize Use of Print Resources, Preferred Electronic Format for Searching, Preferred Format for Accessing Information, Reading and Writing, Significant Features of Electronic Format of Information, Frequently Used Resources among Offline and Online, Need of Training to Users to Access E-Resources, Opinion if all the Needed Information is Found on Internet, Reading Proportion on Screen, analysis is carried out after collection of data and calculations discloses a number of results, which clears about status of electronic and print, and unique features of electronic, need of training for accessing electronic resources, etc. The details are given in the table - 1 to table - 9.

Demographic Structure of the Respondents

It has been observed during the review of literature that there is correlation between demographic factors and access of information. The details of various demographic factors are given in (Table -1).

Table - 1: Demographic Structure of the Respondents

Age (in Years)	**Number**	**Gender**	**Number**	**Designation Levels**	**Number**
21-30	4 (1.3%)	Female	93 (29.7%)	Scientist – B/C	101 (32.3%)
31-40	110 (35.1%)	Male	220 (70.3%)	Scientist – D/E/F	154 (49.2%)
41-50	100 (31.9%)	**Total**	**313**	Scientist – G/H	58 (18.5%)
51-60	86 (27.5%)			**Total**	**313**
61 and above	11 (3.5%)				
Not specified	2 (0.6%)				
Total	**313**				

Table - 1 reveals that number of respondents in lowest and highest age groups (21-30 Years and '61 and above' respectively) is minimal. 4.8% of respondents only lie in these two age groups. Largest number (35.1%) of respondents is in the age group 31-40 Years followed by age groups 41-50 Years (31.9%) and 51-60 Years (27.5%) respectively. About two thirds (70.3%) of respondents are males and the rest are females. Almost half (49.2%) of respondents are at middle level (Scientist – D/E/F) of designations followed by Scientist – B/C (32.3%) and Scientist – G/H (18.5%). The study also reveals that there is direct co-relationship between demographic parameters and access/use of different biomedical resources in India.

Preferred Electronic Format for Searching, Reading and Writing

Generally uses of the electronic format of information vary on various factors including subject differences and demographic differences of users, time, purpose, etc. In a question, respondents are asked preferred format for searching information, reading and writing by them. Reading and writing are interrelated and interdependent retrospective processes via accessing/searching information/data. Writing is essential for reading, which needs several editing for finalizations. Searching/accessing is somewhat different than reading and writing

in the sense searching means sorting information for the purpose of reading. Table - 2 presents the frequency of respondents choosing electronic/print for reading, writing and searching.

Table - 2: Preferred Electronic Format for Searching, Reading and Writing

Options	Electronic	Print	Total
Searching	285 (97.9%)	6 (2.1%)	291
Reading	160 (55.2%)	130 (44.8%)	290
Writing	232 (81.1%)	54 (18.9%)	286

Table - 2 reveals that majority (97.9%) of respondents search the information in electronic format. Writing is also favourable in electronic format and more than four fifths (81.1%) of respondents write on screen i.e. in electronic format. The status of print is better in the case of reading; however it does not exceed the electronic format (55.2%) of information. In a similar study (**O'Hara & Sallen,** 1997), at initial time of Internet, print was preferred for reading and electronic was used extensively for writing. The result of this study is different in the case of reading, where electronic has been found preferred by more than half (55.2%) of biomedical scientists in this study. The difference between percentage of responses for print (44.8%) and electronic (55.2%) is very low in the findings of this study, but exceeding of electronic in case of reading also – is remarkable. Further studies are suggested to clear the picture to generalize the result for different types of library and information users.

Opinion if E-Resources Minimize Use of Print Resources

The respondents were asked about the use of electronic resources in a question, whether it supports the use of print resources or it minimises the same. The question is stirred by some studies, where it was found that sell of prints are stimulated where markets of electronic resources were strong (**Velde & Ernest**, 2009). It had to test if electronic always stimulated use of prints. The results are totally opposite to the anticipations in the present study as shown in table - 3.

Table - 3: Opinion if E-Resources Minimize use of Print

Options	Yes - Minimizes	No – Maximizes	No Effect	Can't Say	Total
Percentage	250 (83.6%)	26 (8.7%)	17 (5.7%)	6 (2.0%)	299

Majority (83.6%) of the respondents in this study expressed that e-resources have minimised the use of print, whereas 8.7% of them only opined that electronic enhances/maximizes the use of print. Only 5.7% of respondents observed that there is no effect of electronic on the use of print. It can be concluded that electronic resources have minimised use of print by biomedical scientists in India. Possible reasons may include interest of such users in serial latest publications, which are often preferred in electronic. It is also possible that electronic resource generates market of prints only, where print has no market previously. However, it penetrates into the market of print in general.

Preferred Format for Accessing Information

In previous question, respondents cleared that use of print has been minimised at present digital age. Furthermore, there is a question arises if prints are fabricated with electronic in case of information access and reading. The present question was related to know the same in

case of information access. There are five options to this question, which includes only electronic/print, almost electronic/print and composition of both formats. This question is set to also test the theory of paperless or less paper information society from knowing the view from the users itself. The related data is given in table - 4.

Table - 4: Preferred Format for Accessing Information

Options	Prints Only	Almost Prints	Prints as well as Electronic	Almost Electronic	Electronic Only	Total
Percentage	2 (0.7%)	6 (2.1%)	145 (50.0%)	97 (33.4%)	40 (13.8%)	290

Table - 4 stated that half (50.0%) of respondents prefer combination of both the print and electronic format, whereas 13.8% respondents selected 'electronic only'. Almost electronic was selected by 33.4% respondents; 'print only' by 0.7% respondents and 'almost print' had very less (2.1%) percentage of respondents. Almost/only electronic are used by about half of respondents, where largest number of them prefer combination of the both formats. Hence, it can be summarised that print will be continued in use, but electronic will be in driving position in case of biomedical scientists in India.

Reading Proportions on Screen

There is a common perception that electronic resources suits less to reading and this possibility creates a question whether people read full-text or read partially a document on screen. Some people read the documents only after taking prints that reduces the frequency of reading entire the document on screen. However the results of this question did not support that screen readings are meant only for ready references and people do not read entire the document which was asked in this question.

Table - 5: Reading Proportion on Screen

Options	Full Text	Reference Only	Total
Percentage	184 (69.2%)	82 (30.8%)	266 (100%)

It is clear from the table - 5 that findings are not similar to assumptions since 69.2% of respondents stated that they read entire the document on screen. The results are different than the findings by **Hannigan** (2007), who envisaged that only 7.1 percent of people read entire the document on screen in University of Denver. Study by **Nicholas, Huntigton & Jamali** (2008) too is different as they have found that very few people read the entire document online and at average they spent 20 minutes only reading from the screen. It may be due to differences in subjects and streams of the respondents in two studies and therefore detailed study only comprising of different types of users can clear the picture.

Significant Features of Electronic Format of Information

The respondents are asked if they consider electronic format as being improved with some features. This question had multiple sub-questions and respondents had to select one option from 'Yes', 'May be' and 'No' for each sub-question. Respondents were suggested to tick 'Yes' if their experience were enough good in electronic in context of that particular feature in compare to print. 'No' and 'May be' options were designed for negative and no clear opinion respectively. For better analysis, the three options i.e. 'Yes', 'May Be' and 'No' were marked with scores one (1), half (0.5) and zero (0) respectively. Bar graphs were sketched after the final scores for each feature. Figures - 1, indicates that findings, Easy to Search

(scoring 0.98), time save (scoring 0.96), platform of vast information (scoring 0.95), user friendly (scoring 0.94) and less cost (scoring 0.89) are found very positive for the electronic resources. Easy writing (scoring 0.80), authenticity (scoring 0.69) and comfortable reading (scoring 0.55) are also found positive. This clears that electronic resources have no negative experiences in any of the cases. Similar findings are also revealed i.e. Ease to use, easily availability and ability to save are considered most important reason to use e-resources by **Monopoli, Nicholas, Georgian & Korfiat** (2002).

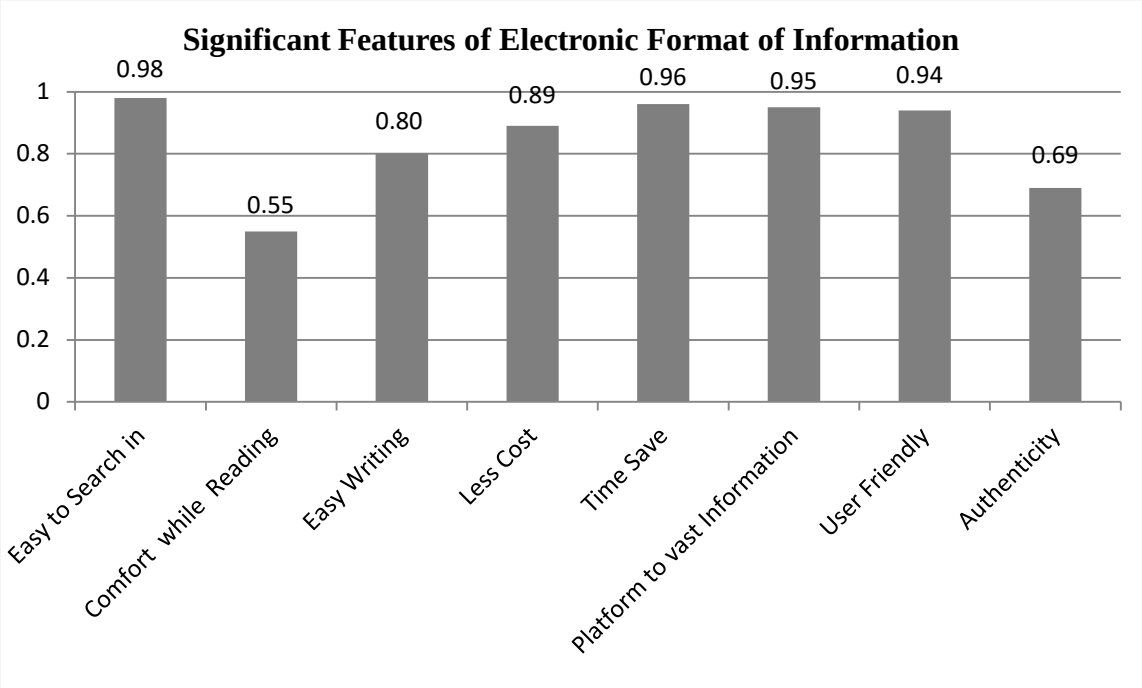

Figure - 1: Significant Features of Electronic Format of Information

Frequently Used Resources among Offline and Online

Further, respondents were asked to reveal about frequently used resources from the options of offline and online resources. The opinion of respondent's is given in table - 6.

Table - 6: Frequently Used Resources among Offline and Online

Options	Offline Resources	Online Resources	Total
Percentage	10 (3.5%)	273 (96.5%)	283

Table - 6, summarises that offline resources are found preferred by negligible proportion (3.5%) of respondents, whereas online resources are found used frequently by almost all (96.5%) of respondents than offline resources. However, this result doesn't entitle that reading also goes on online. It is possible that respondents read offline at a later time than the time of searching. This type of answers is queried in a further question of this study.

Need of Training to Users to Access E-Resources

Electronic resources are newer than print resources and need extra information access literacy to use it. Hence, respondents were asked if they need any type of training to access electronic resources in a question. Table – 7 contains the related data.

Table - 7: Need of Training to Users to Access E-Resources

Options	Yes – Needed	Partially Needed	No Need	Can't Say	Total
Percentage	37 (12.5%)	89 (30.1%)	162 (54.7%)	8 (2.7%)	296

More than half (54.7%) of respondents said that they do not need any type training, whereas almost one third (30.1%) of them expressed that they need it partially. Only one eighth (12.5%) of the respondents expressed that they need training to access e-resources. The finding is somewhat different from the studies carried out in other subjects or subjects in general. **Sharma** (2009), **Moorthy & Karisidappa** (2001), **Nikam & Prabodhini** (2007), **Parmeshwar & Patil** (2009), **Talab & Tajafari** (2012) and **Pujar & Sangam** (2007) had stressed on need of training to use e-resources. It is possible that awareness of scientists towards new technologies and requirement of current information should have turned them into more cyber literate.

Comparative Analysis Based on Designation Levels

Comparisons are made at the base of designation levels for all the questions in the questionnaire, which has been described in this part of the study (Table - 8).

Table - 8: Comparative Analysis Based on Designation Levels

S. N.	Question	D. f.	χ^2 Value	Critical Value	Significance of Relationship
1	**Preferred format for Searching, Reading and Writing**				
	Searching	2	3.862	5.991	No
	Reading		0.57		No
	Writing		**6.672**		**Yes**
2	Opinion if E-Resources minimize use of Print Resources	6	1.923	12.592	No
3	Preferred Format for Accessing	8	3.401	15.507	No
4	**Significant Features of Electronic Format of Information**				
	Easily Available	4	1.335	9.488	No
	Easy to search in		4.239		No
	Comfort while Reading		1.551		No
	Easy Writing		2.527		No
	Less Cost		4.157		No
	Time Save		5.456		No
	Platform to vast information		0.592		No
	User Friendly		2.211		No
	Authenticity		3.862		No
5	Frequently Used Resources among Offline and Online	2	1.683	5.991	No
6	Need of Training to Users to Access E-Resources	6	4.28	12.592	No
7	Opinion if All the Needed Information is found on Internet	4	3.035	9.488	No
8	Reading Proportion on Screen	2	**14.292**	5.991	**Yes**

For the sub-question 'Writing', Scientist – G/H has more percentage to the option 'print' as compared to other two groups. 17.6% and 15.0% of respondents in groups Scientist – B/C and Scientist – D/E/F prefer to write in print, but 30.9% of Scientist – G/H does the same which is adequately more than previous two groups. No significant difference is visible except two cases i.e. one question and one sub-question. However, 81.3% of respondents at designation level Scientist – G/H are found reading full-text on reading also which is 72.2% and 52.2% for Scientist – D/E/F and Scientist – B/C respectively.

Opinion if All the Needed Information is Available on Internet

On the Internet various resources are available in different form and formats, which are directly related to access. Respondent's opinion about the same i.e. Yes, No, can't say is given in table - 9.

Table - 9: Opinion if all the Needed Information Available on Internet

Options	Yes	No	Can't Say	Total
Percentage	173 (61.8%)	67 (23.9%)	40 (14.3%)	280 (100%)

Upon asking about the satisfaction with availability of information on the Internet, almost two thirds (61.8%) of respondents communicated that they found all the information needed on the Internet. 14.3% replied 'can't say'. However, percentage of respondents replying 'No' was less but significant (23.9%). It can be conclude that all the needed information is not available on the internet.

5. Discussions

The present study has some similarities and some differences from previous studies for general and specific users of the libraries in many respects. **O'Hara & Sallen** (1997) had found that reading was preferred in print at the start of the Internet where in this study it was found preferred in electronic irrespective to the fact that status of print for reading is found nearly equal. For writing and searching electronic were found more used in both the studies. Electronic were found elaborated with some features like to previous studies by **Monopoli** ***et al.*** (2002). But need of training was less felt by biomedical scientists in India than other users in previous studies (**Sharma,** 2009; **Moorthy & Karisidappa,** 2001; **Nikam & Prabodhini,** 2007; **Parmeshwar & Patil,** 2009; **Talab & Tajafari,** 2012; **Pujar & Sangam,** 2007). The results are different in case of proportion of reading at screen from options i.e. reading entire or reading partially (for ready reference) on screen. 69.2 percent of biomedical scientists in India were found reading entire the document on screen, where previous study by **Hannigan** (2007) differ as he had envisaged that only 7.1 percent of people read entire the document on screen in University of Denver. Study by **Nicholas, Huntigton & Jamali** (2008) too has different results as they had found that very few people read the entire document online and at average they spent 20 minutes only reading from the screen. The differences can arise due to differences in subject streams and type of resources being used during access to information.

6. Suggestions

Above discussion clears that biomedical scientists in India are highly oriented to electronic resources. Electronic format is used not only for information search and writing, but also preferred for reading. 96.5% of them access generally online resources at the place of offline

electronic resources. Electronic resources are estimated to be incapacitated with several features and more reliable than prints. This all tends us to make suggestions to such biomedical libraries to accomplish for the followings:

- It is suggested that number of online resources should be maximised by direct subscriptions and other resource sharing methods to procure and availing it to scientists.
- The changing needs of users and availability of electronic resources mainly online remote access it is essential that LISc professionals deployed for the above purposes should have good skill and knowledge to cyber and Information Technology; therefore it is suggested that syllabi of LISc should be modified insisting on the use of such resources and selection of qualified staff should be made in biomedical libraries.
- Since biomedical information so as to information resource is vital to human health, hygiene and life, it is also suggested that Government of India should take initiative to establish a ***National Digital Biomedical Information System (NDBIS)*** analogue to National Medical Library and easily available and accessible to the biomedical information users.
- The development of library resources should be taken with utmost care to satisfy the changing needs of the users.
- It is also suggested that there should be user awareness programmes from time to time to educate them about the new developments in access and use of new resource, technology and techniques.

7. Conclusions

Based on the above discussions it is clear that almost all biomedical scientists in India are moving towards use of electronic at steep rate than common users of information. They require less training to make use of e-format of information. They have no important obstructions to use electronic and find suitable it in terms of easy in search, time save, platform to vast information, user friendly, less cost, easy writing, authenticity, and easy in reading. Offline resources are rarely used by them and they get all the required information on Internet. For searching and writing, electronic is preferred; print competes with electronic in case of reading the documents. Scientists at higher designation levels are found more reading entire the documents on screen.

References and Bibliography:

1. Arif, M., & Ameen, K. (2011). Library electronic resources' use: Students attitude. *Pakistan Library Science & Information Journal, 42*(2), 3-14.
2. Biradar, B. S., & Kumar, S. (2005). Use of Internet by physicists in University of Karnataka State: A comparative study. *ILA Bulletin, 41*(4), 25-40.
3. Brown, C. M. (1999). Information seeking behaviour of scientists in the electronic age. *Journal of American Society for Information Science, 50*, 929-943.
4. Chauhan, S., Chopra, H. S., & Kumar, P. (2012). Information seeking behaviour of scholars in electronic environment: Study of Panjab University. *Indian Journal of Information Science and applications, 2*(1), 15-18.
5. De Groote, S. L., Shultz, M., & Blecic, D. D. (2014). Information-seeking behaviour and the use of online resources: A snapshot of current health sciences faculty. *Journal of Medical Library Association, 102*(3), 169-176.
6. Ebrary. (2007). *Global Student E-Book Survey*. Retrieved April 30, 2012, from http://www.ebrary.com/corp/collateral/en/Survey/ebrary_faculty_survey_2007.pdf

7. Ebrary. (2008). *Global Student E-Book Survey*. Retrieved September 26, 2013, from http://www.ebrary.com/corp/newspdf/ebrary_student_survey.pdf
8. Emwanta, M.-G., & Nwalo, K. I. (2013). Influence of computer literacy and subject background on electronic resources by undergraduate students in universities in South-Western Nigeria. *International Journal of Library and Information Science, 5*(2), 29-42.
9. Folb, B. L., Wessel, C. B., & Czechowski, L. J. (2011, July). Clinical and academic use of the electronic and print books: The health science library system e-book study at the University of Pittusburgh. *Journal of Medical Library Association, 99*(3), 218-228.
10. Hannigan, G. G. (2007). Users' Awareness of Electronic Book is Limited. *Evidence Based Library & Informtion Practice, 2*(2), 104-106.
11. Hewiston, A. (2002). Use and awareness of electronic information services by academic staffs at Leeds Metropolitan University: A qualitative study. *Journal of Librarianship and Information Science, 34*(1), 43-52.
12. Hussain, N. S. (2014). Use of electronic resources at Jamia Millia Islamia (a central university): A case study. *Paripex Indian Journal of Research, 3*(7), 1-4.
13. Jowkar, A., & Dehghani, L. (2006). A Survey of the Rate of Graduate Students' Use of Electroni Journals in Comparison with Printed Journals in the Faculties of Education and Psychology of Ferdoswsi, Isfahan, Shahid Charman, Shiraz and Tehran Universities. *Studies in Education and Psychology, 7*(1), 83-103.
14. King, D. W. (2007). Why are different sources of STM information used? *Emerging Trends in Scholarly Publishing.* Allen Press.
15. Mestri, M. (2013). Use of information sources in Guru Nanak College of Education, Bidar. *Indian Streams Research Journal, 2*(12), 10 pp.
16. Monopoli, M., Nicholas, D., Georgiou, P., & Korfiati, M. (2002). A user oriented evaluation of digital libraries: Case study of the electronic journals service of the library and information service of the University of Patras, Greece. *Aslib, 54*(2), 103-117.
17. Moorthy, A. L., & Karisidappa, C. R. (2001). Information infrastructure and use of electronic media in Indian libraries. *1st South Indian Library Conference on Role of University and College Librarians.* Hyderabad: Patti Sreramulu Telugu University.
18. Nicholas, D., Huntigton, P., Jamali, H. R., Rowlands, I., Dobrowoiski, T., & Tenopir, C. (2008). Viewing and reading behaviour in a virtual environment: The full text download and what can be read into it. *Aslib Proceedings, 60*(3), 185-198.
19. Nikam, K., & Prabodhini, B. (2007). Use of e-journals and databasesby the academic community of University of Mysore: a survey. *Annals of Library and Information Studies, 54*(1), 19-22.
20. Nikkar, M., & Mooghali, A. R. (2010). Investigating the electronic journals' status in comparison with printed journals among the faculty members of Payam-e.Noor University: A study. *Int. Journal of Information Science and Management, 8*(1), 83-105.
21. O'Hara, K., & Sellen, A. (1997). A comparison of reading paper and on-line document. *CHI 97* (pp. -). Atlanta GA: -.
22. Parameshawar, S., & Patil, D. B. (2009). Use of the Internet by faculty and research scholars at Gulberga University Library. *Library Philosophy and Practice*, 1-10. Retrieved May 11, 2014, from: http://digitalcommons.unl.edu/libphilprac/264?utm_source=digitalcommons.unl.edu%2Flibphilprac%2F264&utm_medium=PDF&utm_campaign=PDFCoverPages
23. Pujar, S. M., & Sangam, S. L. (2007). Information use by economists: A study. *Annals of Library and Information Studies, 54*(4), 190-194.
24. Qunqing, H. (2004). Reading outside the library: How the Internet has affected reading in China. *Information Development, 20*(3), 182-188.

25. Roesnita, I., & Zainab, A. N. (2005). The pattern of e-book use amongst undergraduates in Malayasia: A Case of to know is to use. *Malaysian Journal of Library and Information Science, 10*(2), 1-23.
26. Rogers, S. A. (2001). Electronic journal usage at Ohio State University. *College and Research Libraries, 62*(1), 25-34.
27. Rowland, I., Nicholas, D., Jamali, M. R., & Huntigton, P. (2007). What do faculty and students really think about e-books? *Aslib Proceedings: New Information Perspectives, 59*(6), 489-511.
28. Safley, E. (2006). Demand for e-books in academic library. *Journal of Library Administration, 4*(3 & 4), 445-457.
29. Seena, S. T., & Pillai, K. G. (2014). A study of ICT skills among library professionals in the Kerala University Library System. *annals of Library and Information Studies, 61*(2), 132-141.
30. Sharma, C. (2009). Use and impact of e-resources at Guru Gobind Singh Indraprastha University (India): A case study. *Electronic Journal of Academic and Special Librarianship, 10*(1).
31. Singh, Pankaj Kumar (2009). User Awareness and Use of Online Journals at Jammia Millia Islamia University Library: A Survey. *IASLIC Bulletin, 54*(4), 210-218.
32. Slater, R. (2009). E-books or print , big deals or local selections - what gets more use. *Library Collections Acquisitions & Technical Services, 33*(1), 31-41.
33. Talab, S. M., & Tajafari, M. (2012). Impact of Information and Communication Technology (ICT) on library staff training. *Annals of Library and Information Studies, 59*(1), 7-15.
34. Tenner, E., & Yang, Z. Y. (1999). End-user acceptance of electronic journals: A case study from a major academic research library. *Technical Services Quarterly, 17*, 1-14.
35. Umesha & Chandrashekhara, M. (2013). Information seeking and searching behaviour of dental science professionals in Karnataka. *DESIDOC Journal of Library and Information Technology, 33*(2), 83-86.
36. Vaughan, K. L. (2003). Changing use patterns of print journals in the digital age: Impact of electronic equivalents on print chemistry journal use. *Journal of the American Society for Information Science and Technology, 54*(12), 1149-1152.
37. Velde, W. V., & Ernest, O. (2009). The future of e-books - will print disappear: End-users' perspectives. *Library Hi-Tech, 27*(4), 570-583.
38. Vicente, A., Crawford, J., & Clink, S. (2004). Use and awareness of electronic information services by academic staffs at Glasgow Caledonian University. *Library Review, 53*(8), 401-407.
39. Walton, E. (2007). From the ACRL 13th National Conference: E-book use versus Users' perspectives. *College and Undergraduate Libraries, 14*(4), 19-35.
40. Woody, W. D., Daniel, D. B., & Baker, C. A. (2010). E-books or textbooks: Students prefer textbooks. *Computer Education, 55*(3), 945-948.
41. Wu, M.-d., & Chen, S.-C. (2011). graduate students usage of and attitude towards e-books: Experinces from Taiwan. *Program: Electronic Library and Information System, 45*(3), 294-307.

■■■