Indian Journal of Library and Information Science

Indexing information: The journal is indexed with google Scholar, Index Copernicus, Poland, EBSCO Publishing's Electronic Databases, USA, Library & Information Science Source, USA, National Science Library, New Delhi, ProQuest, UK, Genamics JournalSeek, Scientific Indexing Services, USA.

Corresponding address: **Red Flower Publication Pvt. Ltd,** 48/41-42, DSIDC, Pocket-II, Mayur Vihar Phase-I, Delhi - 110 091(India), Phone: 91-11-22754205, Fax: 91-11-22754205, E-mail: info@rfppl.co.in, Web:www.rfppl.co.in

Printed at: R.V. Printing Press, C-97, Okhla Industrial Area Phase-I, New Delhi - 110 020.

The Indian Journal of Library and Information Science (Print ISSN 0973-9548, Online ISSN 0973-9556, Registered with Registrar of Newspapers for India: DELENG/2007/22242) provides comprehensive international coverage of library & information science and technology. **IJLIS** is published 3 times a year by the **Red Flower Publication Pvt. Ltd.**

It presents peer-reviewed survey and original research articles on specific areas are: new information technology, education and training, human resource management, the changing role of the library, future developments, opportunities, bibliographic databases, cataloging issues, electronic publishing, acquisitions, collection development, administration, management, archives, preservation, and special collections, automation and cataloging. Its papers include letters to the editor, book reviews, calendar of events, conference reports, interviews, and much more.

Readership: Scholars, professionals, practitioners, faculty, students in the field of library and information science

Indexing information: The journal is indexed with google Scholar, Index Copernicus, Poland, EBSCO Publishing's Electronic Databases, USA, Library & Information Science Source, USA, National Science Library, New Delhi, ProQuest, USA, Genamics JournalSeek.

Subscription Information

India
Institutional (1 year) (Print+Online): INR 9000

Rest of the World
Insitutional (1 year) (Print+Online): USD643

Payment instructions
Online payment link:
http://rfppl.co.in/payment.php?mid=15

Cheque/DD:
Please send the US dollar check from outside India and INR check from India made. Payable to 'Red Flower Publication Private Limited'. Drawn on Delhi branch

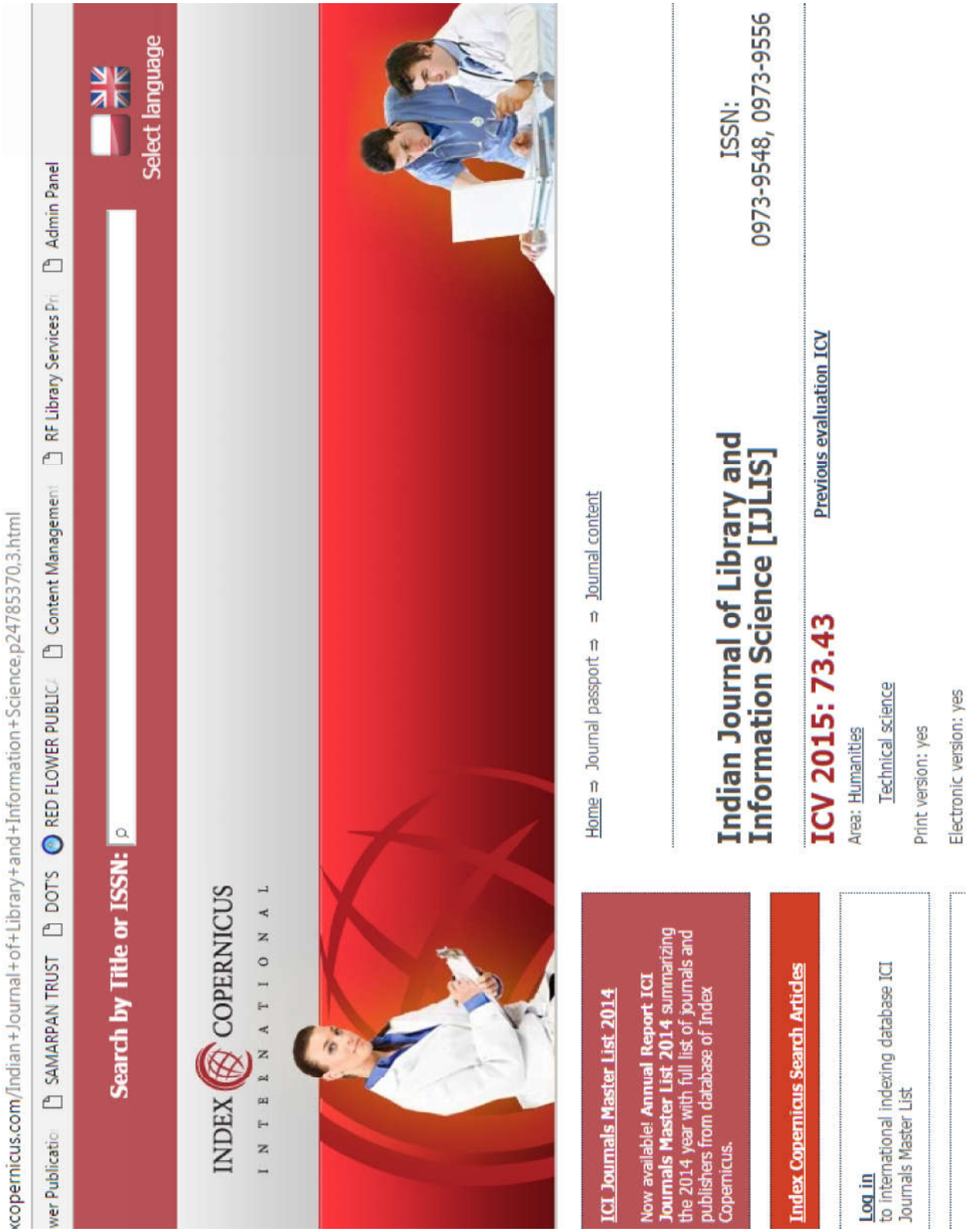
Wire transfer/NEFT/RTGS:
Complete Bank Account No. 604320110000467
Beneficiary Name: Red Flower Publication Pvt. Ltd.
Bank & Branch Name: Bank of India; Mayur Vihar
MICR Code: 110013045
Branch Code: 6043
IFSC Code: BKID0006043 (used for RTGS and NEFT transactions)
Swift Code: BKIDINBBDOS

Send all Orders to: Subscription and Marketing Manager, Red Flower Publication Pvt. Ltd., 48/41-42, DSIDC, Pocket-II, Mayur Vihar Phase-I, Delhi - 110 091(India), Phone: 91-11-45796900, 22754205, 22756995, E-mail: sales@rfppl.co.in, Website: www.rfppl.co.in

Indian Journal of Library and Information Science

January - April 2017
Volume 11 Number 1

Contents



Original Article

Indian Journal of Library and Information Science
Volume 11 Number 1, January - April 2017
DOI: http://dx.doi.org/10.21088/ijlis.0973.9548.11117.1

Citation Analysis of Annals of Library and Information Studies from 2003 to 2014

Anubhav Shah*, Sharad Kumar Sonkar, Shrutika Sinha*****

Abstract

Author concerns the citation analysis of the journal entitles "Annals of Library and Information studies" from the period 2003 to 2014. Citation analysis is a branch of Information science which contributed quantitative evaluation of publication patterns of all macro and micro communication along with their authorships by mathematical and statistical calculation. It can be applied to any branch of subject or subject area. Citation analysis is a process to establish the relationship between one works to other research works by mathematical and statistical calculations. The study covers the total numbers of citations per volume, authorship pattern of cited references, print vs web document cited references and type of cited references.

Keywords: Bibliometric; Citation Analysis; Information Science.

Introducation

Citation analysis is a valuable area of research which measuring the relation or impact of an author, an article or publication by counting the number of times that an article, author or publication has been cited by the other works (University, Nd). It is also one of the extensively used methods of bibliometics. Bibliometrics is a study of statistical and mathematical analysis of publications, has focused on quantitative analysis of citations and citations counts. It is very useful method for understanding the subject relationships, author effectiveness, publication trends etc (Chikate, 2008). It is a best way of written scholarly communication and it can be applied to any subject area. This paper mainly concern with citation analysis of Annals of Library and information studies from 2003 to 2014 which mainly concern with Year wise Distribution of Citations, Authorship Pattern of Cited References, Print Vs Web Document Cited References and last type of Cited References.

Annals of Library and Information studies are one of the Research Journal of NISCAIR Online Periodicals Repository abbreviated as NOPR. Where you can access full text article research journals published by CSIR-NISCAIR. All 18 research journals Viz. ALIS, BVAAP, IJBB, IJBT, IJCA, IJCB, IJCT, IJEB, IJEMS, IJFTR, IJMS, IJNPR, IJPAP, IJRSP, IJTK, JIPR, JSIR & JST provide full text facility to access. NOPR also published three popular science Magazines viz. Science Reporter (SR), Vigyan Pragati (VP) & Science Ki Duniya (SKD) and a Natural Products Repository (NPARR) [1]. Annals of Library and Information Studies is an quarterly journal in the field of Library and Information Science which published Original papers, Survey Reports, Reviews, Short Communications, and Letter pertaining to Library Science. It was published since 1954 to till date. The ISSN number of Annals of Library and Information studies is 0975-2404 (Online) and 0975-5423 for print [2].

Objective

- To Study the Year wise Distribution of Citations.
- To Examine the Authorship Pattern of Cited References.

Author's Affiliation: *Ph.D. Scholar **Assistant Professor/ Supervisor ***MLIS, Department of Library and Information Science, Babasaheb Bhimrao Ambedkar University, Lucknow-226025.

Reprint's Request: Anubhav Shah, Ph.D. Scholar, Department of Library and Information Science, Babasaheb Bhimrao Ambedkar University, Lucknow-226025.
E-mail: anubhav.shah.lucknow@gmail.com

Received on 23.12.2016, **Accepted on** 09.01.2017

- To Find out the Print Vs Web Document Cited References
- To Explore the Type of Cited References.

Scope of the Study

The scope of the study is not only limited to the scholars but also for the administrators and policy makers of Annals of Library and Information studies. The different aspects of Citation analysis have been taken. With the help of this paper the policy makers can evaluate the performance of the journal and take a future decision for betterment of the 'Annals of Library and Information studies'.

Limitation of the Study

One of the limitations of this paper is that authors mainly concern citation analysis of journal "Annals of Library and Information studies" from 2003 to 2014 which is limited to the concern subject of Library an Information Science only.

Methodology

A total number of 48 issues (12 volumes) of the journal Annals of Library and Information studies from 2003 to 2014 have been taken for the study. The details regarding to each article published in journal such as total numbers of papers, volume /year wise distribution of citations, authorship pattern of cited article and print vs. web document cited articles etc were recorded and analyzed by the author. Table are filled by the tally mark system of counting one by one article and theirs different aspect. The data have been calculated and presented in a form of tables and diagrams.

Data Interpitation

Year-Wise Distribution of Citations

Table 1 gives the year-wise distributions of citations of twelve volumes of the journal. Out the 6316 cited references, the highest number of citations is 976 (15.45%) in the year 2010 and lowest number of citations is 151 (2.39%) in the year 2004.

Table 1:

Year	Volume	Total Cited Article	Total Citation	%
2003	50	19	320	5.07
2004	51	21	151	2.39
2005	52	23	275	4.35
2006	53	26	361	5.72
2007	54	28	352	5.57
2008	55	35	523	8.28
2009	56	34	608	9.63
2010	57	43	976	15.45
2011	58	36	654	10.35
2012	59	27	465	7.36
2013	60	37	828	13.11
2014	61	35	803	12.71
TOTAL	*12*	*364*	*6316*	*100.00*

Table 2:

No. of Author	No. of Contribution	%
Single	3202	50.70
Double	1609	25.47
Three	577	9.14
Mutiple	267	4.23
Corporate (others)	661	10.47
TOTAL	6316	100.00

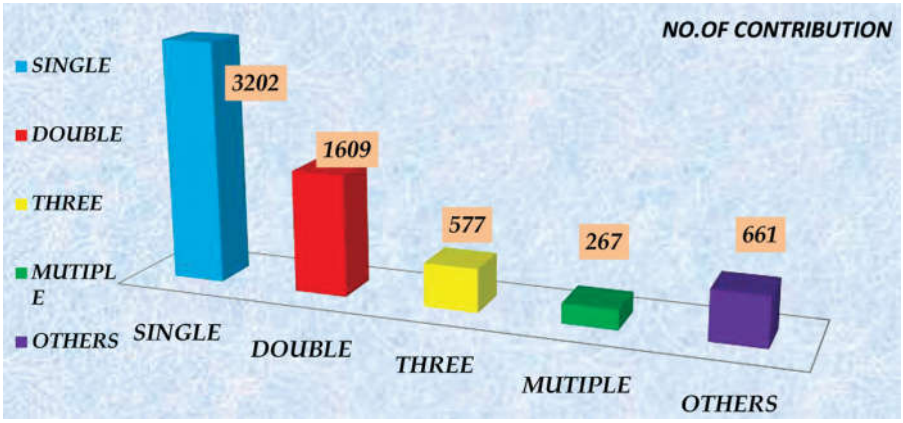
Authorship Pattern of Cited Refrances

Table 2 gives the details about the authorship pattern in cited articles. Out the whole 6316 cited references the highest number (50.70 %) cited by single authored. This reveals that single authors cited more than those of double and triple authors. 3203 (50.70%) out of whole 6316 references cited by single authors. 1609 (25.47%) out of 6316 references are cited by double authors. 577 (9.14%) out of 6316 references are cited by triple authors. 267 (4.23%) out of 6316 references are cited by multiple authors.

Graph of Authorship Pattern of Citations

The graph 1 showes that 6316 references are cited in which the majority of the references are cited have by single author and lowest cited by multiple authors.

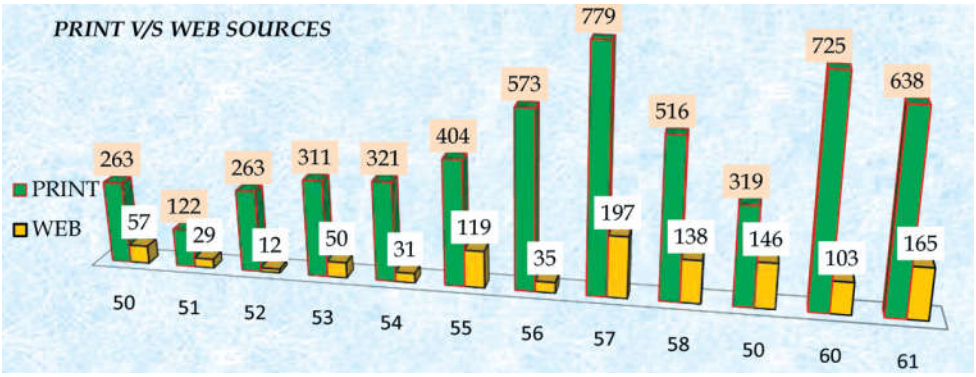
Graph 1:



Distribution of Cited References, Print/Web Document

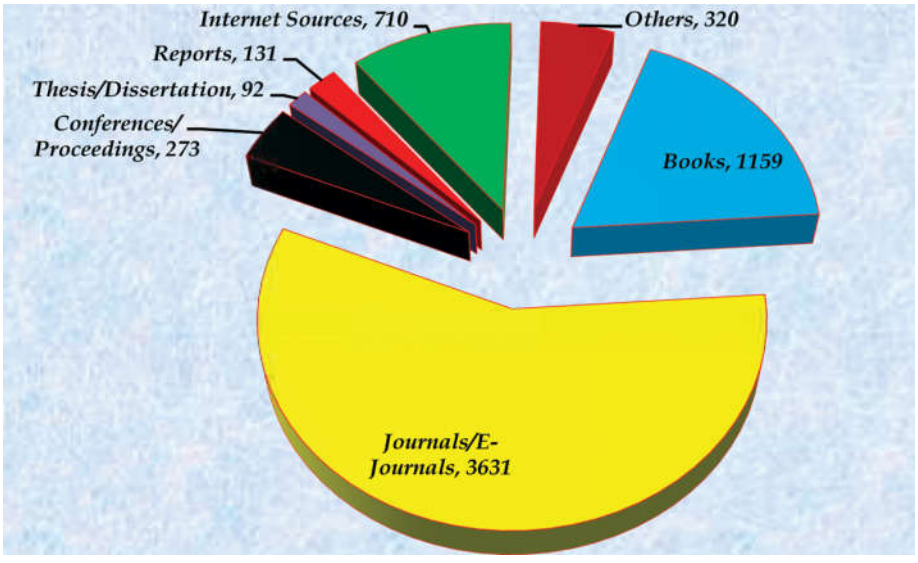
The Graph 2 showes that out of 6316 total references cited 5234 are print sources and 1082 are web sources in total of 12 journal in which highest contribution in print sources is 779 and lowest is 122 and in web sources highest contribution is 197 and lowest contribution is 12.

Graph 2:



Publication Type of Cited References

The graph 3 shows that out of 6316 citations, majority of citations are from are the journal/e-journal citations 3631, than followed by 1159 books citation where as 710 citations was cited by internet sources.



Findings and Conclusion

Citation Analysis of Annals of Library and Information Studies from 2003 to 2014 was examined by the authors. It was discovered that during the period of 2003 to 14 364 articles were published by the annals of library and information studies journal. Total 6316 citations were recovered by the authors.

Out of 6316 citations majority of the cited articles (50.70%) were published by the single authors than followed by double authors.

It was also discovered that majority out of 6316 cited references 5234 cited references were recovered from Print sources than followed by web resources.

In order to know the publications type of cited references the result shows that majority of cited references were received from Journals /E-Journals were 3631 that followed by Books 1159.

Referances

1. Annals (N.d). Annals of Library and Information studies, Home page. Retrieved 05/ Dec/2016 from http://www.niscair.res.in/sciencecommunication/researchjournals/rejour/annals/annals0.asp.
2. Chikate, V. R (2008). Citation Analysis of Theses in Library and Information Science Submitted to University of Pune: A Pilot Study, Library Philosophy and Practices, Retrieved 09/ Dec/2016 From http://www.webpages.uidaho.edu/~mbolin/chikate-patil.htm.
3. Jan, Rosy. (2008). Citation Analysis of Library Trends, Webology, V6 (01). Retrieved 09/ Dec/2016 From http://www.webology.org/2009/v6n1/a67.html.
4. OSU.EDU (N.d). Citation Analysis, Ohio Agricultural Research and Development Center Library. Retrieved 09/Dec/2016 From http://osu. campusguides. com/oardc/citation_analysis/whatis.
5. University of New York. (N.d). Citation Analysis and Bibliometrics, University of New York Retrieved 09/Dec/2016 From https://www.york.ac.uk/library/info-for/researchers/citation/.

Original Article

Indian Journal of Library and Information Science
Volume 11 Number 1, January - April 2017
DOI: http://dx.doi.org/10.21088/ijlis.0973.9548.11117.2

Libraries in ICT Environment: A Study from the Education Students' Perspectives

Anil Kumar Dhiman*, Surendra Kumar**

Abstract

ICT is changing each and every sphere of our lives and libraries are not untouchable of this technology. Though university libraries are doing well in adopting ICT and providing ICT based services to their users but college libraries have also started to adopt the same technology, particularly the self-financed colleges. This paper is an attempt to observe the student's view on library resources, ICT facilities and the use of library by taking data from the library of Babu kamta Prasad Jain Mahavidyalya, Baraut. This study will be useful to increase all types of collection and to execute new and innovative services to meet out the student's requirements more efficiently.

Keywords: ICT; College Libraries; Library Satisfaction.

Introduction

Information Communication Technology (ICT) that is used to denote a combination of information and communication (Dhiman, 2003; Dhiman and Rani, 2012) is an important buzzword of today's world. ICTs are the major factors causing changes in environment of library and information centres. It has facilitated the speedy library operations, services, and access to and delivery of information. Therefore, it is completely clear that the new information technology brings new information seeking patterns among the users.

Details of the College

Babu Kamta Prasad Jain Mahavidyalaya is a Jain minority institution that was established in the year 2004 by Shri Balraj Singh Jain to fulfill the dream of his father late Shri Babu Kamta Prasad Jain with an enviable reputation for imparting teacher education with professional integrity and values of righteousness and enlightenment.

The institution endeavors to provide modern facilities for curricular and co-curricular programs for future teachers. It runs the education related courses which are detailed out below.

Course Name	Seats
B.T.C. (started from 2013-14 session)	50
B.Ed. (started from 2015-17 session)	200
M.Ed (started from 2133-14 session)	50
M.Phil (Education) (started from session 2012-13)	10

The library of the mahavidyalaya has got all what makes it a place of earning knowledge. The library is provided, with large number of books (over 10,000) on different subjects covering recommended text books and reference books, and a number of journals out of which are 16 subscribed ones for the students of B.T.C., B. Ed., M.Ed. In short, it has more than what a student expects. Right from issuing and retuning of books and materials of comprehensive search of books, the library is equipped with all facilities. There

Author's Affiliation: *Information Scientist, Gurukul Kangri University, Haridwar – 249 404 (Uttarakhand). **Research Scholar (LIS), Mewar University, Chittorgarh (Rajasthan).

Reprint's Request: Anil Kumar Dhiman, Information Scientist, Gurukul Kangri University, Haridwar – 249 404 Uttarakhand.
E-mail: akvishvakarma@rediffmail.com

Received on 03.01.2017, **Accepted on** 23.01.2017

is also a reference section in the library for consulting and reading purpose which contains Dictionaries, Encyclopedias, Syllabus related Research papers and many other books for easy access. The students use library facilities regularly as a part of their curricular programmes. The library remains open till the late hours for the benefit of the students.

In addition to the other services provided by the library the institution has introduced the scheme of 'Book Bank' in the college. This is being done to provide academic support to those students who are from poor economic backgrounds. Under this scheme, every student of low economic status get 2 books for complete session which he/she has to return before the examination.

The library is made fully automated with the help of GURUKUL LIBRARY SOFTWARE. Open access system is followed in the college library. CCTV cameras are fitted in each and every corner of the library which are used to check the bad habits of readers such as, the tearing of the books, marking the books with pens and also the theft of the books.

Besides, two computers have been made free for the students who want to check OPAC and do self work. Airtel internet connection with wi-fi facility is also installed in the library for internet access.

A Brief Review of Literature

Sen (2005) studied the automation status of a college library. She opines that entire library automation programme requires judicious decision making at various stages. Such decision may be related to 'do it' or 'buy it' services, selection of hardware and software platform, application software ant the types of services to be rendered etc.

Sampath Kumar and Biradar (2010) have surveyed the use of ICT in college libraries in Karnataka and found that college libraries have not reached the very level in using ICT for automation due to lack of budget, lack of manpower, lack of skilled staff and lack of training. They also pointed out the need of extensive and appropriate training to library professionals to make use of ICT tools and techniques.

Dhanavandan, Esmail and Nagarajan (2011) have analyzed the ICT infrastructure facilities with reference to self-financing engineering college libraries in Tamil Nadu. The study traces out the status of electronic resources in terms of topology of library network, electronic access points, electronic database, e-journals, and electronic resources in the libraries. The study reveals that most of the engineering colleges in Tamil Nadu use the library application software in their libraries. They conclude that the establishment of ICT infrastructure facilities in the self financing college libraries in Tamil Nadu can improve the efficiency of information support, the information retrieval and quality of education also.

Paulson (2013) has studied the role of ICT facilities and information services in arts and science college libraries. He is of the opinion that ICT facility is found in all arts and science, engineering, medical, law and agricultural college libraries. However such facility is poor in arts and science college libraries. His study concludes that about 54.55 percent libraries have automation and the remaining (45.45%) do not have such facility. 50 percent arts and science college libraries have internet facility, where as 50 percent do not have such one. Further, 36.36 percent of the arts and science college libraries have network facility and the remaining (63.64 %) do not have such one. It is also observed that out of the select college libraries, 27.27 percent have multimedia, 50 percent have internet, 36.36 percent have network and 54.55 percent have OPAC service.

Rattan (2013) also has studied the ICT usage in college libraries in Punjab by studying government engineering college libraries only within the state of Punjab. It is noted that a large majority of 75.40% respondents felt the need of more computer terminals within the library. But majority of the students have not provided any answer of using OPAC, Audio-video material, CD-ROMS, Internet searching, Internet facilities, E mail, online chatting, Offline and Online databases. It is suggested that the librarians should have certain financial powers with them and sufficient budgetary provisions should be made to meet out the latest technological advancements in ICT and telecommunications which are to be implemented in the library.

Senthur Velmurugan and Amudha (2014) have studied the use of ICT based resources and services among the users of Arts and Science Colleges in Virudhunagar District (Tamil Nadu) by using survey method. Their findings reveal that all the faculty members and students make use of ICT based resources and service in Arts and Science Colleges. ICT can be useful for learners of all kinds, because of the resources available on the internet, applications that make it possible to explore subjects and the possibilities of networking among learners and the teachers. It is also noted that the majority of the respondents (49.08%) have excellent awareness of the ICT based resources. However, the training in ICT needs to be imported to both students and the faculty

members of Arts and Science colleges in Virudhunagar District.

Mahalakshmi and Nageswara Rao (2016) have studied the use and application of information and communication technology in aided autonomous and non-autonomous Christian missionary college libraries in Tamil Nadu. The findings of this study are very indicative in nature and enumerate the possible reasons that affect ICT library services. Further, the study also identifies librarian attitude towards ICT applications and reasons for poor ICT applications.

Need for the Study

ICT has changed all surroundings where information is available 24x7. Thus, it has become essential that the studies from different fields of knowledge should be carried out to study the impact of ICT on library users and library services and what the users want in ICT environment.

The present study is conducted with full focus from the students' point of view on library services so that their opinions could be used for improving the services of library further.

Objectives of the Study

The present study is user based. Thus, the main aims of the study are to find out the students view:

- To assess the library staff performance.
- To know the satisfaction of students in using college library resources.
- To assess the importance of computer/internet facility in library.
- To know the frequency and place of use of computer /internet; and
- To know the overall performance/satisfaction from the library.

Scope of the Study

The present study covers the students from all courses of education, like B.Ed., B.T.C. & M.Ed. of Babu Kamta Prasad Jain Mahavidyalya, Baraut (Uttar Pradesh).

Methodology

The data were collected in the months of May and June, 2016. For collecting the same, a questionnaire was prepared and circulated randomly to 200 students of all classes, viz. B.Ed., and B.T.C. and M.Ed. Out of 200 questionnaires, 170 students were received back which means that the response rate is 85 %.

Data Analysis

The study is carried out by taking survey of the students comprising of both male and female groups. It is noteworthy to mention that out of 170 respondents, 130 are females and only 40 are males which constitute to 76.47 and 23.53 percent respectively.

Personal Profile of Male Respondents

The personal profiles of the male respondents are depicted in Table 1.

Table 1: Personal profile of male respondents

S. No	Age of Students	Students		
		M.Ed.	B.Ed.	B.T.C.
1	20 YEARS	-	-	-
2	20-22 YEARS	-	2	4
3	22-24 YEARS	3	5	4
4	24-26 YEARS	6	6	2
5	26 AND ABOVE	3	1	4
	TOTAL	**12**	**14**	**14**

Findings

Table 1 shows that the number of male respondents is 40 that is 23.57% of the total respondents. In M.Ed. class, the male respondents are 12, in B.Ed. Class, the male respondents are 14 and in B.T.C. class, their number is 14. B.Ed. and B.T.C. respondents' number is equal but ratio of percentage is different.

Personal Profile of Female Respondents

The personal profiles of the female respondents are depicted in Table 1.

Table 2: Personal profile of female respondents

S. No	Age of Students	Female Students M.Ed.	B.Ed.	B.T.C.
1	20 YEARS		2	2
2	20-22 YEARS		18	13
3	22-24 YEARS	5	30	9
4	24-26 YEARS	9	12	7
5	26 AND ABOVE	9	6	10
	TOTAL	**23**	**66**	**41**

Findings

Table 2 shows the number of female respondents. It is seen that out of 170 respondents, there are 130 females. In M.Ed. class, the female respondents are 23, in B.Ed. class, the female respondents are 66 and in B.T.C. class there are 41 female respondents.

Considering age wise group, a very low number of respondents fall in the age group of 20 years where there are only 2 students (0.011%) in both gender groups – male & females. But the maximum number of respondents falls under the age group of 22-24 years. They are 56 in number and forms 32.94% of the total sample.

Frequency of Visiting the College Library

Table 3 depicts the frequency of the visiting of college library by the users comprising of male and female both.

Table 3: Frequency of visiting college library

S. No	Frequency	Students	Percentage
1	Daily	159	93.53%
2	Once in A Week	7	4.12%
3	Fortnightly	0	0.0%
4	Monthly	4	2.35%
5	Other, If Any	0	0.0%
	TOTAL	**170**	**100.00%**

Findings

Table 3 shows that 159 (93.53%) respondents are using the library daily. Only 7 (4.12%) respondents use the library once in a week and 4 (2.35%) respondents are visiting the library once in a month. However, no student is seen to use the library on fortnight basis.

Purpose of Visiting the Library

The purpose of visiting of libraries by the students is shown in Table 4.

Table 4: Purpose of visiting the library

S. No	Frequency	Students	Percentage
1	Books	170	100.00%
2	Reference Books	137	80.59%
3	Journals	136	80.00%
4	Magazines	128	75.29%
5	Newspapers	127	74.71%
6	Computer/Internet	36	21.18%
7	Dissertations	35	20.59%

Findings

It is observed from the table 4 that all (100%) respondents come to the library to borrow the text books. 137 (80.59%) users come to use the reference section for reading in the library. 136 (80%) respondents come to use the journals, 128 (75.29%) respondents come to read the magazines, 127 (74.71%) respondents come to read the newspapers regularly, and 36 (21.18%) respondents come to use the computers and to access internet in the library. Only 35 (20.59%) respondents visit the library to consult the dissertations of previous students in the library.

Place and Access & Use of Computer/Internet

Users also use computers for different purposes not only in the library premises but also at home or at cyber café. Thus, the place and access of use of computer were also asked in the study. Table 5 gives the overview of students' response on this point.

Table 5: Place and access & use of computer/internet

S. No	Place of Access	Students	Percentage
1	Home	76	44.71%
2	Cyber Cafe	54	31.77%
3	Library	47	27.65%
4	Computer Lab	92	54.12%
5	Other, If Any		

Findings

Table 5 shows that 76 (44.71%) respondents use computers and access internet at home. 54 (31.77%) respondents use the computer and access internet in cyber café. It is also seen that 47 (27.65%) respondents use the computers and access the internet in the library. However, more than half number of respondents comprising of 92 users (54.12%) use the computers and access internet only in computer lab of the college.

Opinion on the Goodness of Different Sections of Library

Table 6 gives the details of the responses received from the users of the library on the different sections of the library.

Table 6: Opinion on goodness on the different sections of library

S. No	Section of Library	Number of Students	Percentage
1	Book Stack	162	95.29%
2	Newspapers/Periodicals	152	89.41%
3	Seating Capacity	158	92.94%
4	Infrastructure Availability	145	85.29%
5	Internet/Online Access	66	38.82%

Findings

Table 6 shows that out of 170 respondents, 162 (95.29%) respondents opine that the books stack section of the library is good. 152 (89.41%) like news papers, magazines and journal section. While, 158 (92.94%) respondents are satisfied with the seating arrangement in the library. However, 145 (85.29%) respondents like the infrastructure of the library. 66(38.82%) respondents like internet availability and online access facility.

Opinion about Library Management

The library management is the important part for taking decisions and for improving the existing conditions of the library and its services on the basis of the opinions / suggestions received from its users. Table 7 gives an overview on the opinions of the students about library management.

Table 7: Opinion about library management

S. No	Opinion	Students	Percentage
1	Worst	0	0.0%
2	Bad	2	1.18%
3	Good	61	35.88%
4	Better	28	16.47%
5	Best	79	46.47%
6	No Response	0	0.0%
	Total	**170**	**100.00%**

Findings

In Table 7, the highest number of respondents that is 79 (46.47%) has the opinion that the library management is best. 28 (16.47%) respondents say it better. 61 (35.88%) respondents say well. However, 2 (1.18%) say the library management is bad; thus, the rooms exist there for improvement of the library services further.

Satisfaction about the Library Services

The purpose of library can only be said successful if its users are satisfied with the services being provided to them.

Thus, a question was also asked about the satisfaction on the library services from the students. Their responses are tabulated in Table 8.

Findings

Table 8 depicts that the majority of the respondents comprising of 168 (98.82%) users have shown their satisfaction with the library services and staff. But 2 (1.18%) respondents are not satisfied with library services and staff.

Table 8: Satisfaction about the library services

S. No	Opinion	Students	Percentage
1	Satisfied	168	98.82%
2	Not Satisfied	2	1.18%
3	No Response	0	0.0%
4	Other, If Any	0	0.0%
	Total	**170**	**100.00%**

Overall Satisfaction about the Library

The responses on the overall satisfaction about the library are tabulated in table 9.

Table 9: Overall satisfaction about the library

S. No	Types of Satisfaction	Students	Percentage
1	Highly Dissatisfied	0	0.0%
2	Dissatisfied	2	1.18%
3	Normally Satisfied	89	52.35%
4	Highly Satisfied	79	46.47%
5	Other If Any	0	0.0%
	Total	**170**	**100.00%**

Findings

Table 9 shows the majority of respondents 79 (46.47%) are highly satisfied. 89 (52.35%) respondents are normally satisfied and 2 (1.18%) respondents are dissatisfied. It means majority of the students are satisfied with the overall performance of the library.

Conclusion

It is seen that the use of ICT and ICT based services is being increased day by day; thus, it is essential to encourage and enhance the use of library in ICT environment. However, the findings of the present study show that most of the students still using books as information source for their professional study but gradually they are moving towards adoption of ICT oriented environment. However, some of the students who are very less in number, are not satisfied with the present services but rooms are there for improvements which are to be kept in mind in future.

It is also evident from the present study that the majority of the students (respondents) have shown their satisfaction towards helpfulness of library staff in searching information. Thus, it can be concluded that information and communication technology is a boon for libraries, where library users can make use of the latest resources in no time and with accuracy. It is also supported by the results of present study that the students of education field are also moving towards ICT oriented services for satisfying their needs.

References

1. Dhanavandan, S., Esmail, S. Mohammed and Nagarajan, M. Information Communication Technology (ICT) Infrastructure Facilities in Self-Financing Engineering College Libraries in Tamil Nadu. Library Philosophy and Practice (e-journal). 2011; Paper 555. Available at: http://digitalcommons. unl.edu/libphilprac/555.
2. Dhiman, A.K. Basics of Information Technology for Librarians and Information Scientists. 2003; 2 Vols. Ess Ess Publications, New Delhi.
3. Dhiman, A.K. and Rani, Yashoda. Manual of Digital Libraries.2 Vols. Ess Ess Publications, New Delhi. 2012.
4. Mahalakshmi, M. and Nageswara Rao, P. Application of ICT in Aided Autonomous and Non-Autonomous Christian Missionary College Libraries in Tamil Nadu: A Comparative Study. International Journal of Library & Information Science (IJLIS). 2016; 5(3):34-53. Available at: http://www.iaeme.com/MasterAdmin/uploadfolder/IJLIS_05_03_004/IJLIS_05_03_004.pdf.
5. Paulson, C. ICT in Arts and Science College Libraries. International Journal of Science and Research (IJSR). 2013; 4(1):2120-2123. Available at: https://www.ijsr.net/archive/v4i1/18011505.pdf.
6. Rattan, P. ICT Usage in Government Engineering College Libraries in Punjab: A Case Study. International Journal of Information Dissemination and Technology. 2013; 3(3):167-170.
7. Sampath Kumar, B.T and Biradar, B. S. Use of ICT in College Libraries in Karnataka, India: A Survey.

Electronic Library and Information Systems. 2010; 44(3):271-282.

8. Sen, Puravi. Automation of a College Library: Some Issues. In Biswajit Banerjee (Ed.): Automation and Networking of the College Libraries. Maulan Azad College, Kolkata. 2005.p.125-26.
9. Senthur Velmurugan, S. and Amudha, G. Use of ICT Based Resources and Services among the Users of Arts and Science Colleges in Virudhunagar District: A Study. International Research Journal of Library & Information Science. 2014; 4(4):522-535. Available at: http://irjlis.com/wp-content/uploads/2015/01/8-IR237.pdf.

Original Article

Indian Journal of Library and Information Science
Volume 11 Number 1, January - April 2017
DOI: http://dx.doi.org/10.21088/ijlis.0973.9548.11117.3

Institutional Repository (IR) Practices in Libraries of Bangladesh: A Study on Some Selected Libraries

Islam Md. Nazmul*, Islam Md. Shariful, Sorkar Md. Amanullah*****

Abstract

This study was aimed to examine the Institutional Repository (IR) practices for the period of 2013-2016 by exploring their growth and development, maintenance, technologies used, search and access features, challenges and opportunities etc. in surveyed some libraries of Bangladesh. In Bangladesh nine libraries/ institutions were claiming the existences of IR which were also enlisted by DOAR (Directory of Open Access Repositories) of which 6 libraries were purposively selected to conduct the survey. A structured questionnaire comprising of 40 separate questions was designed for quantitative analysis of gathered data. All of the surveyed libraries commented that the concept of IR was not completely new but was evolved somehow in new package. The findings revealed that there were some problems that hampered the advancement of IR development in Bangladesh. Finally a sustainability model for IR based on some opportunities and challenges was recommended.

Keywords: Institutional Repository (IR); Directory of Open Access Repositories (DOAR); Digital Repository (DR); Open Access (OA); Registry of Open Access Repositories (ROAR); Scholarly Communication.

Introduction

In library and information center the concept and development of Institutional Repository (IR) based service is expanding speedily with the advancement of research and emerging technology. In Bangladesh like many other developing countries it is a new phenomenon though it's not new in developed countries. Due to escalating journal subscription cost and shrinking library budget almost all of the libraries, academic and research based special libraries in particular, have been taking initiatives to set up digital repositories based facilities to their users. Smooth scholarly communication and open access facilities are also another two main reasons behind of this initiative.

IR development is still in the process of establishing guiding principles and best practices. Actually there are no standard and established cases across the world to follow and learn about development options, challenges and risks [1]. Without having a clear concept and strategies of IR it becomes sometimes difficult to implement repository based practice properly in developing countries. In Bangladesh few libraries are trying their level best to effectively execute this emerging technology as an add-on service. In doing so, they are facing various challenges and at the same time also creating some opportunities for other interested groups. Bangladesh entered into digital repository based world by setting up an institutional repository at ICDDRB (International Centre for Diarrhoeal Disease Research, Bangladesh) library in 2005 [2]. Currently nine libraries and institutions altogether have this facility so far.

Institutional Repository (IR) Initiatives in Bangladesh

Computer came into Bangladesh in 1964 with the installation of an IBM 1620 machine at Atomic Energy Commission in Dhaka and libraries began to use it in the early 1980s though a drastic progress has been

Author's Affiliation: *Assistant Professor **Associate Professor, Dept. of Information Science & Library Management, University of Rajshahi, Rajshahi-6205, Bangladesh. ***Search Engine Optimizer & Senior Content Executive, Beshto Limited, Dhaka-1215, Bangladesh.

Reprint's Request: Md. Shariful Islam, Associate Professor, Dept. of Information Science & Library Management, University of Rajshahi, Rajshahi-6205, Bangladesh.
E-mail: Email: sharif6islam@yahoo.com

Received on 28.11.2016, **Accepted on** 13.12.2016

observed after 1996 [3]. Internet came to Bangladesh in early 1990s but full-fledged Internet service began in the country on 4th June 1996 [4]. According to Internet World Stats [5] the Internet penetration rate was very poor until 2011 (0.4% in 2010 and 3.5% in 2011). Since the inception of 3G mobile Internet service in 2012 the number of Internet users grows noticeably (31.9% of the total population in 2015).

There is no national record of the total number of functional open access institutional repository in Bangladesh. Open DOAR (Directory of Open Access Repositories) and ROAR (Registry of Open Access Repositories) are two world wide recognized directories keeping statistics of open access repositories through out the world. In 2013, Open DOAR[6] listed the name of only three repositories from Bangladesh. These were BRAC University Institutional Repository (http://dspace.bracu.ac.bd/); Independent University, Bangladesh (IUB) Library Digital Repository (http://dir.iub.edu.bd:8081/); International Centre for Diarrhoeal Disease Research Bangladesh (ICDDR,B) Digital Repository (http://dspace.icddrb.org/dspace/).

In 2015, they listed four more names of IR from Bangladesh named: Daffodil International University (DIU) Institutional Digital Repository (http://dspace.daffodilvarsity. edu.bd:8080/); Eastern University Digital Library (http://gsdl.easternuni.edu.bd/greenstone/cgi-bin/library.cgi); Islamic University of Technology Digital Library (http://lib.iutoic-dhaka.edu/); Dhaka University Institutional Repository (http://repository.library.du.ac.bd/). In 2016, Open DOAR listed two more names of organization, e.g. East West University and Department of Disaster Management, Peoples Republic of Bangladesh (http://kmp.dmic.org.bd/) of which East West University library maintaining two institutional repositories (http://gsdl.ewubd.edu/greenstone/cgi-bin/linux/library.cgi and http://dspace.ewubd.edu/).

In 2013 ROAR [7], on the other hand, mentioned that four institutions were maintaining IR in Bangladesh. The names of these repositories are International Centre for Diarrhoeal Disease Research Digital Repository, Bangladesh; IUB Library Digital Repository; BRAC University Institutional Repository and Institutional Repository of Bangabondhu Sheikh Mujib Medical University, Bangladesh. In 2015, they added 6 more IR in their list.

The name of these Institutional repositories are: two institutional repositories of East West University (EWU) Library; National Library Digital Repository (http://180.211.164.156:8020/greenstone/cgi-bin/linux/library.cgi); Daffodil International University Institutional Digital Repository; Islamic University of Technology (IUT) Digital Library (http://lib.iutoic-dhaka.edu/greenstone/cgi-bin/library.cgi); Eastern University Digital Library. DOAR have already listed 2600 IR throughout the world. In figure 1, the country position of Bangladesh in terms of having IR is not at satisfactory level. On basis of registry of DOAR, there are only 10 IR throughout the country.

Literature Review

Institutional Repository or Digital Repository may be defined as a digital archives system of all kinds of knowledge materials/objects including research papers, journal articles, letters, notes, handouts, class lectures, term papers, research report/monogram, book, thesis/dissertations, teaching-learning-research materials etc, deposited by institutional members, support staff, researchers, teachers, students etc, or by the other external entity that might fit to the object submission objectives of institution, organized/maintained/operated by the parent institution/library for immediate dissemination to ensure free flow of scholarly, research and Open Access (OA) communication.

Thibodeau [8] evaluated the success of digital repository from five dimensions: ***service*** (functionality for members of the community); ***orientation*** (place in the continuum between preservation and access where the repository operates); ***coverage*** (content of IR); ***collaboration*** (alone or collaboration in functions); and ***state*** (maturity in the development of the IR). Interest in Open Access (OA) publishing has arisen for many reasons-technological, financial, ethical, political and scholarly… students as one of many contributors in OA repository are interested in OA publishing mainly for advancing their carriers [9].

Institutional repositories have the capacity to change the paradigm of traditional library culture and help to advocate for new ways for organizing, managing and disseminating scholarly information… libraries all over the world can also get benefits of IR by providing scholarly communication platforms, electronic publishing services, digital preservation support, storage for learning materials and courseware, knowledge management, and a unified platform for users to access the research output in the open access domain irrespective of geographic boundaries [10].

The benefits of having repositories in libraries and institutions are of manifolds [11-13]:

- Certainly accelerate scholarly communication;
- Reduce the information poverty in third world countries;
- Increase development of subject;
- Enhance access to all related document;
- Expedite the opportunities of research, experiments and study for researchers, teachers, scientists, scholars and learners;
- Increase visibility, usage and impacts of scholarly materials.

Obstacles to the development and deployment of full-fledged Institutional Repository vary from country to country, institution to institution. In this case, few problems are common as for example legal and copyright issue, technological issue, institutional and government support etc. In few cases the development and growth of institutional repositories have largely been affected by country's socio-economic and political situation [14]. The fear of losing authorship right later on is another reason most people especially students avoid submitting their research work in repositories. Therefore researchers, especially research students, might be anxious on depositing their materials for several reasons as for example, confidentiality of their work, exact ownership of the copyright, the chance of publishing their works later on etc [15].

Singh [16] observed that open access repositories in India are increasing among higher education and research institutions and that are playing roles for dissemination of research output of the institutions to the wider community. Ghosh and Das [17] thought that the future of open access institutional repository in India depends upon proper policy and sustainable framework. Pre-defined strategies and conditions are very much important in the advancement of IR development. Palmer, Teffeau and Newton [18] conducted a case study on three progressing IRs of United States where they found that long term goal and success targets were not pre-defined for IR initiatives. Bossaller and Atiso [19] described sharing habits and feelings of scientists and librarians on scholarly communication in relating to the roles of IR from Ghanaian context.

Chowdhury et al [20] conducted a study on the development of IR using Dspace from Bangladesh perspectives where they compare the existing status and service of mainly two repositories. Rahman and Islam [21] reviewed issues and strategies of Institutional Repositories in Bangladesh where they explored the potentiality of IR in Bangladesh and also stated its current status and provided some guidelines. Shoeb [22] investigated the possibility for setting up procedure of institutional repository in a university of Bangladesh.

Objectives of the Study

The main aim of this study was to reveal IR based systems and services of the university and special libraries of Bangladesh. Besides, this study has been carried out with a view to the following objectives:

i. To state the growth and development of IR based real scenario in Bangladesh;
ii. To explore the different features/aspects related to IR practices and compare among several selected libraries in Bangladesh;
iii. To identify some problems, opportunities and challenges in the growth and development of IR; and
iv. To prescribe a sustainable model for IR.

Materials and Methods

A survey research method has been applied to explore the status and service of Institutional Repository (IR) system in Bangladesh. Six institutional repositories from Dhaka (capital city of Bangladesh) have been selected purposively as sample. The core data for this study have been collected mainly with the help of a structured questionnaire; both open and closed-ended questions are included in formulating questionnaire.

The questionnaire was designed to cover various issues, including basic information on IR system; maintenance, software and technologies used for IR; search and access, opportunities and challenges etc. The theoretical framework for this study has also been constructed by reviewing necessary secondary documents, such as books, journal articles, web materials, etc. All the gathered data have been analyzed by using modern statistical method and presented in tabular, graphical and theoretical form.

Study Areas

Among the 9 libraries and institutions of Bangladesh which are currently maintaining and also planning full-fledged Institutional Repository (IR) for their users, 6 pioneering and leading libraries relating to providing IR services have been purposively selected as study areas (Table 1).

Table 1: Surveyed libraries

Sl. No.	Name of the Libraries	Library Types	URL of IR
1.	BRAC University Library (BRACUL)	University Library	http:// dspace.bracu.ac.bd/
2.	Independent University Bangladesh, Library (IUBL)	University Library	http://div.iub.edu.bd:8081
3.	East West University Library (EWUL)	University Library	http://dspace.ewubd.edu/
4.	Eastern University Library (EUL)	University Library	http://gsdl.easternuni.edu.bd/greenstone/cgi-bin/library.cgi
5.	Daffodil International University Library (DIUL)	University Library	http://dspace.daffodilvarsity.edu.bd:8080/
6.	International Centre for Diarrhoeal Disease Research Bangladesh Library (ICDDRBL)	Special Library	http://dspace.icddrb.org/dspace/

Results

A: Basic Information on Institutional Repositories of surveyed libraries

IR system in Bangladesh is really new phenomenon. Most of the libraries under survey initiate the concept more recently. In this case ICDDRB library plays pioneering role. This library claims that they introduced IR system in 2004. The main users of university centered IR are the students, staff, teachers, researchers whereas the IR of one special library serve their researchers and doctors (physician) (Table 2).

Half of the total libraries under survey don't have any statistics about the number of users visit per day in their IR homepage. All types of users irrespective of authorized and non-authorized have the same right to access the content of IR of the libraries without paying any charge. Open DOAR and ROAR are online directories of existing IR regarding the growth and status of repositories throughout the world. All of the IRs of libraries under survey have been registered by DOAR/ROAR (Table 3).

The most common question in relating to IR is that why do they provide IR service to users. They were given four options to indicate all of which is related with the objectives of IR. All of the libraries under survey think that they introduced IR system for ensuring easy access to information while 83.3% libraries under survey consider it for ensuring smooth scholarly communication. 66.7% libraries think the IR system may eliminate research gap by ensuring best use of modern technology (Table 4).

B: Maintenance of IR

In 2013 two libraries didn't provide information regarding number of items being uploaded in IR (Table 5). ICDDRB library has the highest number of items (5659 items) uploaded in IR, which is followed by BRACUL (4131) and EWUL (1285).

There are different types of items the surveyed libraries prefer to upload in their repositories. Table 6 represents that the preferred category of uploaded items under surveyed libraries are research paper/ internship report (100%), thesis/dissertation (83.3%), conference proceeding (66.7%), books and journal (66.7%), unpublished document (66.7%), audio-visual/ multimedia object (66.7%) and pre/post print publication (50%). While 16.7% respondents deposit cross-institutional research product in their repository.

Respondent libraries were asked to indicate the type of subject areas they consider for their items' submission. Table 7 depicts that 83.3% libraries under survey prefer items on business administration, health science and CSE for their IR. While 66.7% libraries prefer items on language, social science, humanities, development studies and economics subject for their repository.

There are three types of indigenous document from institutional product's point of view viz., institutional document, institutional member's research product and cross-institutional research product. Respondents were asked to indicate which types of materials they normally emphasized most in terms of selection for their repository. The surveyed libraries normally emphasize on Institutional document and Institutional members' research product (100%) and while cross-institutional research product (33.3%) were given less priority for item selection (Table 8).

The items to be selected for submission to repository should have undergone through proper review of subject expert. 100% recognize the fact by saying that all of them have subject expert for review items and metadata creation. Respondents were also asked to comment their item submission policy whether it has been defined or don't have such policy. Table 9 shows that all of the surveyed libraries' items submission policies are defined & stated. Meta data harvesting is an important feature to which search effectiveness depends on. Many different metadata schemes have been developed as standards across disciplines, such as library science, education, archiving, e-commerce, and arts. Respondents were asked whether they follow any such standard for maintaining uniformity

in metadata creation. As usual all of the surveyed libraries have been following standard for metadata harvesting.

C. Software and Technologies used for IR

There are dozens of software used for building up IR. But in Bangladesh only two/three software are being used in this case. Dspace is the most popular software for building up institutional repository in the libraries under survey (83.3%). Only EUL (16.7%) use Greenstone software for building up and smooth functioning of institutional repository (Table 10).

D. Search and Access

Without any exception all of the libraries under survey have multi-language feature, specially, Bengali script browsing facility. In retrieving items form IR, browsing options play important role. It's also the indication of structured organization of items in the repository. Respondent libraries were given some sample browsing options. Beyond them they may also indicate some others if there is any other browsing options. All of the surveyed libraries indicated author, title, subject as user browsing options to retrieve items from IR (Table 11). The downloading facility of full text items of surveyed libraries is freely accessible to all irrespective of institutional and cross-institutional member (Table 12).

E. Advantages, Impact and Comment of Librarians

Respondent libraries were provided some options of advantages of having IR in which they were asked to provide their opinions. All of the respondent libraries think that having IR may support in teaching and learning and also it may open universal accessibility of its deposited learning content. While 66.7% libraries think that IR have the advantage of one stop source and easier way to discovery of its content and in the long run it will be prestigious as well as more exposure for its institution as it support to scholarly communication (Table 13).

After being introduced IR in the libraries under survey whether their institutional members accept it positively for scholarly communication or not were asked. The result shows in Table 14 that the institutional members took it pretty positive for smoothing scholarly communication. 66.7% surveyed libraries observe that there is a positive on-going impact among institutional members for scholarly communication after IR being introduced.

The entire libraries under survey think that the creation and implementation of IR is the sole responsibility of library professionals. All the libraries under survey reckon (Table 15) that there should have national level mechanism to promote and integrate IR initiatives and national level awareness. The concept of IR is an emerging one in library field though cent percent libraries under survey thought that the concept of IR was old but it was evolved in new package.

F. Challenges and Opportunities

Developing a balanced and focused institutional repository might be some challenging and risky tasks. Surveyed libraries were asked to mention such type of challenges they have already been faced. Table 16 represent that 66.7% respondents under survey treated 'copyright issue' as a major threat to developing a resourceful IR. Some (33.3%) respondents indicated motivational issue, archival issue and technological issue as challenges. Library might also face several problems during development and maintenance period. Respondent libraries under survey were also asked to point out those problems. 'Low rate of participation' was the main problem for all libraries while some mentioned unconsciousness on IR (66.7%) as problem.

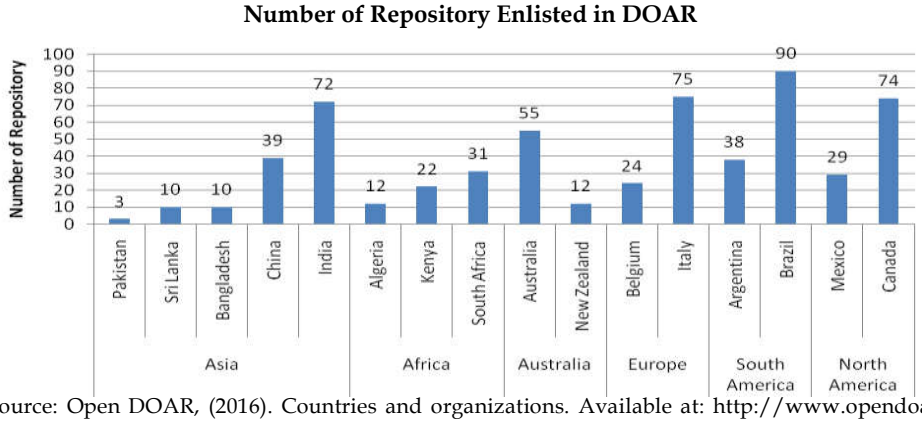


Fig. 1: Worldwide Growth of Institutional Repository: Focus on Bangladesh

[Source: Open DOAR, (2016). Countries and organizations. Available at: http://www.opendoar.org/countrylist.php]

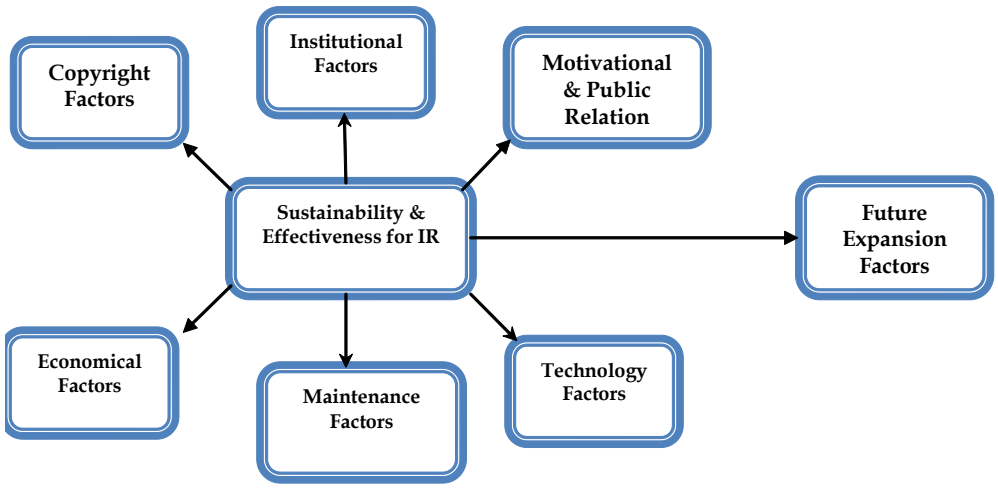


Fig. 2: Sustainability model for IR

Table 2: Inception year and users of IR

Surveyed Libraries	Inception year	Main users of the IR					
		Student	Teachers	Staff	Researchers	Doctors (Physician)	Others
BRACUL	2007	✓	✓	✓	✓	x	x
IUBL	2011	✓	✓	✓	✓	x	x
EWUL	2010	✓	✓	✓	✓	✓	x
EUL	2012	✓	✓	✓	✓	x	x
DIUL	2012	✓	✓	X	✓	x	x
ICDDRBL	2005	x	x	X	✓	✓	x

Table 3: Visiting users' number, DOAR/ROAR enlistment and nature of IR system

Surveyed Libraries	Number of users visit IR homepage per day	DOAR/ROAR Enlistment	Nature of IR		
			Open to all with charge	No charge but open to all	Member only
BRACUL	Data not available	Yes	x	✓	x
IUBL	Data not available	Yes	x	✓	x
EWUL	300	Yes	x	✓	x
EUL	150	Yes	x	✓	x
DIUL	Data not available	Yes	x	✓	x
ICDDRBL	10	Yes	x	✓	x

Table 4: Reasons to launch IR (multiple responses)

Reasons to launch IR	BRACUL	IUBL	EWUL	EUL	DIUL	ICDDRBL	Number (%)
Ensuring smooth scholarly communication	✓	✓	✓	✓	✓	x	5 (83.3%)
Eliminating research gap	✓	✓	✓	✓	x	x	4 (66.7%)
Ensuring easy access to information	✓	✓	✓	✓	✓	✓	6 (100%)
Ensuring best use of modern technology	✓	✓	✓	✓	x	x	4 (66.7%)

Table 5: Number of items uploaded

Surveyed libraries	Number of items uploaded in IR	
	2013	2016
BRACUL	1430	4131
IUBL	100	179
EWUL	Data not provided	1285
EUL	4	378
DIUL	Data not provided	771
ICDDRBL	3740	5659

Table 6: Category of items (multiple responses)

Category of items	BRACUL	IUBL	EWUL	EUL	DIUL	ICDDRBL
Thesis/dissertation	✓	✓	✓	✓	✓	x
Research Paper/ Internship report	✓	✓	✓	✓	✓	✓
Conference proceeding	✓	✓	X	x	✓	✓
Pre/Post print publication	x	✓	X	✓	x	✓
Books and journal articles	x	x	✓	✓	✓	✓
Teaching & learning objects	x	✓	X	✓	x	X
Unpublished document	✓	✓	X	✓	✓	X
Dataset	x	✓	X	x	x	✓
Audio-visual/ multimedia object	✓	✓	✓	✓	x	X
Software	x	x	X	x	x	X
Cross-institutional research product	x	✓	X	x	x	X
Others	x	x	✓	x	x	X

Table 7: Subject areas

Subject areas of Items	BRACUL	IUBL	EWUL	EUL	DIUL	ICDDRBL	Number (%)
Business administration	✓	✓	✓	✓	✓	x	5 (83.3%)
Language	✓	✓	✓	✓	x	x	4 (66.7%)
Social Science	✓	✓	✓	✓	x	x	4 (66.7%)
Humanities	✓	✓	✓	✓	x	x	4 (66.7%)
Health science	✓	✓	x	✓	✓	✓	5 (83.3%)
Natural science	✓	x	x	✓	x	x	2 (33.3%)
Pharmacy	x	x	✓	x	✓	x	2 (33.3%)
Medical science	x	x	x	✓	x	✓	2 (33.3%)
Development studies	✓	✓	✓	✓	x	x	4 (66.7%)
Economics	✓	✓	✓	✓	x	x	4 (66.7%)
CSE	✓	✓	✓	✓	✓	x	5 (83.3%)
Science	✓	✓	x	✓	x	x	3 (50%)
Others	x	x	x	✓	✓	x	2 (33.3%)

Table 8: Types of materials emphasized most in depositing (multiple responses)

Surveyed libraries	Most emphasized types of selected items		
	Institutional document	Institutional members' research product	Cross-institutional research product
BRACUL	✓	✓	x
IUBL	✓	✓	x
EWUL	✓	✓	x
EUL	✓	✓	✓
DIUL	✓	✓	✓
ICDDRBL	✓	✓	x

Table 9: Availability of subject expert, metadata harvesting standard, and submission policy

Surveyed libraries	Availability of subject expert	Standard for metadata harvesting	Items submission policy
BRACUL	Yes	Yes	Yes
IUBL	Yes	Yes	Yes
EWUL	Yes	Yes	Yes
EUL	Yes	Yes	Yes
DIUL	Yes	Yes	Yes
ICDDRBL	Yes	Yes	Yes

Table 10: Types of software being used for IR

IR Software	BRACUL	IUBL	EWUL	EUL	DIUL	ICDDRBL	Number (%)
Dspace	✓	✓	✓	x	✓	✓	5 (83.3%)
E-prints	x	x	x	x	x	x	-
Fedora	x	x	x	x	x	x	-
Greenstone	x	x	x	✓	x	x	1 (16.7%)
Others	x	x	x	x	x	x	-

Table 11: Language features and browsing options

Surveyed libraries	Language features		Browsing options				
	Availability of multi-language feature to access	Bengali script browsing facility	Author	Title	Subject	Date	Others
BRACUL	Yes	Yes	✓	✓	✓	✓	✓
IUBL	Yes	Yes	✓	✓	✓	✓	X
EWUL	Yes	Yes	✓	✓	✓	✓	X
EUL	Yes	Yes	✓	✓	✓	✓	X
DIUL	Yes	Yes	✓	✓	✓	x	X
ICDDRBL	Yes	Yes	✓	✓	✓	✓	X

Table 12: Downloading features

Surveyed libraries	Downloading facility of full text item	
	Limited within institutional member	Freely accessible (irrespective of institutional and cross-institutional member)
BRACUL	x	✓
IUBL	x	✓
EWUL	x	✓
EUL	x	✓
DIUL	x	✓
ICDDRBL	x	✓

Table 13: Advantages of IR

Advantages	BRACUL	IUBL	EWUL	EUL	DIUL	ICDDRBL	Number (%)
One-stop-source	✓	✓	✓	✓	x	x	4 (66.7%)
More exposure	✓	✓	✓	✓	x	x	4 (66.7%)
Universal access	✓	✓	✓	✓	✓	✓	6 (100%)
Easier information discovery	✓	✓	✓	✓	x	x	4 (66.7%)
Long term presentation	✓	✓	✓	✓	x	✓	5 (83.3%)
Wide range of content	x	✓	✓	✓	x	x	3 (50%)
Prestigious for institution	✓	✓	✓	x	✓	x	4 (66.7%)
Supportive to teaching and learning	✓	✓	✓	✓	✓	✓	6 (100%)
Supportive to scholarly communication	✓	✓	✓	x	✓	x	4 (66.7%)

Table 14: Impact of IR

Surveyed Libraries	Positive Impact	Modes of Impact		
		Short term impact	Long term impact	On-going impact
BRACUL	Yes	x	x	✓
IUBL	Yes	x	x	✓
EWUL	Yes	x	x	✓
EUL	Yes	✓	x	X
DIUL	Yes	x	x	✓
ICDDRBL	Yes	x	✓	X

Table 15: Librarians' remarks on IR

Surveyed libraries	Remarks of the Librarian on IR		
	Sole responsibility of librarian for development	Essentiality of national level mechanism	Old wine in a new bottle
BRACUL	Yes	Yes	Yes
IUBL	Yes	Yes	Yes
EWUL	Yes	Yes	Yes
EUL	Yes	Yes	Yes
DIUL	Yes	Yes	Yes
ICDDRBL	Yes	Yes	Yes

Table 16: Challenges and problems faced while developing IR (multiple responses)

Challenges and Problems	BRACUL	IUBL	EWUL	EUL	DIUL	ICDD RBL	Number (%)
Challenges							
Sustainability issue	x	x	x	x	x	x	-
Publicity issue	x	x	x	✓	x	x	1 (16.7%)
Motivational issue	✓	x	x	✓	x	x	2 (33.3%)
Economical issue	x	x	x	x	x	x	-
Archival issue	x	x	x	✓		✓	2 (33.3%)
Technological issue	x	x	x	✓	✓	x	2 (33.3%)
Copyright issue	✓	x	✓	✓	x	✓	4 (66.7%)
Problems							
Low rate of participation	✓	✓	✓	✓	✓	✓	6 (100%)
Low awareness common to IR	✓	x	✓	✓	✓	x	4 (66.7%)
Conflict with copyright act	x	x	x	✓	x	✓	2 (33.3%)
Ever changing technology	x	x	x	x	x	x	-
Financial problems	x	x	x	x	x	x	-
Administrative complexity	x	x	x	x	x	x	-
Technical problem	x	x	x	x	✓	x	1 (16.7%)

Discussions

According to the statistics of OpenDOAR [23] only nine libraries or institutions across the country have Institutional Repositories (IR) of which six have been selected randomly for current study. The present research is the facts and findings that have been gathered since last three years. Though ICDDRB library has played a pioneering role in the establishment of IR in Bangladesh yet majority percent libraries under survey adopted this technology from 2010 to 2012. ICDDRB library has also been playing leading role by submitting 5659 items in its IR while BRACU library has also uploaded 4131 items so far. Thesis/dissertation, research paper/ internship report, conference proceeding, books and journal articles are the main categories of items reflected in the majority of the repositories for submission. All the libraries give most priority on institutional document together with institutional members' research output for submission as their item submission policy is defined and stated. The students, teachers, researchers and staff members are the main users of these IRs. They provide IR services to users without any charge. Everyone can download and upload items from/to the repositories. The library officials inspire their users to upload items to the repository directly though this task is performed by their staff members most often. All of the libraries think that the easy access to information through IR will ensure smooth scholarly communication in the long run.

Dspace is the most popular software in this part of the world as it is easy to use, handle, upload/ download items, customize, and it has also user friendly interface and in particular it is open source software. In choosing right type of software, technical and performance factors have been considered most often by the surveyed libraries. The respondent libraries prefer multi-lingual features in browsing and user interface. Arranging seminar and workshop is the best way to motivate users in the use of IRs. All of the librarians under survey think that 'universal access' and 'supportive to teaching and learning' are the two advantages of having IR in their libraries.

Before going to develop IR, surveyed libraries thought that copyright issue might be the real threats. A noteworthy number of respondents also put their comment accordingly. If we consider service of IR to the users, all the libraries under study think that it's pretty effective. For institutional support, scholarly communication and long time preservation IRs are engaged exclusively. It has been observed a positive on-going impact of IR in library services and activities.

Recommendations and Sustainability Model for IR

Sustainability and effectiveness of IR in the road of open access depends solely on several factors which have been depicted through the Figure 2.

Copyright Factors

It seems that copyright issue is congenital dilemma for IR. For eligibility of content and clearing the content right, copyright clearance tools (e.g. SHERPA/ RoMEO) can effectively be used. Infringement of copyright act can also overcome by:

- Negotiating with government, third party, global publishers, e-database etc. to flexible the issue someway;
- Ensuring consensus with conflicting parties,

policies and agreement on information generation or re-production;

- Involving the big parties like Google or Yahoo etc. to work out on it;
- Arrange awareness growing program among students and young researchers regarding like how to avoid infringement of copyright and plagiarism etc.

Institutional Factors

Without having profound support from parent organization IR can't be sustained. Institutional support can be achieved by:

- Synergistic efforts to make a solution, if any problem arises;
- Increasing willingness and enthusiasm among support staffs and contributors;
- Developing a separate research domain to work on it;
- Supplying well trained manpower, emerging technologies, and sufficient fund.

Motivational and Public Relation Factors

The effectiveness of IR heavily rely on proper motivation and public relation activities on support staff and contributors. Advocacy and promotions are needed to make the content of IR attractive to the users. These include following activities:

- Arrange seminars, symposiums, webinars, hands on training, workshop etc. on theory and practice of IR for professionals as well as non-professionals;
- Inform current information and activities relating to IR to contributors, support staffs and young professionals;
- Involve mass people by arranging discussion program; releasing news in media; bringing out handout, brochure, manual etc. like printed publication on IR, circulating news and message on online forum, blog, social networking site etc.;
- Inspire information producer like author, editors, researchers, students etc. in using and submitting items to IR for accelerating scholarly communication;
- Arrange program on author's right, intellectual property right, depositing policy, pre-print and post print deterrent, obligation of institution, journal and research supervisor etc;

Economical Factors

The steps to be taken to overcome the economic barriers for setting up and sustaining repository include following:

- Develop network system and consortia on IR;
- Allocation of fund jointly;
- Arrange fund generating program continuously.

Maintenance Factors

These include followings:

- Promote sustainable infrastructural development;
- Enhance better security system to protect data embezzlement, theft and fraud;
- Regular update of software and security system;
- Regular risk analysis and taking up possible protection;
- Develop standard repository and archiving system;
- Ensure better service standard to the users;
- Maintain exact policy for metadata and harvesting.

Technological Factors

The emergence of repository management software, such as DSpace, EPrints, Digital Commons, and Fedora has facilitated the technical aspects of repository implementation, making it a reasonable prospect for many institutions [24]. These include followings:

- Choosing right type software and allied technologies fit to the need of the users, institution and selection parameters;
- Ensure proper maintenance, development and customization;
- Development of IT expert and ensure regular training.

Future Expansion Factors

Possible mechanisms for future expansion policy include:

- Formation of a team consisting of staff members, contributors, and experts for collaborative efforts and future development;
- Construct a common platform for sharing views and opinions creating IR based wiki, video-

sharing website, blog, SNS group, online solution group, mail group, news feed etc.;

- Arrange global exchange program on IR.

Conclusion

The development and wider acceptance of emerging technologies, Internet in particular has brought revolutionary change in bringing the results of research to everyone. Without any doubt these new technologies make it possible to access substantial amount of information expediently and instantaneously. But in the case of getting quality research materials, the probability of freely accessible relevant resources is very limited. The effectiveness of a research result can only be measured when it is effectively used, shared and applied by others. Hence, open access institutional repository have exposed new gateway of hopes for professionals and research scholars.

In Bangladesh 9 libraries/institutes listed by DOAR have developed open access repository system for smoothing scholarly communication to which 6 progressing IR initiatives were studied using survey method. The development and application level of IR in this region if we compare with developed countries remains at primary stage. It has been found in the present study that Dspace is the most popular software for the libraries of Bangladesh due to easy to use, handle and customize. Most of the libraries are facing some challenges in terms of providing full-fledge repository services where copyright and legal issues were getting prime importance in this respect by the libraries under survey. Low rate of participation and below par awareness are the most important problems for the development of repository in this part of the world. Realizing the growing importance of IR in enhancing institution's academic quality more action plans for its sustainable development will be taken at national and international level.

References

1. Palmer CL, Teffeau LC, Newton MP. Strategies for institutional repository development: a case study of three evolving initiatives. Library Trends. 2008; 57(2):142-167.
2. AIMJ. Rahman. Institutional Repository: a case study of ICDDR,B Library. Unpublished report, Parma University, Italy. (2011).
3. Islam MS, Islam MN. Use of ICT in libraries: an empirical study of selected libraries in Bangladesh. Library Philosophy and Practice. 2007. Available from: http://digitalcommons.unl.edu/libphilprac/143.
4. Azad AK, Islam N. Overview of Internet access in Bangladesh: impact, barriers, and solutions. Proceedings of the paper presented at Internet society's seventh annual conference; 1997.
5. Internet World Stats. Usage and population statistics: Bangladesh. Available from: http://www.internetworldstats.com/asia/bd.htm
6. OpenDOAR. Countries and organizations. 2103. Available from: http://www.opendoar.org/find.php?cID=19&title=Bangladesh.
7. ROAR. Browse by country. 2013. Available from: http://roar.eprints.org/view/geoname/geoname=5F2=5FBD.html.
8. Thibodeau K. If you build it, will it fly? criteria for success in a digital repository. Journal of Digital Information. 2007; 8(2).
9. Pickton M, McKnight C. Research students and the Loughborough institutional repository. Journal of Librarianship and Information Science. 2006; 38(4):203-219.
10. Singh P. Open access repositories in India: characteristics and future potential. IFLA Journal. 2016; 42(1):16–24.
11. Canessa E, Zennaro M. eBooks, Science dissemination using open access: a compendium of selected literature on open access. Available from: http://eprints.rclis.org/13650/.
12. Nyambi E, Maynard S. An investigation of institutional repositories in state universities in Zimbabwe. Information Development. 2012; 28(1):55–67.
13. Xuemao W, Chang S. Open access, philosophy, policy and practice: a comparative study. Proceedings of 72nd IFLA general conference and council; 2006 August 20-24; Seoul, Korea.
14. Nyambi E, Maynard S. An investigation of institutional repositories in state universities in Zimbabwe. Information Development. 2012; 28(1):55–67.
15. Pickton M, McKnight C. Research students and the Loughborough institutional repository. Journal of Librarianship and Information Science. 2006; 38(4):203-219.
16. Singh P. Open access repositories in India: characteristics and future potential. IFLA Journal. 2016; 42(1):16–24.
17. Ghosh SB, Das AK. Open access and institutional repositories-a developing country perspective: a case study of India. IFLA Journal. 2007; 33:229-250.
18. Palmer CL, Teffeau LC, Newton MP. Strategies for institutional repository development: a case study of three evolving initiatives. Library Trends. 2008;

57(2):142-167.

19. Bossaller J, Atiso K. Sharing science: The state of institutional repositories in Ghana. IFLA Journal. 2015; 41(1):25–39.
20. Chowdhury MHH, Uddin MN, Afroz H, Sameni, AH. Building institutional repositories in Bangladesh using Dspace: a new paradigm of scholarly communication. Library Philosophy and Practice. Available from: http://unllib.unl.edu/LPP/chowdhury-uddin-afroz-sameni.htm.
21. Rahman AIMJ, Islam MM. Issues and strategy of institutional repositories (IR) in Bangladesh: a paradigm shift. The Electronic Library. 2014; 32(1): 47–61.
22. Shoeb MZH. Developing an institutional repository at a private university in Bangladesh. OCLC Systems & Services: International Digital Library Perspectives. 2010; 26(3):198-213.
23. Open DOAR. Countries and organizations. 2103. Available from: http://www.opendoar.org/find.php?cID=19&title=Bangladesh.
24. Palmer CL, Teffeau LC, Newton MP. Strategies for institutional repository development: a case study of three evolving initiatives. Library Trends. 2008. 57(2):142-167.

Original Article

Indian Journal of Library and Information Science
Volume 11 Number 1, January - April 2017
DOI: http://dx.doi.org/10.21088/ijlis.0973.9548.11117.4

Use and Awareness of Social Networking Tools by the Agriculture Professionals of T.C.B. College of Agriculture & Research Station, Bilaspur (C.G.)

Kundan Jha*, Tejaswini Gupta**

Abstract

This paper highlight on the use and awareness of social networking tools to the agriculture science professionals of T.C.B. college of agriculture & research station, Bilaspur. The main objective of this study determines the use and awareness of Internet and social network. The study found that a majority of the agriculture professionals used social networking tools. This paper also describes in brief about frequency, place, and frequency of uses of Internet and awareness, time spent on access, social networking tools, and purpose of using social networking.

Keywords: Agriculture Professionals User Studies; Social Networking Tools; Library and Information Science; T.C.B. College of Agriculture & Research Station; Bilaspur.

Introduction

Now a day Internet and social network have emerged as the most powerful tools for use, access, storage and retrieving the information. Social networking becomes an essential part of every day's life. Social networking is a composition of individuals or group of persons, which are attached to one or more individuals such as friend, family, neighborhood, small communities etc.

The paper is attempted to study use and awareness of social networking tools by the agriculture professionals of T.C.B. college of agriculture and research station, Bilaspur (C.G.).

Need and Significance of the Study

The need and significance of proposed study intend to identify "use and awareness of social networking tools by the agriculture professionals of T.C.B. college of agriculture and research station, Bilaspur" with the following objective, assumption, scope and limitations.

Objective of the Study

The objectives of the present study are:

- Find out the accessibility (uses) and use of the Internet by the agriculture science professionals of T.C.B. College of agriculture and research station, Bilaspur;
- To find out the frequency, place, and frequency of uses of Internet;
- To find out the awareness, time spent to access, social networking tools, and purpose of using social networking.

Assumption

In order to authenticate the present study it is aimed to test the following assumption:

- The student, Researcher, and facility member of T.C.B. College of agriculture and research station, Bilaspur are more than the use of social networking tools for an educational purpose.

Methodology

This paper attempts to find out the use and awareness of social networking tools by the

Author's Affiliation: *Assistant Librarian, Hon'ble Judges Library, High Court of Chhattisgarh, Bilaspur, 495220. **Librarian, Jawahar Navoday Vidyalaya, Barsoor, Dantewara, Chhattisgarh - 49441.

Reprint's Request: Kundan Jha, Assistant Librarian, Hon'ble Judges Library, High Court of Chhattisgarh, Bilaspur, 495220.
E-mail:kundanjha101@gmail.com

Received on 26.12.2016, **Accepted on** 09.01.2017

agriculture professionals of T.C.B. College of agriculture and research station, Bilaspur. In this study using questionnaire, the method was used for data collection. For this purpose google forms Questionnaire ware distributed to the Library, T.C.B. College of agriculture and research station, Bilaspur and out 33 questionnaires were received. The collected data were then analyzed, tabulated, interpreted in the form of this paper.

Scope and Limitation of the Study

This study gives an integrated picture of use and awareness of social networking tools by the agriculture professionals of T.C.B. College of agriculture and research station, Bilaspur (C.G.)

Thakur Chhedilal Barrister College of Agriculture & Research Station: An Overview

Thakur Chhedilal Barrister College of Agriculture & Research Station, Bilaspur, named on a renowned freedom fighter, social worker, and Barrister of Chhattisgarh Late Shri Thakur Chhedilal Barrister. This Agriculture College is one amongst the nine constituent agriculture colleges comes under Indira Gandhi Krishi Vishwavidyalaya, Raipur, C.G. Earlier, it was a Regional Agricultural Research Station and on 20th September 2001, a College of Agriculture was established and renamed as "Thakur Chhedilal Barrister College of Agriculture & Research Station, Bilaspur" C.G.

Data Analysis and Interpretation

Table 1 shows the details of the gender-wise respondents. The majority 25 (75.80%) of the respondents are male and the remaining are female 08 (24.20%).

Table 2 show that 33 (100.00%) of respondents are using Internet and its resources.

Table 1: Gender-wise Respondents

S. No.	Respondents (Gender)	No. of Respondents	Percentage (%)
01	Male	25	75.80
02	Female	08	24.20
	Total	**33**	**100.00**

Table 2: Us of Internet

S. No.	Response	No. of Respondents		Percentage (%)
		Male	Female	
01	Yes	25	08	100.00
02	No	00	00	00.00
	Total			**100.00**

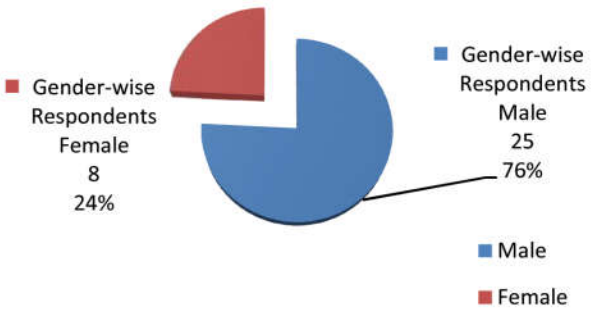


Chart 1: Gender-wise Respondents

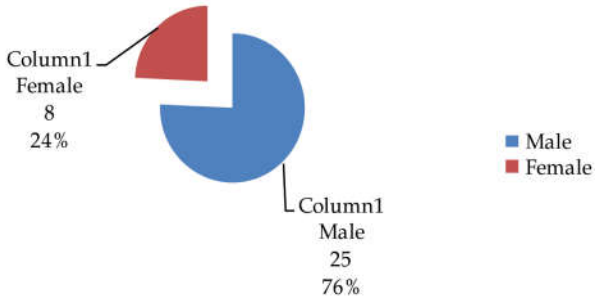


Chart 2: Use of Internet

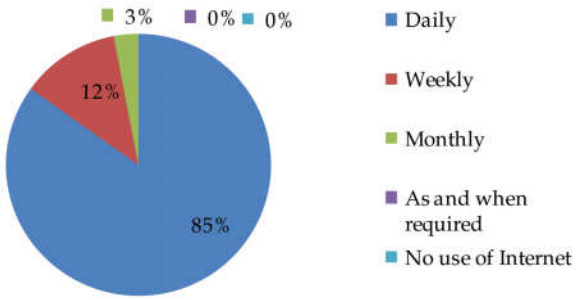


Chart 3: Frequency of Uses of Internet

Table 3 shows that the majority of 28 (84.80%) of respondents are used the Internet daily, 04 (12.10%) weekly, 01 (03.00%) monthly, 00 (00.00%) as and when required, and 00 (00.00%) of respondents no uses of the Internet.

Table 3: Frequency of Uses of Internet

S. No.	Frequency	No. of Respondents	Percentage (%)
01	Daily	28	84.80
02	Weekly	04	12.10
03	Monthly	01	03.00
04	As and when required	00	00.00
05	No use of Internet	00	00.00
	Total	**33**	**100.00**

Table 4 indicate that majority of 13 (39.40%) of respondents were using Internet in the Home. It was followed by 08 (24.20%) of respondents were by the Library, 09 (27.30%) of the respondents were by the any other place, and only 03 (09.10%) of respondents were using Internet through the Internet cafe.

Table 4: Place of Using Internet

S. No.	Place	No. of Respondents	Percentage (%)
01	Library	08	24.20
02	Home	13	39.40
03	Internet Cafe	03	09.10
04	Any Other (Friend's)	09	27.30
	Total	**33**	**100.00**

Table 5 shows that 32 (97.00%) of respondents were aware of the social network, 01 (03.00%) of respondents were not aware of the resources and 00 (00.00%) of respondents no answer about the social network.

Table 5: Awareness of Social Network

S. No.	Response	No. of Respondents	Percentage (%)
01	Yes	32	97.00
02	No	01	03.00
03	No Answer	00	00.00
	Total	**33**	**100.00**

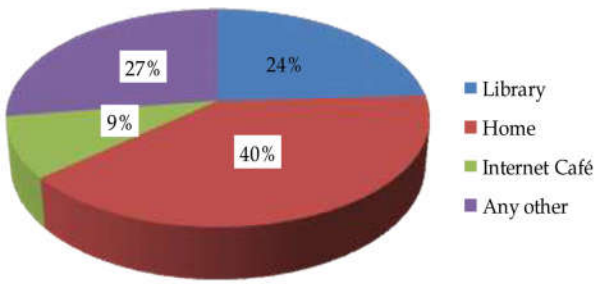


Chart 4: Place of Using Internet

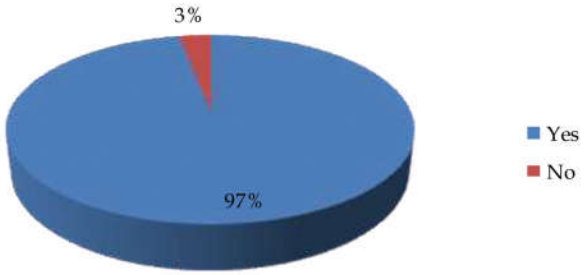


Chart 5: Awareness of Social Network

Table 6 shows that the time spent to access social network of among the agriculture science professionals. 14 (42.40%) of respondents were accessing social network for 0-1 hour, 13 (39.40%) of respondents were accessing social network for 2-3 hour, 02 (06.10%) of respondents were accessing social network for 4-6 hour and 04 (12.10%) of respondents were spending more than 7 hours.

Table 6: Time Spent to Access Social Network

S. No.	Time Spent	No. of Respondents	Percentage (%)
01	0-1 Hour	14	42.40
02	2-3 Hour	13	39.40
03	4-6 Hour	02	06.10
04	More than 7 Hour	04	12.10
	Total	**33**	**100.00**

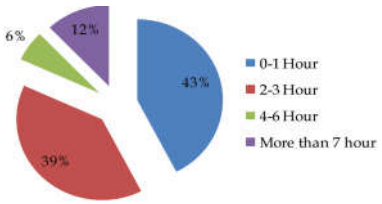


Chart 6: Time Spent to Access Social Network

Table 7: Type of social network tools being used

S. No.	Social Networking Tools	No. of Respondents	Percentage (%)
01	Facebook	12	36.40
02	Whatsup	16	48.50
03	Google+	05	15.20
04	Linkedin	00	00.00
05	Twitter	00	00.00
06	Other (Instagram, Fllickr, Vine, VK)	00	00.00
	Total	**33**	**100.00**

Table 7 shows that the various types of social networking tools used by the agriculture science professionals, most of 16 (48.50%) used Whatsup, 12 (36.40%) used facebook, 05 (15.20%) use google+, and 00 (00.00%) used linkedin, twitter, instagram, fllickr, vine and vk.

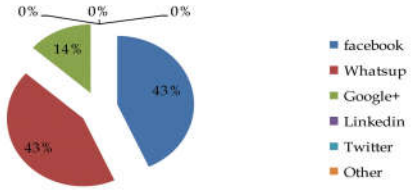


Chart 7: Type of social network tools being used

Table 8 shows that the purpose of using social network used by the agriculture science professionals, most of 19 (57.60%) used social network for personal work, 10 (30.30%) used social network for educational work and 04 (12.10%) used other work for using social network.

Table 8: Purpose of Using Social Network

S. No.	Purpose	No. of Respondents	Percentage (%)
01	For educational work	10	30.30
02	For personal work	19	57.60
03	Any other work	04	12.10
	Total	**33**	**100.00**

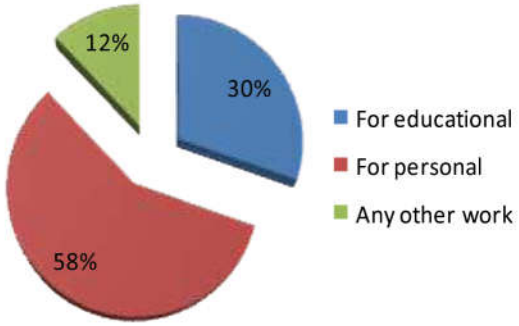


Chart 8: Purpose of Using Social Network

Finding

- Majority 25 (75.80%) of the respondents are male and the remaining is female 08 (24.20%);
- 33 (100.00%) of respondents are using Internet and its resources;
- 28 (84.80%) of respondents are used the Internet daily, 04 (12.10%) weekly, 01 (03.00%) monthly, 00 (00.00%) as and when required, and 00 (00.00%) of respondents no uses of the Internet;
- 13 (39.40%) of respondents were using Internet in the Home. It was followed by 08 (24.20%) of respondents were by the Library, 09 (27.30%) of the respondents were by the any other place, and only 03 (09.10%) of respondents were using Internet through the Internet cafe;
- 32 (97.00%) of respondents were aware of the social network, 01 (03.00%) of respondents were not aware of the resources and 00 (00.00%) of respondents no answer about the social network;
- 14 (42.40%) of respondents were accessing social network for 0-1 hour, 13 (39.40%) of respondents were accessing social network for 2-3 hour, 02 (06.10%) of respondents were accessing social network for 4-6 hour and 04 (12.10%) of respondents were spending more than 7 hours;
- 16 (48.50%) of respondents used Whatsup, 12 (36.40%) used facebook, 05 (15.20%) use google+,

and 00 (00.00%) used linkedin, twitter, instagram, fllickr, vine and vk;

- 19 (57.60%) of respondents used social network for personal work, 10 (30.30%) used social network for educational work and 04 (12.10%) used other work for using social network.

Conclusion

Now a day Internet and social network have emerged as the most powerful tools for use, access, storage and retrieving the information. The paper is attempted to study use and awareness of social networking tools by the agriculture professionals of T.C.B. College of agriculture and research station, Bilaspur (C.G.). The result shows that most of the agriculture professionals are aware of the social network and its tools.

References

1. Information Needs and Seeking Behavior of Agriculture Students at the University of Swaziland. International Journal of Digital Library Services , 2014; 4(2):1-15.
2. Jha, K. Use of Electronic Resource by the Dental Science Professionals in Bilaspur City. Indian Journal of Library and Information Science, 2016; 10(2).
3. Jha, K., Gupta, T., & Gupta, N. Open Access Online E-Resources in Library & Information Science. In B. Gungal, D. K. Pradhan, D. P. Tripathi, V. K. Mishra, V. Mishra, & K. Das, Electronic Resource Management in Libraries 2016.p.284-296). New Delhi: Ess Ess Publication.
4. S, A. K., S, S. B., S, P. T., & R, K. Awareness And Use of E-Journals by Undergraduate Students Of CMRIT, Bangalore, Karnataka: A Case Study. Tumkur: Tumkur University College of Arts. 2015.
5. http://www.tcbcarsbilaspur.org/index.html (Accessed on: 30/08/2016).

Original Article

Indian Journal of Library and Information Science
Volume 11 Number 1, January - April 2017
DOI: http://dx.doi.org/10.21088/ijlis.0973.9548.11117.5

Internet Literacy Skills among Research Scholars of Rajshahi University, Bangladesh: A Study

Md. Nazmul Islam

Abstract

Now a day Internet has become indispensable part in modern research work. There is no research work carried out in modern era where Internet can't effectively be utilized. Quick and easy access to scholarly materials and enormous number of e-resources makes it more dependable sources of information for research scholars. That's why a modern researcher must have the competencies and some sorts of skills in searching and retrieval of information over Internet. The present study was carried out with a view to explore the extent of Internet literacy skills among research scholars of Rajshahi University, Bangladesh. For this purpose primary data in relation to assess the level of Internet literacy skills collected through a self-designed questionnaire. 125 research scholars were randomly selected and distributed them questionnaire to which 96 research scholars returned the questionnaire with a response rate of 76.8% out of which 92 respondents (96%) access Internet. The study revealed that a high percentage of the research scholar (78.26%) access Internet to support research and development. Though majority percent respondents (96%) have idea on advanced literature search techniques yet half of the respondents usually search Internet for specific piece of information using 'exact phrase'. A high percentage of respondents have practical knowledge on search engines (89.13%) and web browser (83.69%) while a majority of them don't have any idea on semantic web (95.65%), programming language (83.69%) and web development (81.52%). Majority percent of the respondents have the awareness towards the usage of some web resource tools like SNS, e-mail and blog sites. In the case of e-journal database, OPAC and citation index database, almost half of the respondents are unaware. More than half of the respondents neither use narrowing parameters nor avoid adjectives, prepositions, and articles in search phrase. Use of Boolean operator, term truncation, wild card, bracket and nesting command and proximity operators are not familiar in most of cases under survey.

Keywords: Internet Literacy; Rajshahi University; Research Scholars.

Introduction

Bangladesh is one of the most densely populated countries in the world (14,97,72,364 as on 15 March 2011) with a average Internet penetration rate (66.862 million as on September 2016)[1,2]. Though Internet came in private service sector of Bangladesh in the mid of 1996 the concept of Internet became familiar in 2012 through launching 3G internet service in mobile phone service[3,4].

University of Rajshahi is one of the oldest public universities located in Rajshahi, Bangladesh. At present the university has 57 departments organized into 10 faculties, 7 institutes, 25,000 students (approximately) and more than 1200 teachers, which make the 2nd largest university of Bangladesh [5]. Considering the multifaceted and dynamic role of the Internet, universities of all sizes and types are now connecting to the web and thus providing myriad Internet facilities to students, teachers, researchers and officials. Rajshahi University is one of the leading higher academic institutions of Bangladesh that has positively begun to take advantage of this superior technology for her large population. The university

Author's Affiliation: Assistant Professor, Dept. of Information Science & Library Management, University of Rajshahi, Rajshahi-6205, Bangladesh.

Reprint's Request: Md. Nazmul Islam, Assistant Professor, Dept. of Information Science & Library Management, University of Rajshahi, Rajshahi-6205, Bangladesh.
E-mail: nazmul.islam.81@gmail.com

Received on 16.01.2017, **Accepted on** 31.01.2017

formally launched Internet in April 2000 through a Rajshahi-based local ISP, Three Sons Ltd. establishing a fiber optic backbone-based Local Area Network [6].

Effective Internet access is dependent not only on availability of technological support and infrastructure but too on some sorts of skills and efficiencies what we better call 'literacy' of Internet users. Internet literacy is nothing but better ability to work with Internet services. This ability can be multifaceted capabilities i.e. how to search relevant, accurate information over Internet by avoiding useless one; how to work effectively with various Internet tools, techniques and applications to meet up demand of social, academic, business, personal, research and recreation work.

Internet Literacy

Internet is the grand network of networks while literacy means knowledge that relates to a specified subject [7,8]. Therefore Internet literacy is critical skills that help to use Internet properly by avoiding unsafe and illegal content and ensuring security and privacy. Bawden (2001) think that the concept of Internet literacy derived as a part from general information literacy, which is further constituted by traditional literacy, computer literacy, library literacy, network literacy (synonymous with Internet literacy), and digital literacy[9].

Livingstone, Bober & Helsper (2005) defined Internet literacy as "the ability to access, understand, critique, and create information and communication content online". They argue that due to growing prominence of Internet such ability, skills, and competencies on Internet are required to get effective result [10].

Obasuyi and Otabor (2012) defined Internet literacy for under graduate student as a relative measure of students' capacity to make use of the internet for educational and learning purposes. It is not just about website analysis but the skills it takes to read, disseminate and evaluate online sources in order to socialize, network and collaborate with people [11].

Rapid growth in amount, type and format of information on Internet forced its users to become literate. There are several factors to be considered for Internet users behind internet literacy. Islam and Begum's (2010) observations in this regard are worth mentioning for why such skills and competencies on Internet are required [12]:

- Internet does not have any general web pages uploaded policy. Anyone can upload any type of materials beyond ethics, moral and values.
- Internet does not have regular or any kind of weeding policies. As a result Internet seriously suffers from outdated information with current one.
- Internet covers comprehensive collections that often mislead users to pick up the right information at right time.
- There is no definite indexing system for organizing huge array of information resources in Internet. Among this huge bulk of information it is very tricky for users to differentiate which are relevant and which are not.
- Internet does not ensure quality control of information being uploaded for all websites. Lack of evaluation or review of information sources through billions of web pages, it has sometimes become difficult to trace out right information at all the time.

Research Objectives

The present study was designed mainly with a view to explore Internet literacy skills and competencies among research scholars. The other objectives which are also pertinent with main objectives as follows:

- To know their preferences and knowledge level in the usage of Internet;
- To investigate their search techniques and strategies in Internet;
- To identify how they evaluate web resources

Materials and Methods

The present study was exploratory in nature using survey method. The data was collected by a structured questionnaire consisting of 16 different questions relating to reflect literacy skills and competencies of the respondents regarding information searching and retrieval techniques on Internet. The questionnaire comprising of both open and close questions was formulated based upon basically literature review. The questionnaire had been broken into four distinct parts for the purpose of easy understanding for the respondents, and straightforward data analysis, viz. demographic Information, Internet use and preferences, search techniques and strategies and evaluation. The respondents of the present research are basically research scholars who are currently pursuing Mphil or PhD degree under different departments and institutes of Rajshahi University, Bangladesh. The structured questionnaire was randomly sent to 125 research scholars in Rajshahi University. In reply 96 questionnaires (at the rate of

76.8% response) were returned to the researchers out of which 92 respondents (96%) access Internet. Five and in some cases three likert numbering scales have been used here to depict frequency and other levels for getting respondents opinions. All the gathered data have been analyzed by using modern descriptive statistical methods and presented in tabular, graphical and theoretical form.

Results and Discussion

The collected data were analyzed, classified, and tabulated. The questionnaire based on a set of questions was implied to collect data. In this section, analysis has been prepared only those questions which are essential to conduct the objectives of the study.

Weighted arithmetic mean has been used here. For measuring frequency as for example, qualitative terms have been arranged in ascending order i.e. from 'Always' to 'Never'. So, lower the mean value means better value in frequency and other scales. For getting result upper limit has been counted here if there is fraction in numeric value of mean score only when the fraction is equal and more than .5. The analysis has been shown in different angles through both tables and graphs.

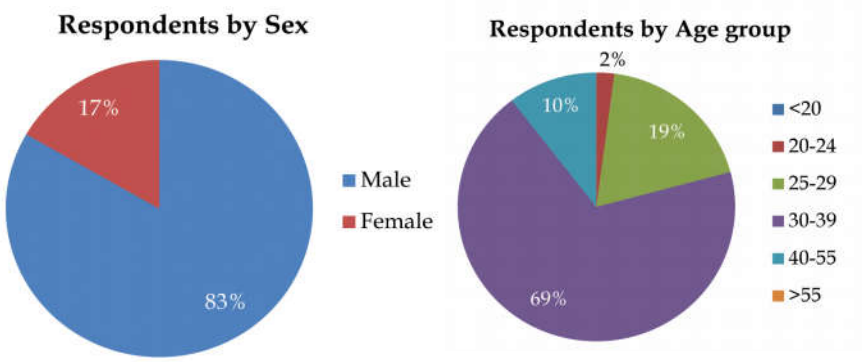


Fig. 1: Sex and Age distribution of the respondents

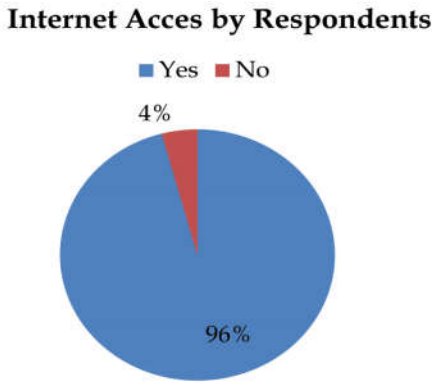


Fig. 2: Internet access by the respondents

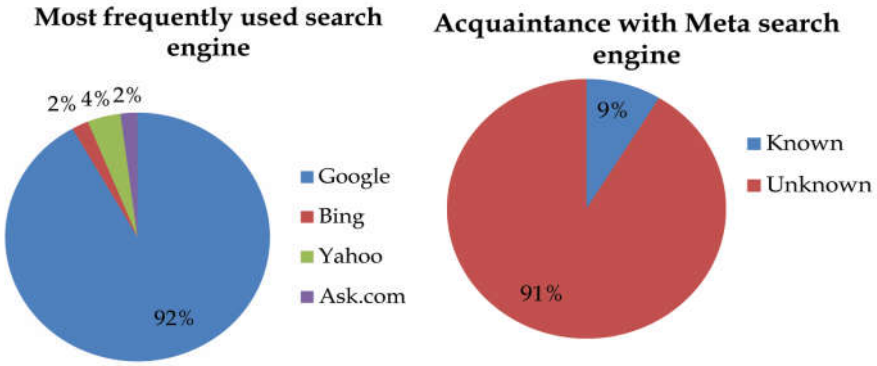


Fig. 3: Search engine and Meta search engine

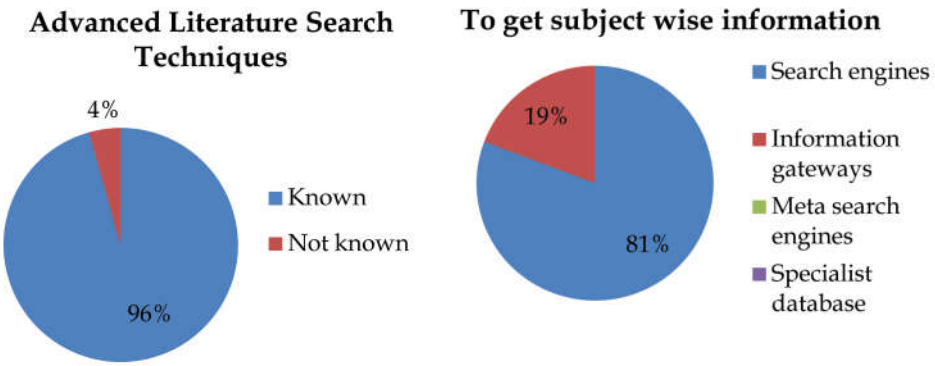


Fig. 4: Advanced literature search techniques and search tools to get subject wise information

Table 1: Reasons to use internet (multiple responses)

Reasons	Number & Percentage
To communicate with others	82 (89.13%)
To support research & development	72 (78.26%)
To update subject knowledge	70 (76.08%)
To prepare class notes for learning	44 (47.82%)
To carry out project work	36 (39.13%)
To attend or organize seminars/workshops	30 (32.60%)
To write research paper	68 (73.39%)
To get relevant information of interest	60 (65.21%)
To be ICT expert	2 (2.17%)
To be well informed	48 (52.17%)
To have entertainment	48 (52.17%)
Others	4 (4.34%)

Table 2: Knowledge level on ICT tools and techniques

ICT tools and techniques	1	2	3	Weighted $\bar{x}$	Rank
Web browser	15 (16.30%)	77 (83.69%)	-	1.84	1
Search engines	10 (10.86%)	82 (89.13%)	-	1.89	2
Web development	6 (6.52%)	11 (11.95%)	75 (81.52%)	2.75	3
Programming language	5 (5.43%)	10 (10.86%)	77 (83.69%)	2.78	4
Semantic Web	-	4 (4.34%)	88 (95.65%)	2.96	5

(N.B. *Scale:* 1= Sound knowledge, 2=Practical knowledge, 3=Don't have any idea)

Table 3: Crawlers based search engine Vs human powered directories

Response pattern	Number & Percentage
Capable to differentiate	8 (8.69%)
Don't have idea	84 (91.30%)

Table 4: Awareness towards the usage of web resource tools

Web resources tools usage	Knowledge level scale 1	2	3	4	5	Weighted $\bar{x}$	Rank
e-mail or mail group	35 (38.04%)	34 (36.95%)	16 (17.39%)	5 (5.43%)	2 (2.17%)	1.97	1
SNS	30 (32.60%)	32 (34.78%)	12 (13.04%)	6 (6.52%)	12 (13.04%)	2.33	2
Blog sites	30 (32.60%)	21 (22.82%)	18 (19.56%)	6 (6.52%)	17 (18.47%)	2.55	3
e-journal database	6 (6.52%)	24 (26.08)	12 (13.04%)	8 (8.69%)	42 (45.65%)	3.61	4
Citation index database	10 (10.86%)	14 (15.21%)	4 (4.34%)	8 (8.69%)	56 (60.86%)	3.93	5
OPAC	4 (4.34%)	12 (13.04%)	-	16 (17.39%)	60 (65.21%)	4.26	6

(N.B knowledge level scale: 1=Fully known, 2=known, 3=known somewhat, 4=hardly ever known, 5=Not known at all.)

Table 5: Search strategies during searching

Search strategies	1	2	3	4	5	Weighted $\bar{x}$	Rank
Using exact phrase	46 (50%)	14 (15.21%)	12 (13.04%)	10 (10.86%)	10 (10.86%)	2.14	1
Avoiding always adjectives, prepositions and articles	4 (4.34%)	14 (15.21%)	16 (17.39%)	8 (8.69%)	50 (54.34%)	3.93	2
Using narrowing parameters	-	14 (15.21%)	16 (17.39%)	10 (10.86%)	52 (56.52%)	4.09	3
Using Boolean operator	2 (2.17%)	4 (4.34%)	14 (15.21%)	8 (8.69%)	64 (69.56%)	4.39	4
Using term truncation	-	2 (2.17%)	12 (13.04%)	10 (10.86%)	68 (73.91%)	4.57	5
Using proximity operators	-	6 (6.52%)	4 (4.34%)	12 (13.04%)	70 (76.08%)	4.59	6
Using site searching	-	2 (2.17%)	10 (10.86%)	10 (10.86%)	70 (76.08%)	4.61	7
Using wild card	-	6 (6.52%)	2 (2.17%)	4 (4.34%)	80 (86.95%)	4.72	8
Using bracket and nesting command	-	-	4 (4.34%)	12 (13.04%)	76 (82.60%)	4.78	9

(N.B. *Frequency Scale:* 1= Always, 2=Frequently, 3=Sometimes, 4=Seldom, 5=Never)

Table 6: Alternative search approaches

Alternative search options	No. and Percentage
Use advanced search option of search engine	42 (45.65%)
Use different search engine and meta search engine to search it again	16 (17.39%)
Search it in different bibliographic, e-journal and open source database	18 (19.56%)
Search it in various open access institutional repository	12 (13.04%)
Search it in various subject directories	14 (15.21%)
Using different (near) synonymous words and related words to search it again	26 (28.26%)
Search it in various libraries' web portals	12 (13.04%)

Table 7: Perceptions on Internet and web resources

Perceptions on web resources	1	2	3	Weighted $\bar{x}$	Rank
Information over Internet have no geographical boundaries	36 (39.13%)	44 (47.82%)	12 (13.04%)	1.74	1
Most of the information on web is valuable	26 (28.56%)	46 (50%)	20 (21.73%)	1.93	2
Huge hit but few to pertinent in search engine search list	22 (23.91%)	48 (52.17%)	22 (23.91%)	2	3
Most of the information on Internet are free	16 (17.39%)	54 (58.69%)	22 (23.91%)	2.07	4
Pertinent and valuable information are not complementary at all	16 (17.39%)	52 (56.52%)	24 (26.08%)	2.09	5
Most of the information on web is reliable and authentic	8 (8.69%)	66 (71.73%)	18 (19.56%)	2.11	6

(N.B. *Perceptions Scale:* 1= Exactly right, 2=Partial Right, 3=Not right at all)

Table 8: Reliability levels on domain name

Top level domain	1	2	3	4	5	Weighted $\bar{x}$	Rank
.com	28 (30.43%)	36 (39.13%)	10 (10.86%)	-	18 (19.56%)	2.39	1
.gov	30 (32.60%)	20 (21.73%)	12 (13.04%)	-	30 (32.60%)	2.78	2
.edu	18 (19.56%)	28 (30.34%)	16 (17.39%)	-	30 (32.60%)	2.96	3
.org	16 (17.39%)	32 (34.78%)	12 (13.04%)	-	32 (34.78%)	3	4

(N.B. *Reliability Scale:* 1= Most Reliable, 2=Reliable, 3=Somewhat Reliable, 4=Not Reliable, 5=don't know)

Table 9: Checklist for evaluating web resources

Evaluative parameters	1	2	3	4	5	Weighted $\bar{x}$	Rank
To check the up to datedness of web resources	30 (32.60%)	20 (21.73%)	16 (17.39%)	6 (6.52%)	20 (21.73%)	2.63	1
To check the accuracy of information of web resources	28 (30.43%)	22 (23.91%)	14 (15.21%)	6 (6.52%)	22 (23.91%)	2.69	2
To check the reliability of web resources	24 (26.08%)	22 (23.91%)	20 (21.73%)	2 (2.17%)	24 (26.08%)	2.78	3
To check the authority of web resources	22 (23.91%)	20 (21.73%)	14 (15.21%)	8 (8.69%)	28 (30.43%)	3.00	4
To check the purposes and objectives of the web resources	16 (17.39%)	20 (21.73%)	24 (26.08%)	2 (2.17%)	30 (32.60%)	3.11	5

(N.B. *Evaluative Scale:* 1= Always, 2=Most often, 3=Sometimes, 4=Seldom, 5=Never)

Demographic Information

A total of 96 respondents (76.8%) returned their questionnaire out of which 80 respondents were male and 16 respondents were female from different research institutes and departments of Rajshahi University, Bangladesh. Age ranges of the respondents have been classified into six pre-defined category in which it is visible that majority percent respondents (69%) under survey belong to the age group of 30-39. The Figure 1 shows the sex and age distribution of the sample.

Internet use and Preferences

Internet Access by the Respondents

Respondents were asked to indicate whether they access internet or not. 92 respondents gave answer "yes" and only four respondents answered "not". These 92 respondents who access Internet were taken under the present survey. The Figure 2 shows the result.

Reasons to use Internet (Multiple Responses)

The respondents (92) who access Internet were asked to show the reasons why do they use Internet and related technologies. There were given twelve options to expose their motives. The table 1 shows that the respondents under survey use Internet and related technologies to communicate with others (89.13%) and to support research & development (78.26%), to update subject knowledge (76.08%), to write research paper (73.39%), to get relevant information of interest(65.21%), to be well informed and to have entertainment (52.17%), to prepare class notes for learning (47.82%), to carry out project work (39.13%), to attend or organize seminars/workshops (32.60%).

Knowledge Level on Internet Tools and Techniques

Respondents were asked to indicate their knowledge levels on Internet tools and techniques by giving three options viz, '*sound knowledge level*', '*practical knowledge level*' and '*don't have any idea*'. The table 2 presents that 89.13% respondents under survey have practical knowledge on search engines while 10.86% respondents have a sound knowledge on it. The 83.69% respondents use web browser while 16.30% of total respondents have sound knowledge on it. 95.65% and 81.52% of total respondents gradually have no idea on 'semantic web' and 'web development'.

Search Engine and Meta Search Engine

The respondents were asked in the case of choosing search engine which one they use most frequently. No doubt about this Google (92%) is the most frequently used search engine to explore relevant information. Meta search engine minimizes the search time by combining the search results of several search engines. In our research maximum respondents (91%) even don't know the term "meta search engine" (Figure 3). Those who indicate that they are familiar with meta search engine are further asked to mention which one they use most frequently. In reply they mentioned 'Dog pile', 'Kartoo', and 'Mamma' used most frequently.

Crawlers Based Search Engine Vs Human Powered Directories

The crawler will periodically return to the sites to check for any new information. The administrators of the search engine determine the frequency at which this happens. No humans are involved in this process, which is the major difference between a search engine and a directory [13]. Dmoz is an example of a directory where people (rather than spiders) review and index information from websites.

Respondents were asked to differentiate between crawlers based search engine and human powered directories. They were given two options viz. yes and no through which they were asked to put their views. In table 3 majority percent of respondents (91.30%) were incompetent to demarcate between crawlers based search engine and human powered directories. Those who have idea on crawlers based search engine and human powered directories are further asked to indicate which human powered directory they used commonly. In reply most of the respondents indicated that they used to "yahoo directory" most frequently before it became defunct in 2014.

Awareness towards the Usage of Web Resource Tools

Internet users were asked to indicate their awareness level in handling web resource tools by providing five likert numbering scales started from 'Fully known to Not known at all'. The Table 4 shows that some of the researchers have best idea on how to use SNS (32.60%), e-mail or mail group (38.04%) and blog sites (32.60%). On the other hand some of the researchers don't have any idea on how to use e-journal database (45.65%), OPAC (65.21%) and citation index database (60.86%).

Search Techniques and Strategies

Advanced Literature Search Techniques and Getting Subject Wise Information

The skilled and literate Internet user must have

knowledge on advanced literature search techniques. Most of the respondents (96%) have ideas on advanced literature search techniques. To find out specific information related to subject field of interest maximum number of respondents (81%) prefer search engine as best search tool. The Figure 4 shows this result in details.

Search Strategies during Searching

Using exact search strategy can ensure precise search result. Respondents were asked to indicate their strategies while conducting search. Most of the respondents have given the answer "Never" in table 5. Researchers are habituated in conducting search using exact phrase (50%). That means during searching they don't avoid always 'adjectives', 'prepositions' and 'articles' in search phrase (54.34%). Researchers under survey also don't like to use Boolean logic (69.56%), wild card (86.95%), bracket and nesting command (82.60%), proximity operators (76.08%).

Alternative Search Approaches

Respondents were asked to indicate when they failed to get specific information using search engine what did they do then. They were given eight options to expose their views. The result shows in table 6. The respondents use advanced search option of search engine (45.65%), 17.39% of the respondents use different search engines and meta search engines to search it again; 19.56% search it in different bibliographic, e-journal and open source database; 13.04% search it in various libraries' web portals along with various open access institutional repository when they failed to get information using search engine normally; 28.26% use different synonymous or near synonymous words and related words to search it again.

Evaluation

Perceptions on Web Resources

Respondents were asked to reveal their perceptions on web resources. They were given some statements on web resources to ask their comments by three qualitative terms viz, exactly right, partial right, not right at all. Table 7 shows that maximum respondents have chosen partial right in all of the cases.

Reliability Levels on Domain Name

There are various types of domain name existing in the internet. Here the respondents were given four types of domain name viz; .com, .org, .edu, .gov and asked to mention which type of domain they rely most. They were given five qualitative terms to point out the level of dependency. The table 8 shows that .Gov is the most reliable domain name to the respondents (32.60%). More interestingly 32.60% respondents didn't clarify the level dependency on .edu and .gov. 39.13% respondents think that .com type of domain is reliable.

Checklist for Evaluating Web Resources

To check the accuracy and authenticity of web resources is prime most factor before use it in research and other works. In the case of using web resources how the respondents rate the evaluative parameters is most interesting to watch. For evaluating web resources they were given five qualitative options. The Table 9 shows that 23.91% respondents always check the authority of web resources while maximum number of respondents (30.43%) never checks it before use of web resources. A high percentage of respondents (32.60%) never check the purpose and objectives of the web resources while maximum number of respondents always check the accuracy (30.43%), up to datedness (32.60%) and reliability (26.08%) of information of web resources.

Discussion

It has been observed that most of the respondents are male research scholars (83%). Among the respondents, more than half of them are between the age group of 30-39 years (69%). Maximum number of the research scholars (96%) under survey access Internet. To communicate with each others (89.13%), support research and development (78.26%) and write research papers (73.39%) are the main reasons behind their Internet usage. Research scholars under survey have practical knowledge on web browser ($\bar{x}$=1.84), and search engines ($\bar{x}$=1.89) but they don't have too much idea on web development ($\bar{x}$=2.75), programming language ($\bar{x}$=2.78), and semantic web ($\bar{x}$=2.96).

Google is the most popular search engine (92%) and almost all of them don't know the term meta search engine (91%). Majority percent respondents are incapable to differentiate between crawlers based search engine and human powered directories (91.30%).

Respondents have knowledge on e-mail or mail group ($\bar{x}$=1.97), and Social Networking sites ($\bar{x}$=2.33). Blog sites ($\bar{x}$=2.55) are known somewhat

while e-journal database ($\bar{x}$=3.61) and citation index database ($\bar{x}$=3.93) are hardly ever known by research scholars under survey. The surveyed respondents did not recognize about OPAC and related services ($\bar{x}$=4.26).

For searching subject wise information search engines are the most preferred option (81%). Research scholars under survey were habituated with searching frequently using exact phrase ($\bar{x}$=2.14). They seldom use narrowing parameters ($\bar{x}$=4.09) and Boolean operators ($\bar{x}$=4.39) while browsing over Internet. They hardly ever avoid adjectives, prepositions and articles in their search phrase. They have never used proximity operators ($\bar{x}$=4.59), wild card ($\bar{x}$=4.72) and bracket and nesting command ($\bar{x}$=4.72) at the time of searching. Almost half of the respondents use advanced search option when they failed to get information in general searching on web.

The researchers under survey have vague ideas on top level domain. For that reasons they gave their consent that they can rely on commercial website ($\bar{x}$=2.39) whereas they have somewhat reliability on .gov ($\bar{x}$=2.78), .edu ($\bar{x}$=2.96) and .org ($\bar{x}$=3) type of top level domain.

Evaluating web resources before use it is the indicator of literate Internet user. In the present research the respondents sometimes check up to datedness ($\bar{x}$=2.63), accuracy ($\bar{x}$=2.69), reliability ($\bar{x}$=2.78), authority ($\bar{x}$=3), purposes and objectives ($\bar{x}$=3.11) of web resources.

Conclusion

The use of Internet and related technologies makes revolutionary steps in the emergence of new society. It brings radical changes in every sphere of life. Quick and easy access to huge bulk of information is not a pipe-dream. Instantaneous communication and quick sharing of knowledge among distance audiences are now reality. Due to the application of Internet resources and services peoples of 21st century are now witnessing enormous expansion in different areas of society like business, education, research, governance, communication, entertainment, culture etc. As a matter of fact it accelerates a long term effects on information generation, information capture, information transmission, information storage and seeking attitudes of users. The expansion and availability of Internet technologies have also introduced a descent change in usage, perceptions and endeavors of all kinds of people in society including students, teachers and research scholars etc.

To address the lack of understanding of the quality of Internet information Internet literacy training program can be designed to improve researchers' critical thinking skills in using Internet. Internet literacy provides users with knowledge and skills to efficiently and effectively access information, while accurately evaluating and assessing the information they receive from Internet [14]. To gain full advantage of Internet it is required that concerned institutions of higher education make better internet facilities available and also make an effort to make their research scholars aware of the merits of Internet and train them to use Internet effectively to meet their information needs [15].

Due to growing dependency on Internet, research scholars need to be Internet literate. The researchers should check the accuracy, relevancy, reliability, objectivity, currency of web resources before they use it in their research works. They should have clear idea on URL structure, top level domain, various web resource tools, search techniques and strategies to get better result from Internet.

References

1. Bangladesh Bureau of Statistics. Population & Housing Census. Dhaka: BBS. 2011.
2. Bangladesh Telecommunication Regulatory Commission. (2016). Internet Subscribers. Retrieved January 1, 2017, from Bangladesh Telecommunication Regulatory Commission: http://www.btrc.gov.bd/content/internet-subscribers-bangladesh-september-2016
3. Azad, A. K., & Islam, N. Overview of Internet Access in Bangladesh: Impact, Barriers, and solutions. Inet's 97 proceedings. Kualalampur: The Internet Society's Seventh annual conference. 1997.
4. Banglanews24. (2012, October 14). 3G services launched.
5. University of Rajshahi. (2016). Retrieved January 01, 2017, from http://www.ru.ac.bd/
6. Roknuzzaman, M. A survey of Internet Access in a Large public university in Bangladesh. International Journal of Education and Development Using ICT . 2006.
7. Lou, et al. The influence of the sixth grader's parent internet literacy and parenting style on Internet parenting. The Turkish Online Journal of Educational Technology, 2010; 9(4):173-184.
8. Merriam-Webster. (2017). Literacy. Retrieved January 5, 2017, from Merriam-Webster Dictionary: https://www.merriam-webster.com/dictionary/literacy
9. Bawden, D. Information and digital literacy; A

review of concepts. Journal of Documentation, 2001; 57(2):218-259.

10. Livingstone, S., Bober, M., & Helsper, E. (2005). Internet Literacy among Children and Young people: Findings from the UK Children Online Project. Retrieved January 5, 2017, from LSE Research Online: https://eprints.lse.ac.uk/397/1/UKCGOonline Literacy.pdf
11. Obasuvi, L., & Otabor, O. A Survey of Internet Literacy Skills among Physical Science Undergraduate of the University of Benin, Nigeria. Journal of Information and Knowledge Management, 2012; 3(1 & 2).
12. Islam, M. N., & Begum, D. The Internet in Context: A Substitute or a Support to Traditional Library Resources. Emerging Technologies and Changing Dimensions of Libraries and Information Services. 2010.p.757-761. New Delhi: KBD Publication.
13. Wikipedia. (2016). Search engine technology. Retrieved December 26, 2016, from Wikipedia: https://en.wikipedia.org/wiki/Search_engine_technology
14. O'Sullivan, M., & Scott, T. (2000, March-April). Teaching Internet Information Literacy: A Critical Evaluation. Retrieved January 04, 2017, from Information Today, Inc.: http://www.infotoday.com/MMSchools/mar00/osullivan&scott.htm
15. Khare, S. K., Thapa, N., & Shahoo, K. C. Internet as a source of information: a survey of Ph.D. Scholars. Annals of Library and Information Studies, 2007; 54: 201-206.

Special Note!

Please note that our all Customers, Advertisers, Authors, Editorial Board Members and Editor-in-chief are advised to pay any type of charges against Article Processing, Editorial Board Membership Fees, Postage & Handling Charges of author copy, Purchase of Subscription, Single issue Purchase and Advertisement in any Journal directly to Red Flower Publication Pvt. Ltd.
Nobody is authorized to collect the payment on behalf of Red Flower Publication Pvt. Ltd. and company is not responsible of respective services ordered for.

Original Article

Indian Journal of Library and Information Science
Volume 11 Number 1, January - April 2017
DOI: http://dx.doi.org/10.21088/ijlis.0973.9548.11117.6

Annals of Library and Information Studies during 2010 to 2014: A Bibliometrics Analysis

Amit

Abstract

This article carries out a bibliometric analysis of the journal "Annals of Library and Information Studies" (ALIS) during from 2010-2014. The study analyzes the volume wise distribution of articles, distribution of citations, authorship pattern, most productive authors of the ALIS and the average length of articles during the period under study. The study reveals that the maximum numbers of contributions were from the two authors.

Keywords: Bibliometric; ALIS; Library Science.

Introduction

Bibliometrics is a statistical analysis of written publications, such as books or articles. Bibliometric methods are frequently used in the field of library and information science, including scientometrics. For instance, bibliometrics are used to provide quantitative analysis of the academic literature (Wikipedia, 2015). Bibliometric is a set of methods used for publication analysis of impact and contribution. Allen Pritchard coined the term "bibliometric" in 1969, defined it as the "application of mathematics and statistical methods to books and other media of communication."

Annals of library and information studies (ALIS) quarterly journal publishes original research articles in the field of library and information science (LIS) been published by the National Institute of Science Communication and Information Resources, New Delhi on the quarterly basis. It is also publishing original papers, survey reports, reviews, short communications, and letters pertaining to library science, information science, and computer applications in these fields. This study aims to highlight the bibliometric analysis of annals of library and information studies from 2010 to 2014.

Author's Affiliation: Research scholar, Department of Library & Information Science, Maharshi Dayanand University, Rohtak, Haryana 124001.

Reprint's Request: Amit, Research scholar, Department of Library & Information Science, Maharshi Dayanand University, Rohtak, Haryana 124001.
E-mail: amitkhatkar44@gmail.com

Received on 29.12.2016, **Accepted on** 09.01.2017

Review of Related Literature

Review of related literature shows a number of studies have been done by several authors analysed the contributions of different journals of various fields. Siwach and Satish (2015) analysed the publication output of research publication of Maharshi Dayanand University, Rohtak during 2000-13. The analysis covered mainly national and international collaboration, subject wise distribution, high profilic authors, most productive journal, highcitited papers etc. The study show that the paper by joint authors S. Verma and S.N. Mishra had the highest number of citations which cumulated into 99 in number.

Singh and Bebi (2014) retrieved 234 articles and analysed gender-wise authorship. The results found that of 387 authors, 299 (77.2%) articles were contributed by the male authors and 88 (22.8%) were contributed by the female authors.

In another bibliometric study, Grag and Bebi (2014) conducted a comparison study of two journals DESIDOC journals of Library & Information Science and Annals of Library & Information Studies. And found that DJLIT published more articles than ALIS . they indicated a possible reason behind that DJLIT is published six times in a year while ALIS is published four times in a year.

Objectives of the Study

The present study intends to analyze the publication trends in ALIS during the period 2010 to 2014. The main objectives of the study are:

- Determine the distribution of articles contribution (volume wise)
- Analyze the distribution of citation per volume
- Examine the authorship patterns
- Degree of Collaboration
- Identify the most productive authors of the Journal
- Study the average length of articles

Data and Methodology

The study is based on the published data collected from Annals of Library and Information Studies journal website (http://nopr.niscair.res.in/handle/123456789/66) for the period 2010- 2014. This study include twenty issues of five volumes from 2010 to 2014. All data were organized in the tabular form such as authorship pattern, average of reference, number of contributors and simple arithmetic and statistical methods were used for the analysis and presention the data.

Analysis and Discussions

Distribution of Article Contribution (Volume Wise)

Table 1 indicates the volume wise contribution. The ALIS has published 178 articles in 5 volumes during the span of five years from 2010-2014. The highest number of papers, i.e. 43, was published in the volume number 57, which was 24.16% of the total publications. The second highest position is occupied by Volume number 60. It is followed by volume 58. The minimum articles (27) were published in volume 59 of the journal.

Table 1: Distribution of article contribution (volume wise)

	Year	Vol.	Total Articles	Contribution (%)
	2010	57	43	**24.16**
	2011	58	36	**20.22**
	2012	59	27	**15.17**
	2013	60	37	**20.79**
	2014	61	35	**19.66**
Total	**5**	**5**	**178**	**100**

Distribution of citation per volume

Citation analysis is based on the references provided by the author at the end of their articles. Table 2 shows the contribution of the citations per volume. Total five volumes have been published during 2010 to 2014 and 3963 citations add to the 178 articles. Out of 3957 citations, vol. 57 has the maximum number of citation 1045 (26.37%) and vol. 59 has the lowest number of citation 465 (11.73%).

Table 2: Distribution of citation per volume

	Year	Vol.	Articles	Citation	Contribution (%)
	2010	57	43	1045	**26.37**
	2011	58	36	819	**20.67**
	2012	59	27	465	**11.73**
	2013	60	37	831	**20.97**
Total	2014	61	35	803	**20.26**
	5	**5**	**178**	**3963**	**100.00**

Table 3: Authorship patterns

	Year	Vol.	Single Author	Two Authors	Three Authors	More than Three Authors	Total
	2010	57	17	18	6	2	**43**
	2011	58	14	14	7	1	**36**
	2012	59	11	10	6	0	**27**
	2013	60	12	18	5	2	**37**
Total	2014	61	12	18	3	2	**35**
	5	**5**	**66**	**78**	**27**	**7**	**178**
	Contribution (%)		**37.08**	**43.82**	**15.17**	**3.93**	**100.00**

Authorship Patterns

It is evident from the data presented in Table 3 that the maximum number of papers, i.e. 78 (43.82%) are by two authors. This is followed by articles having single author 66 (37.08%) and three authors 27 (15.17%). The number of joint contributions by more than three authors is found to be 7 (3.93%).

Degree of Collaboration

The formula suggested by K. Subramanyam (1983) is used in this study. It is expressed as where;

$$C = \frac{N_m}{N_m + N_s}$$

Where

C = Degree of collaboration in a discipline

Nm = number of multi authored papers in the discipline

Ns = number of single papers in the discipline

Hear Nm = 112

Ns = 66

$$\text{Degree of collaboration, } C = \frac{112}{112+66} = 0.63$$

Table 4 indicates the degree of collaboration during the overall 5 years (2010-14) is 0.63.

A total number of 178 articles were published by researchers in the journal. Among those, 66 articles were written individually and 112 articles were the result of collaboration between two or more authors. The degree of collaboration was highest (0.68) in 2013 and lowest (0.59) in 2012.

Table 4: Degree of Collaboration

Year	Single Author	Multiple Authors	Total	Degree of Collaboration
2010	17	26	43	**0.60**
2011	14	22	36	**0.61**
2012	11	16	27	**0.59**
2013	12	25	37	**0.68**
2014	12	23	35	**0.66**
Total	**66**	**112**	**178**	**0.63**

Most Productive Authors of ALIS

Table 5 shows the four most productive authors identified during the 2010-2014. B.K. Sen chairman of Bibliometric Experts Committee, Dept. of Science & Technology, Govt. of India is the most productive author in this period with 11 publications, which accounts about 1.63% of the total publications. He is followed by K.C. Grag and B.M Gupta with 7 publications each. The third position is Bidyarthi Dutta with 5 publications. Two authors Bhaskar Mukherjee and Shamprasad M Pujar are ranked in the 4 positions with 4 publications each.

Table 5: Most productive authors of Annals

Rank	Author	No. of Papers	(Percentage)
1	Sen, B K	11	**6.18**
2	Garg, K.C.;	7	**3.93**
2	Gupta, B.M.;	7	**3.93**
3	Dutta, Bidyarthi;	5	**2.81**
4	Mukherjee, Bhaskar;	4	**2.48**
4	Pujar, Shamprasad M;	4	**2.48**
	Total	**38**	**21.81**

Average Length of Articles

The page lengths have been divided into five categories i.e. 1-5, 6-10, 11-15,16-20 and more than 20. It is observed that more than half (64.04 %) of the contributions were in the category of page length 6-10 pages, which is followed by page lengths 11-15 pages. These were very few articles, which were of the more than 15 pages.

Table 6: Average length of article

Pages	Year					Total	(Percentage)
	2010	2011	2012	2013	2014		
1-5	8	0	3	5	6	22	12.36
6-10	22	26	16	29	21	114	64.04
11-15	10	10	6	3	7	36	20.22
16-20	2	0	1	0	0	3	1.69
More than 20	1	0	1	0	1	3	1.69
Total	**43**	**36**	**27**	**37**	**35**	**178**	100

Conclusion

The Annals of Library and Information Studies have published 178 articles during the period from 2010-14. The maximum number of articles (24.16%) and a maximum number of citations (26.37%) are published in volume 57. It was found that about 37% articles were single-authored while the rest 63% had two or more authors among which the maximum articles had two authors. And the most productive author is B.K. Sen with (6.18%). The study indicated that the maximum numbers of contributions have the length of 6-10 pages with (64.04%).

References

1. NISCAIR, ALIS, Available at http://nopr.niscair.res.in/handle/123456789/66 (Accessed on 3 September 2015).
2. Grag, K C and Bebi, A citation study of Annals of Library and Information Studies (ALIS) and DESIDOC Journal of Library & Information Technology (DJLIT), Annals of Library and Information Studies, 2014; 61:212-216.
3. Singh, K P and Bebi, Library Herald: A Bibliometric Study (2003-2012), Library Herald, 2014; 52(1):19-27.
4. Siwach, Anil Kumar and Satish Kumar, Bibliometric Analysis of Research Publications of Maharshi Dayanand University (Rohtak) During 2000-2013, DESIDOC Journal of Library & Information Technology, 2014; 35(1):17-24.
5. Subramanyam, K, Bibliometric studies of research collaboration: A review. Journal of Information Science, 1983; 6(1):33-38.
6. Wikipedia, About Bibliometric, Available at https://en.wikipedia.org/wiki/Bibliometrics (Accessed on 18 September 2015).

Original Article

Indian Journal of Library and Information Science
Volume 11 Number 1, January - April 2017
DOI: http://dx.doi.org/10.21088/ijlis.0973.9548.11117.7

Open Source Content Management Software: A Comparative study with reference to Drupal, Joomla & WordPress

T.C. Shivakumar*, Kemparaju T.D.**

Abstract

This paper aims to study the open source content management software like Drupal, Joomla and WordPress. A thorough analysis of all the three software's has been done and listed the general and technical features available in all the three content management software. A content management system (CMS) is a database which organizes and provides access to all types of digital content - files containing images, graphics, animation, sound, video or text. It contains information *about* these files (known as 'digital assets'), and may also contain links to the files themselves in order to allow them to be located or accessed individually. A content management system is usually used to manage digital assets during the development of a digital resource, such as a website or multimedia production. It might be used by staff digitizing images, authors and editors, or those responsible for the management of the content development process (content managers). Content management systems range from very basic databases, to sophisticated tailor-made applications. These more complex systems can be integrated with the eventual digital resource in order to enable access to digital assets and to allow regular updating. *Aims* 1. To compare 3 Open Source Content Management Software to create the library website. 2. To find out the best OS CMS to create and develop the website. 3. To know the different OS CMS features. 4. To find out the suitable platforms to install the OS CMS. *Methods:* Investigative and evaluative research methodology was used for the study. Data were collected: By browsing internet and downloading 3 open source content management software such as Drupal, Joomla and WordPress. Comparing the selected open source content management software. Preparing the worksheet by using different criteria of selected open source content management software such as Drupal, Joomla and WordPress**.** *Conclusion:* Drupal, Joomla and WordPress basic features can be used to create simple sites, single or multi user blogs, brochure ware, forums, community websites and more. Libraries should make consistent efforts to provide web - based services to their users and it is the role of the librarians to act as a guide and be should up – to – date and should also know the usefulness of web sites, web portals. Hence librarians can easily work on the content management system. Content management system allows librarians to create resource page for their liaison groups without any prior knowledge of web development technologies. The study of widely used CMSs Joomla, Drupal and WordPress and the analysis of the features of an individual system can help an individual or organization to choose an appropriate CMS for their specific web application.

Keywords: Open Source Software; Drupal; Content Management Software; Joomla; Wordpress.

Author's Affiliation: *Research Scholar **Professor, Department of Library and Information Science, Bangalore University, Bengaluru, Karnataka, India.

Reprint's Request: Shivakumar T.C., Librarian, St. Joseph's College (Autonomous), Library and Information Centre, PB – 27094, 36, Lalbagh Road, Bangalore Karnataka, India 560 027.

E-mail; shivulis82@gmail.com

Received on 18.01.2017, **Accepted on** 31.01.2017

Introduction

Content is a king, Library is his Palace and Librarian is a Governor to regulate and govern the content management. Being in the digital world at hybrid library movement in web environment, content is granular information it would be text, graphics, pictures, sounds videos and data etc., Greater challenge of library and information science professionals is how to manage this granular

information in the dynamic web environment. Traditional content management software does like old proverb "garbage in – garbage out" (Rawtani, M R and Chidambaram, S Siva, 2009). The way in which content is managed with in the overall content management life-cycle from creation to dissemination is the content management system. It is a tool that enables a variety of technical and non-technical staff to create, edit, manage and finally publish a variety of content (such as text, graphics, video and document etc.), which being constrained by a centralized set of rules, process and workflows that ensure coherent, electronic content. Implementing content management system in Library, Library website environment needs the content management strategy. The elements of content management strategy has figured by Martin White in his book entitle "The Content Management Handbook" is a road map to frame the strategy (Rawtani, M R and Chidambaram, S Siva, 2009).

Open Source Software

Open source software (OSS) is computer software for which the source code and certain other rights normally reserved for copyright holders are provided under a software license that meets the Open Source Definition or that is in the public domain. This permits users to use, change, and improve the software, and to redistribute it in modified or unmodified forms. It is very often developed in a public, collaborative manner. Open source software is the most prominent example of open source development and often compared to user-generated content. The term *open source software* originated as part of a marketing campaign for free software. (Wikipedia Definitions - http://en.wikipedia.org/wiki/Open_source_software)

Features of open Source Software

OSS has many features. The important ones are:

a. It is generally acquired freely
b. Manufacturer or developer has no right to claim royalties on the distribution or use
c. Source code is accessible to the user and distributed with the software
d. No denial to an individual or to a group to access source code of the software
e. It has provision of modifications and derivations under the programme's original name
f. Rights of facilities attached to the programme must not depend on the programme's being part of a particular software distribution
g. Licensed software cannot place restriction on other software that is distributed with it
h. Distribution of License should not be specific to a product and License should be technology neutral, etc.

Content Management System (CMS)

A content management system or CMS is a software that facilitates creating, editing, organizing, and publishing content. WordPress is a Content Management System, that allows you to create and publish your content on the web. Although it is mostly used for web publishing, it can be used to manage content on an intranet, or in a single computer.

Content management systems are very relevant to knowledge management (KM) since they are responsible for the creation, management, and distribution of content on the intranet, extranet, or a website (Frost, Alan, 2010).

A content management system may have the following functions:

- Provide templates for publishing: Making publishing easier and more consistent with existing structure/design.
- Tag content with metadata: I.e. Allowing the input of data that classifies content (e.g. keywords) so that it can be searched for and retrieved.
- Make it easy to edit content
- Version control: Tracking changes to pages and, if necessary, allowing previous versions to be accessed
- Allow for collaborative work on content
- Integrated document management systems
- Workflow management: Allowing for parallel content development
- Provide extensions and plug-ins for increased functionality
- Etc.

Open source Content Management Software

Drupal

Drupal is the most frequently discussed open source CMS developed by Dries buytaert during 1999. Drupal is a free software that allows an individual or a user community to easily publish, manage and organize a great variety of content with an endless

variety of customization on a website. Drupal.org website has been developed and distributed as an open source web platform. Drupal features module enables the content management systems, collaborative authoring environments, forums, newsletters, file uploads and many more utilities.

Joomla!

Joomla! is an award-winning content management system (CMS), which enables you to build Web sites and powerful online applications. Many aspects, including its ease-of-use and extensibility, have made Joomla! the most popular Web site software available. Best of all, Joomla! is an open source solution that is freely available to everyone. Joomla! is one of the world's most popular software packages used to build, organize, manage and publish content for websites, blogs, Intranets and mobile applications. Owing to its scalable MVC architecture it's also a great base to build web applications. With more than 3 percent of the Web running on Joomla! and a CMS market share of more than 9 percent, Joomla! powers the web presence of hundreds of thousands of small businesses, governments, non-profits and large organizations worldwide. As an award winning CMS led by an international community of more than a half million active contributors, helping the most inexperienced user to seasoned web developer make their digital visions a reality.

WordPress

WordPress is a free and open-source content management system (CMS) based on PHP and MySQL. WordPress is installed on a web server that is either part of an Internet hosting service or a network host in its own right. The first case may be a service like WordPress.com, for example, and the second case could be a computer running the software package WordPress.org. A local computer may be used for single-user testing and learning purposes. Features include plugin architecture and a template system. WordPress was used by more than 26.4% of the top 10 million websites as of April 2016. WordPress is reportedly the easiest and most popular website management or blogging system in use on the Web, supporting more than 60 million websites.

WordPress was released on May 27, 2003, by its founders, Matt Mullenweg and Mike Little, as a fork of *b2/cafelog*. WordPress is released under the GPLv2 (or later) license from the Free Software Foundation.

Review of Literature

Sunny, Sanjeev K (2008), in his article briefly discussed about open source content management softwares, evaluation criteria of open source CMS in libraries like mambo, typo3 and Joomla.

Giri, Kaushal K (2009), discussed about open source software and its evaluation pertaining to the library content management systems software. Further added about installation and its maintains of few content management softwares.

Singhal, Niraj (2010), explains about composed of various subsystems that interact with content management systems software, need of CMS, open source content management system packages with comparative study of various cms softwares.

Sheokand, RN (2015) reveals about the file structure of the Joomla and explains about its core features thoroughly. And also explained about the blog and supported softwares to creation.

Viduka, Dejan (2013), seeks to present the results of an analysis of Mambo, Elxis with Joomla. This article also tries to compare with the technical features of Mambo and elxis, Elxis v/s Joomla benchmark comparison, comparisons result.

Wakode, BV (2013), compared the two leading open source content management system (CMS)

packages and highlights the file structure of Joomla and Drupal. It is based on his practical experience.

Bhattacharjee, Sudip (2014), examines the potential of open source content management software, classifying user generated content, need of CMS system, and software selection of WordPress, Joomla and Drupal.

Methodology Adopted for the Study

Investigative and evaluative research methodology was used for the study. Data were collected: By browsing internet and downloading 3 open source content management software such as Drupal, Joomla and WordPress. Comparing the selected open source content management software. Preparing the worksheet by using different criteria of selected open source content management software such as Drupal, Joomla and WordPress.

Scope and Limitation of the Study

Scope of the study is restricted to browsing internet

and downloading the 3 open source content management software such as Drupal, Joomla and WordPress.

Comparative Analysis

Table 1: System Requirements

System Requirements		Joomla!	WordPress
Application Server	Apache	CGI	blank
Approximate Cost	Free	Free	Free
Database	MySQL	MySQL	MySQL
License	Open Source	Open Source	Open Source
Operating System	Platform Independent	Platform Independent	Platform Independent
Programming Language	PHP	PHP	PHP
Root Access	No	No	No
Shell Access	No	No	No
Web Server	Any	Any	-

Table 2: Security

Security		Joomla!	WordPress
Audit Trail	Yes	No	Limited
Captcha	Free Add On	Free Add On	Free Add On
Content Approval	Yes	Yes	Yes
Email Verification	Yes	Yes	Yes
Granular Privileges	Yes	Yes	Yes
Kerberos Authentication	No	No	No
LDAP Authentication	Free Add On	No	Free Add On
Login History	Yes	Yes	Free Add On
NIS Authentication	No	No	No
NTLM Authentication	Free Add On	No	No
Pluggable Authentication	Yes	Yes	Free Add On
Problem Notification	No	No	Free Add On
Sandbox	No	No	Limited
Session Management	Yes	Yes	Free Add On
SMB Authentication	No	No	No
SSL Compatible	Yes	Yes	Yes
SSL Logins	Free Add On	Yes	Yes
SSL Pages	Free Add On	Yes	Limited
Versioning	Yes	Free Add On	Free Add On

Table 3: Support

Support		Joomla!	WordPress
Certification Program	Limited	No	Limited
Code Skeletons	Yes	Free Add On	Yes
Commercial Manuals	Yes	Yes	Yes
Commercial Support	Yes	Yes	Yes
Commercial Training	Yes	Yes	Yes
Developer Community	Yes	Yes	Yes
Online Help	Yes	Yes	Yes
Pluggable API	Yes	Yes	Yes
Professional Hosting	Yes	Yes	Yes
Professional Services	Yes	Yes	Yes
Public Forum	Yes	Yes	Yes
Public Mailing List	Yes	Yes	Yes
Test Framework	Yes	Yes	Yes
Third-Party Developers	Yes	Yes	Yes
Users Conference	Yes	Yes	Yes

Table 4: Ease of Use

Ease of Use		Joomla!	WordPress
Drag-N-Drop Content	Free Add On	No	Yes
Email To Discussion	Free Add On	Free Add On	Free Add On
Friendly URLs	Yes	Yes	Yes
Image Resizing	Free Add On	Yes	Yes
Macro Language	Free Add On	Yes	Free Add On
Mass Upload	Free Add On	Yes	Yes
Prototyping	Limited	Yes	Free Add On
Server Page Language	Yes	Yes	Yes
Site Setup Wizard	Limited	No	No
Spell Checker	Free Add On	Free Add On	Yes
Style Wizard	Limited	No	No
Subscriptions	Free Add On	Yes	Free Add On
Template Language	Yes	Yes	No
UI Levels	Yes	Yes	Yes
Undo	Limited	No	Limited
WYSIWYG Editor	Free Add On	Yes	Yes
Zip Archives	No	No	Free Add On

Table 5: Performance

Performance		Joomla!	WordPress
Advanced Caching	Yes	Yes	Free Add On
Database Replication	Yes	No	Free Add On
Load Balancing	Yes	Yes	Yes
Page Caching	Yes	Yes	Free Add On
Static Content Export	No	No	Free Add On

Table 6: Management

Management		Joomla!	WordPress
Advertising Management	Free Add On	Yes	No
Asset Management	Yes	Yes	Yes
Clipboard	No	No	No
Content Scheduling	Free Add On	Yes	Limited
Content Staging	Free Add On	No	No
Inline Administration	Yes	Yes	Free Add On
Online Administration	Yes	Yes	Yes
Package Deployment	Free Add On	No	No
Sub-sites / Roots	Yes	Yes	Yes
Themes / Skins	Yes	Yes	Yes
Trash	No	Yes	Yes
Web Statistics	Yes	Yes	Free Add On
Web-based Style/Template Management	Yes	Yes	Yes
Web-based Translation Management	Yes	Free Add On	Limited
Workflow Engine	Free Add On	No	No
Advertising Management	Free Add On	Yes	No
Asset Management	Yes	Yes	Yes

Table 7: Interoperability

Interoperability		Joomla!	WordPress
Content Syndication (RSS)	Yes	Yes	Yes
FTP Support	Limited	Yes	Free Add On
iCal	Free Add On	Free Add On	Free Add On
UTF-8 Support	Yes	Yes	Yes
WAI Compliant	Limited	No	Limited
WebDAV Support	No	No	No
XHTML Compliant	Yes	Yes	Yes

Table 8: Flexibility

Flexibility		Joomla!	WordPress
CGI-mode Support	Yes	Yes	No
Content Reuse	Limited	Yes	Yes
Extensible User Profiles	Yes	Yes	Free Add On
Interface Localization	Yes	Yes	Yes
Metadata	Yes	Yes	Yes
Multi-lingual Content	Yes	Free Add On	Free Add On
Multi-lingual Content Integration	Yes	Free Add On	Free Add On
Multi-Site Deployment	Yes	Free Add On	Yes
URL Rewriting	Yes	Yes	Yes

Table 9: Built-in-Applications

Built-in-Applications		Joomla!	WordPress
Blog	Yes	Yes	Yes
Chat	Free Add On	Free Add On	Free Add On
Classifieds	Free Add On	Free Add On	Free Add On
Contact Management	Free Add On	Yes	Free Add On
Data Entry	Free Add On	Free Add On	Free Add On
Database Reports	Free Add On	Free Add On	No
Discussion / Forum	Yes	Free Add On	Free Add On
Document Management	Free Add On	Free Add On	Yes
Events Calendar	Free Add On	Free Add On	Free Add On
Events Management	Free Add On	Free Add On	Free Add On
Expense Reports	No	Free Add On	No
FAQ Management	Yes	Yes	Free Add On
File Distribution	Free Add On	Free Add On	Free Add On
Graphs and Charts	Free Add On	Free Add On	Free Add On
Groupware	Free Add On	Free Add On	No
Guest Book	Free Add On	Free Add On	Free Add On
Help Desk / Bug Reporting	Free Add On	Free Add On	Free Add On
HTTP Proxy	No	No	Free Add On
In/Out Board	Free Add On	No	Free Add On
Job Postings	Free Add On	Free Add On	Free Add On
Link Management	Free Add On	Yes	Yes
Mail Form	Free Add On	Yes	Free Add On
Matrix	No	No	No
My Page / Dashboard	Free Add On	No	Yes
Newsletter	Free Add On	Free Add On	Free Add On
Photo Gallery	Free Add On	Free Add On	Yes
Polls	Yes	Yes	Free Add On
Product Management	Free Add On	Yes	Free Add On
Project Tracking	Free Add On	Free Add On	Free Add On
Search Engine	Yes	Yes	Yes
Site Map	Free Add On	Free Add On	Free Add On
Stock Quotes	Free Add On	Free Add On	Free Add On
Surveys	Free Add On	Free Add On	Free Add On
Syndicated Content (RSS)	Yes	Yes	Yes
Tests / Quizzes	Free Add On	Free Add On	Free Add On
Time Tracking	Free Add On	Free Add On	Free Add On
User Contributions	Yes	Yes	Yes
Weather	Free Add On	Free Add On	Free Add On
Web Services Front End	Limited	Yes	Free Add On
Wiki	Free Add On	Free Add On	Free Add On

Conclusion

Drupal, Joomla and WordPress basic features can be used to create simple sites, single or multi user blogs, brochure ware, forums, community websites and more. Libraries should make consistent efforts to provide web - based services to their users and it is the role of the librarians to act as a guide and be should up–to–date and should also know the

usefulness of web sites, web portals. Hence librarians can easily work on the content management system. Content management system allows librarians to create resource page for their liaison groups without any prior knowledge of web development technologies. The study of widely used CMSs Joomla, Drupal and WordPress and the analysis of the features of an individual system can help an individual or organization to choose an appropriate CMS for their specific web application.

References

1. Rawtani, M R, and Chidambaram, S Siva, (2009), "Drupal: The Open Source Content Management System Software Suit for Library with Library 2.0Features" (paper presented at the 7th International CALBER-2009, Puducherry. Feb 25-27, 2009)176-183.

   Retrieved from http://www.inflibnet.ac.in/caliber2009/CaliberPDF/23.pdf Date of access 17th Jan, 2017.

2. Frost, Alan (2010). Content Management Systems**.** An Educational KM Site. Retrieved from http://www.knowledge-management-tools.net/content-management-systems.html Date of access 17th Jan, 2017.

3. Wakode, B V and Choudhary, D N. Study of content management systems Joomla and Drupal. IJRET: International Journal of Research in Engineering and Technology, Volume: 2013; 02(12): 569-573.

4. Giri, Kaushal K and Nirgude, Kirti R. Open Source Content Management Software : A Comparative Analysis. 7th International CALIBER-2009, Pondicherry University, Puducherry, February 25-27, 2009, © INFLIBNET Centre, Ahmedabad, 2009.pp-184-193.

5. Singhal, Niraj et.al. Comparative study based on open source content Management systemsindian Journal of Computer Science and Engineering. 2010; 1(4):267-276.

6. Viduka, Dejan et. al. Comparative Study Based on Open Source Content Management Systems Mambo and his Fork – Joomla and Elxis. IJCSI International Journal of Computer Science Issues, 2013; 10(5):1.

7. Open-source software (n.d.).Wikipedia. Retrieved from https://en.wikipedia.org/wiki/Open-source_software

8. https://www.drupal.org/about

9. https://www.joomla.org/about-joomla.html

10. https://wordpress.com/com-vs-org/

11. https://en.wikipedia.org/wiki/WordPress

Original Article

Indian Journal of Library and Information Science
Volume 11 Number 1, January - April 2017
DOI: http://dx.doi.org/10.21088/ijlis.0973.9548.11117.8

Use of Library Information Resources and Services by the Central Library Users of Maharshi Dayanand University, Rohtak (Haryana): A Study

Shivcharan

Abstract

The present study investigated the use of Library Information resources and services by the Social Science user of MaharshiDayanad University, Rohtak (Haryana). A total 100 questionnaires were distributed randomly among the users and out of these 86 questionnaires duly field up by respondents were found valid for analysis. It was found that maximum of the users with 38(44.18%) visit the library daily and 23(26.74%) of the respondents use library information resources and services for preparing the competitive exam. It was also found that 28 (32.55%) use textbooks and 26(30.23%) of the respondents use Library circulation services. Out of the 86, 21(24.41%) of the respondents have faced problems as lack of time in using the library.

Keywords: Information Resources; Information Service; Library Users.

Introduction

Today's library is powerhouse where information is stored, generated and transferred to fulfill the users need. For the optimum use of this library its users should also have knowledge to access its resources to their full benefit making every search effective. But still the information searching strategies shows that the user's searching behavior as being subject specific and most users pick what they perceive as important word in an assigned topic and they use it to search for the needed information [1].

Libraries and information centers are undergoing major changes in this recent era. The rapid development of information technology and broadcasting, the phenomenal growth of the world wide web and computerized of library information resources and services are new demand from the users. However, these are the basic need of the library users to access information created, organized and stored for study, research and entertainment [2]. The library is the place, which collects and make available both knowledge and documentation. The evolution of libraries forms part of the mainstream social history and understanding. This process is essential to an understanding of twentieth-century mass culture. Academic libraries become mandatory to combine the provision of both conventional and modern resources/services so as to meet today's information demands of the researchers.

Literature Review

Hussain and Kumar [3] examined the utilization of information resources and services of the Master School of Management Library, Meerut, (U.P.) India. A well structure questionnaire was used for collecting opinions of the library users about usage of information resources and services. The study analyzed the various aspects of library collections uses within the available resources, frequency and purposes of visit, utilization of library services, and assesses the behavior of library staff. Saikia and Gohain [4] investigated that use of library resources, user's satisfaction on library resources & services and information seeking behaviors of the students and research scholars of Tezpur University. The study revealed that 79.5%(159) library users responded where 32.07% (51) respondents visited Central library,

Author's Affiliation: *Research Scholar, Department of library & Information Science, Maharishi Dayanand University, Rohtak.

Reprint's Request: Shivcharan, Research Scholar, Department of library & Information Science, Maharishi Dayanand University, Rohtak - 124001 Haryana.
E-mail: Shivcharan064@gmail.com

Received on 28.07.2016, **Accepted on** 10.08.2016

Tezpur University every day for borrowing library books. It is found that 82.39 % users borrowed text books, 79.87% consulted journals and 75.47% read Newspapers to meet their information needs.Tyagi [5]in their work entitled 'Use of Information Resources and Services at Delhi Public Library (DPL): A Survey'. The study demonstrated and elaborated that various aspect of use of information resources and services, physical facilities available and collection of DPL. It highlighted that problem faced by the users and satisfaction level of users with central library collection. Aghajani et al. [6] carried out a survey on Library resources and services use for study by students of medical Sciences in Semnan University of Medical Sciences and Health Services, 2006-07. This study was an attempt to evaluate student use of information resources and library services in SemnanUnivarsity of Medical Sciences and Health Services. Shrestha [1] conducted a study on 'A Study on Students Use of Library Resources and Self-Efficacy'. The result found that students are most in the need of intervention as they often come to college unprepared. The guidance in the use of library resources and services is necessary to help students meet some of the information requirements. It is also found that library books, e-journals and Internet are the most popular source of information for the course work and research.

Objectives of the Study

A major objective of the present study is to examine the Use of library information resources and services by the Social Science discipline library users in MaharshiDayanand University Central library in Haryana. The specific objectives of the paper are:

- To study the user's ability and their think;
- To study the user approach to the library/public library;
- To elicit opinions about services offered by the library;
- To know the usefulness of information resources and services of the library;
- To identify the purpose of information resources and services, nature and type of information required by the students.

Scope and Methodology

The scope of the present Study confined to the Use of Library Information Resources and Services by Researchers and Post Graduate Student of SocialSciencediscipline at MaharshiDayanand University, Rohtak. In this study, questionnaire method was adopted for the collection of quantitative data from participant. The population of the study 100 consist of Researchers and Post Graduate Student of SocialSciencediscipline from MaharshiDayanand University, Rohtak. The population was very large therefore random sample of 100 respondents from Social Science discipline was selected. After the repeated request the investigator was able to get 90 questionnaires and out of these 86 questionnaires duly field up by respondents were found valid for analysis. Data were proceed and analyzed using MS Excel and presented with the help of the tables and graphs. Detailed breakup of the sample as given below.

Category	Questionnaire Distributed		Questionnaire Received				Questionnaire Valid for Analysis			
	RS	PG	RS	%	PG	%	RS	%	PG	%
Social Science	40	60	35	87	55	91	34	97	52	95

Analysis and Finding of the Study

Table 1: Category wise distribution

Categories of user	Questionnaire distribution	Valid for analysis
Research Scholars	40	34 (97%)
PG Students	60	52 (95%)
Total	100	86 (86%)

Out of 100 and out of these 86 questionnaires duly field up by respondents were found valid for analysis. Although the response of all categories of users was quite good, the highest response was received with 34 (97%) from the Research Scholars followed by the PG students with 52 (95%) questionnaires.

Table 2 reveals that out of 86 respondents, males constitute 62.79%, while the remaining are females (37.20%). In the categories wise 22(25.58%) of the Researchers and 32(37.20%) of PG students were male respondents, whereas 12(13.95%) of the Researchers and 20(23.25%) of PG students were female students. It shows that male representatives are greater than female representatives.

Respondents were asked about the frequency of library use. The questionnaire providing five different frequency and response in Table 3. It clearly indicates that out of 86 respondents maximum of the users with 38(44.18%) visit the library daily, 19(22.09%) users visit library at least once a week. Less 20% of the users visit the library at least once/a fortnight and rarely.

Table 2: Gender-wise distribution

Gender	Respondents		
	Researchers	PG	Total
Male	22 (25.58%)	32 (37.20%)	54 (62.79%)
Female	12 (13.95%)	20 (23.25%)	32 (37.20%)
Total	34 (39.53%)	52 (60.47%)	86 (100%)

Table 3: Frequency of library use

Frequency	Respondents		
	Researchers	PG	Total
Daily	22(25.58%)	16 (18.60%)	38 (44.18%)
At least once a week	06 (06.97%)	13 (15.11%)	19 (22.09%)
At least once a fortnight	03(03.48%)	05 (05.81%)	08 (09.30%)
At least once a month	02 (02.32%)	12 (13.95%)	14 (16.27%)
Rarely	01 (01.16%)	06 (06.97%)	07 (08.13%)
Total	34 (39.53%)	52 (60.47%)	86 (100%)

Table 4: Purpose of use the library resources and services

Purpose	Respondents		
	Researchers	PG	Total
For finding Books	02 (02.32%)	12 (13.95%)	14 (16.27%)
For newspaper reading	03 (03.48%)	02 (02.32%)	05 (05.81%)
For preparing class notes	00	08 (09.30%)	08 (09.30%)
For preparing competitive exam	02 (02.32%)	21 (24.41%)	23 (26.74%)
For doing research work	13 (15.11%)	00	13 (15.11%)
For writing research paper	10 (11.62%)	00	12 (13.95%)
For Internet searching	04 (04.65%)	09 (10.46%)	13 (15.11%)
Total	34 (39.53%)	52 (60.47%)	86 (100%)

Table 4 denotes that most of the respondents 23(26.74%) use library information resources and services for preparing competitive exam, 14(16.27%) respondents use for findings books and 13(15.11%) use for doing research work or Internet searching. Only 05(05.81%) of library users use for newspaper reading.

It was reveal from the above table that most of the respondents with 28(32.55%) use text books, 13(15.11%) use newspapers and e-journals. 10(11.62%) of the respondents use periodicals, reference books and e-books were used at the least by users.

Table 5: Use of Library Resources

Information resources	Respondents		
	Researchers	PG	Total
Text Books	01 (01.16%)	27 (31.39%)	28 (32.55%)
Reference Books	03 (03.48%)	04 (04.65%)	07 (08.13%)
Newspapers	02 (02.32%)	11 (12.79%)	13 (15.11%)
Periodicals	07 (08.13%)	03 (03.48%)	10 (11.62%)
E-Books	02 (02.32%)	04 (04.65%)	06 (06.97%)
E-Journals	11 (12.79%)	02 (02.32%)	13 (15.11%)
Databases	08 (09.30%)	01 (01.16%)	09 (10.46%)
Total	34 (39.53%)	52 (60.47)	86 (100%)

A question was asked to know about the library services used by the users. Table 6 clearly indicates that most of the respondents with 26(30.23%) use Library circulation service, 22(25.58%) Online Public Access Catalogue (OPAC), 16(18.60%) reprographic service, 11(12.97%) Internet and 10(11.62%) classification.

Overall of the response about library resources and services is positive. The above (Table 7) shows that 22(25.58%) of researchers and 18(46.51%) of PG students gave very good response about the resources and services in the library. It was also found that 08(09.30%) of Researchers and 24(27.90%) of PG students said library resources and services are good. Only 06(06.97%) asked library resources and services are poor.

Table 6: Use of Library Services

Library services	Researchers	PG	Total
Circulation	10 (11.62%)	16 (18.60%)	26 (30.23%)
OPAC	09 (10.46%)	13 (15.11%)	22 (25.58%)
Classification	03 (03.48%)	07 (08.13%)	10 (11.62%)
Reprography	06 (06.97%)	10 (11.62%)	16 (18.60%)
Internet	05 (05.81%)	06 (06.97%)	11 (12.97%)
Newspaper Clipping	00	00	00
Current Awareness Service(CAS)	01 (01.16%)	00	01 (01.16%)
Total	34 (39.53%)	52 (60.47)	86 (100%)

Table 7: User response about Library Resources and Services

Responses	Respondents		
	Researchers	PG	Total
VERY GOOD	22 (25.58%)	18 (20.93%)	40 (46.51%)
GOOD	08 (09.30%)	24 (27.90%)	32 (37.20%)
SATISFACTRY	02 (02.32%)	06 (06.97%)	08 (09.30%)
POOR	02 (02.32%)	04 (04.65%)	06 (06.97%)
Total	34 (39.53%)	52 (60.47%)	86

Table 8: Problems faced to using the Library Resources and Services

Problems faced	Respondents		
	Researchers	PG	Total
Do not how to use the library resources and services	00	17 (19.76%)	17 (19.76%)
Lack of awareness	00	06 (06.97%)	06 (06.97%)
Library staff are unwilling for service	08 (09.30%)	09 (10.46%)	17 (19.76%)
Lack of time in using the library	10 (11.62%)	11 (12.79%)	21 (24.41%)
Technical problems	08 (09.30%)	05 (05.81%)	13 (15.11%)
Any other	06 (06.97%)	04 (04.65%)	10 (11.62%)
Total	32 (39.53%)	52 (60.47%)	86 (100%)

The above Table 8 related with the problems faced by respondents. It was found that 21(24.41%) of the respondents were faced problems as lack of time in using the library, followed by 17(19.76%) users said who do not know how to use the library resources/ services and library staffs are unwilling for service. Only 06(06.97%) respondents asked lack aware to the library resources and services of the library.

Finding of the Study

The major findings of the study are:

- 38(44.18%) visit the library daily and less than 20% of the users visit the library at least once/a fortnight and rarely;
- Most of the respondents 23(26.74%) use library information resources and services for preparing competitive exams;
- Almost the respondents use text books and e-journals;
- 22(25.58%) of researchers and 18(46.51%) of PG students gave very good response about the resources and services in the library;
- 21(24.41%) of the respondents were faced problems as lack of time in using the library.

Conclusion

MaharshiDayanand University central library

invest lots of rupees every year on the collection development in order to meet the need of users. In order to make the most of the use of library resources, every library should build up their collection keeping in mind the need of users and should design library with changing information environment. This study revealed that nearly half of the total respondents visit library regularly and borrowing books is the main purpose of visiting library, followed by reading print journals & access to e-journals, reference sources and to read Newspaper. Overall response of the respondents about library resources and services is positive. A University library has a very vital role to play to meet multidimensional demands of users.

References

1. Shrestha N. A Study on Student' S Use of Library Resources and Self-Efficacy." Tribhuvan University, Kirtipur, Katmandu, Nepal. 2008; 1-133.
2. Burman J, Kumar D. Use of information resources and services by the library users at Hindu College, Sonepat (Haryana). International Journal of Library and Information Science. 2015; 6(2):114-19.
3. Hussain A, Kumar K. Utilization of Information Resources and Services of the Master School of Management Library/ : A Study. International Journal of Library Science. 2013; 09(3):39–52.
4. Saikia M, Gohain A. Use and User's Satisfaction on Library Resources and Services in Tezpur University (India): A Study. Library Philosophy and Practice (e-journal). 2013; 1–19.
5. Tyagi S. Use of Information Resources and Services at Delhi Public Library (DPL): A Survey. Library Philosophy and Practice. 2011; 1–14.
6. Aghajani S H, Saberian M, Ghorbani R. Library Resources and Services Use for Study by Students of Medical Sciences in Semnan University of Medical Sciences and Health Services , 2006-7. Journal of Medicine Eduction (2009); 13(1):51–54.

Instructions to Authors

Submission to the journal must comply with the Guidelines for Authors.

Non-compliant submission will be returned to the author for correction.

To access the online submission system and for the most up-to-date version of the Guide for Authors please visit:

http://www.rfppl.co.in

Technical problems or general questions on publishing with IJLIS are supported by Red Flower Publication Pvt. Ltd's Author Support team (http://rfppl.co.in/article_submission_system.php?mid=5#)

Alternatively, please contact the Journal's Editorial Office for further assistance.

Editorial Manager

Red Flower Publication Pvt. Ltd.

48/41-42, DSIDC, Pocket-II

Mayur Vihar Phase-I

Delhi - 110 091(India)

Phone: 91-11-22754205, 45796900, 22756995, Fax: 91-11-22754205

E-mail: author@rfppl.co.in

Review Article

Indian Journal of Library and Information Science
Volume 11 Number 1, January - April 2017
DOI: http://dx.doi.org/10.21088/ijlis.0973.9548.11117.9

Implementation and Empirical Analysis of Web Discovery Tools with Special Reference to India

Vasanthkumar R.*, Gopal K.**

Abstract

This paper throws lights on how discovery solution works and provides the potential features of Discovery Solutions in context to Library environment. It also evaluates the available web discovery services offered by eminent organizations and also provides a practical analysis of available library discovery tools in context of the present-day explosion of available open search engines on the Internet. The focus of analysis include how discovery tools are expected to manage library collections, provide access to scholarly information content, as well as other factors. It discusses some of the possibilities regarding how these technologies, methodologies, and products might be able to adapt to changes in the evolving information landscape in scholarly communications and to take advantage of new technologies, metadata models. It also throws light on Indian scenario of web discovery service.

Keywords: E- Resources; Single Search Window; Relevance Ranking; Search Engines; Web Discovery Tools.

Introduction

In recent days Libraries have shown interest in the tools and technologies that offer more convenient way of accessing to the resources for the communities that they serve. These tools evolved steadily in recent decades, making great progress in the scope and depth of materials addressed.

The development seen in the successive generations of technology beginning from online catalogs, to Meta search tools, to the current generation of index-based discovery services represents an incredible improvement. The users of academic libraries including students, faculty, researchers and other users have left to augment Google results by searching library databases individually. Some of the libraries are using meta search engines also referred to as federal search engines, which are simply searching across databases, but they have fallen short of libraries expectations in addition to this federal solution are slower of response, problems with relevance ranking and in adequate handling of duplicates are some of the major problems [1].

Web scale system really creating an information system that integrates nearly all library content to a single platform information professionals are coordinators of all these process and it is essential that they should have good understanding about the concepts of web discovery solutions, its technology, major players and evaluation parameters of selecting a discovery service, Our end users certainly are familiar with the idea of a single search across a comprehensive index that produces a large, relevancy-ranked results list.

Even though most patrons would not recognize the term web-scale discovery (WSD), it is what they have come to expect. More and more libraries are stepping up to meet their users' expectations by implementing WSD services.

Librarians around the world are trying to learn what these services are and how they work, evaluating the services on the market, selecting and implementing a service, and then teaching colleagues and patrons all about it.

Author's Affiliation: *Edutel Technologies Pvt. Ltd., Yeshwanthpur, Bengaluru-560022, Karnataka, India. **District Central Library, Chitradurga, Karnataka, India.

Reprint's Request: Vasanthkumar R., Edutel Technologies Pvt. Ltd., Yeshwanthpur, Bengaluru-560022, Karnataka.
E-mail: vasanth.kumar@edutelmail.in

Received on 04.01.2017, **Accepted on** 23.01.2017

Literature Review

This literature focuses primarily on usability studies and criteria for choosing a web-scale discovery service, with emphasis on search performance. There are few studies specifically reviewing the search performance of web-scale discovery services with each other of those, most base their evaluation of search performance on a very small sample of searches (e.g., Timpson & Sansom, 2011; Zhang, 2013). The studies below represent more extensive attempts to compare the search performance of these products. Asher, Duke, and Wilson (2012).

Study was based on searches performed by test subjects, assessments had been made using studies carried by eminent authors of useful research papers. Rochkind (2013) compared user preference for search results produced by EDS, Summon, EBSCO host "Traditional" API and Ex Libris Primo. His survey tool allowed subjects to enter search terms of their own choosing and view side-by-side results, within the survey window, for two randomly chosen products. Each product was configured to exclude non-scholarly content. The study found no significant difference in preference between products.

Implementation

Implementation phases can run from 3-12 months or more, depending on the size of the library and the number of content providers (Stone, 2010). The core set of content providers established in the evaluation phase should serve as the first build of the discovery data. In the case of e-book content providers, be aware that local e-book subscriptions may not be complete sets, and e-books may have to be identified at the title level rather than the set level. Identify next the OAI-compliant services that can also provide metadata for simultaneous searching in the discovery tool, such as Content DM, DSpace or other image or document repositories. These are easily integrated into the discovery tool, usually by providing a single URL for each OAI server. Objects containing metadata should be reviewed for completeness; depending on customization of the metadata in local systems, additional mapping may be required similar to the ILS database at the discovery tool level (Allison, 2010; Luther, 2011).

Discovery tools, by design, are extraordinarily capable of searching multiple fields of data quickly, whereas existing ILS data is derived from specific, limited MARC fields indexed in one or more narrowly defined indexes. Notes fields, local holdings fields, even item-level information including faculty course reserves or acquisition pricing, could conceivably be included if library chose to harvest that information for inclusion in the discovery tool. In some cases, even the weighting and precedence of certain fields of data can be determined by the library in the discovery tool. The ILS database is not a stagnant data file, so once the entire ILS database is uploaded, synchronization scripts need to report additions, changes, and deletions of records from the ILS database and convey these to the discovery tool, daily, if possible (Marcin & Morris, 2008). Full database reloading, once scripts are in place, should not need to occur more than twice a year. The discovery tool synchronization intervals should be flexible to accommodate the needs and work patterns of the library, including rapid additions of large sets, or only seasonal discards for weeding. Note that this synchronization step may not be needed if the ILS and discovery tool are on the same vendor platform; or, more likely, the scripts will be provided and executed automatically, if on the same vendor platform.

EBSCO

EBSCO Information Services is involved in three main activities, offering subscription services to libraries for print and electronic journals, developing tools for libraries to manage their electronic resources based on the EBSCONET platform, and producing database and discovery products on its EBSCO host platform. It not only provides a search interface for accessing e-books and full-text journals that are native to the EBSCO platform, but it also indexes and provides links to most of the electronic content that the library has purchased or leased from other information suppliers. Furthermore, it indexes the catalog of the library's physical inventory the books, journals, CD-Roms, maps, etc., Ebsco provides a link to the content straight from the citation. In the case of the library catalog, real-time availability is supplied showing the location and status of the material. It provides superior relevancy ranking, most comprehensive collection of full text for searching and capable of leveraging controlled vocabularies for key subject indexes. Flexibility, including interface customizations and seamless interaction with most third-party vendors such as document delivery services, ILS etc. Like the ability to search all databases at once. There were several databases that were not able to be loaded into EDS due to EBSCO might not have agreements with them which made having a discovery service less than ideal and the user interface is confusing. It is a challenge to make it work with non-EBSCO partners/products. It searches

well, and results are reasonably relevant. However, it presents a pedagogical problem in the subjects or discipline- and need-specific databases. It is a great step forward for improving access to journal articles, but it lacks in searching for known items in the catalog. It is useful for academic libraries, but public, school and special libraries are generally facing confusion on which search tool to use and sometimes it does not integrate very well with current ERMS.

Worldcat Local

OCLC launched a pilot for WorldCat Local in April 2007. Libraries using World share Management services operate directly with the WorldCat database; those using a local ILS might need to synchronize their holdings on WorldCat through a process called reclamation. OCLC's WorldCat Local is the web-based discovery service that delivers access through a single search box to more than two billion items. It also offers syndication services through partnerships and collaborations with more than 200 partners that make library collections accessible to searchers through leading search engines and other websites, More than 977 million articles with easy access to full text, 37 million digital items from trusted sources like Google Books, OAIster and HathiTrust, 15 million e-books from leading aggregators and publishers, More than 30 million pieces of evaluative content. Some issues with display and wording that are confusing to users and librarians, and links to items are not consistently available. Its strength is in delivering records for any book imaginable, but naturally it is not strong for journals. Have some Functionality issues needs urgent fixing and support has been less than helpful. OCLC's WorldCat Local discovery tool provides access to local, consortia, and worldwide content in a single user interface. The limited scope of the search makes it mostly useless for advanced students and faculty, but the unsorted hodgepodge of search results is not ideal for novice.

Primo + Primo Central

Primo was developed by Ex Libris Group, Primo was launched as a discovery interface in 2006. Primo was designed to provide a more modern and sophisticated interface for library collections, based on a local index created from records imported from a library's ILS or other local or remote repositories for which the library can load copies of metadata. Save search queries and use them again without having to reformulate the query. Change the number of results that appear in the brief result display. Change the interface language based on the interface language made available to the users by the library, Save ("push-to") items to a personal e-Shelf as well as third-party applications such as Connotea, del.icio.us, RefWorks, and EndNote Web. Export in RIS format is supported to enable the user to work with the client versions of various citation managers such as EndNote. Print and e-mail results or have results sent to their cell phone (by SMS) so that items can be easily located on the library shelf. Configure links from a record to other queries, to individual records or to other systems, based on a URL template and information in the record. Problems with relevance ranking and support and generally works OK if you search like you're using Google and use the facets to narrow your search. Less effective for advanced searchers who want to do Boolean searches, etc. Primo is a step forward from MetaLib, but it has definite shortcomings.

Summon

The Summon discovery service was created by Serials Solutions, a division of ProQuest. Serials Solutions was founded in 2000 to help libraries manage their e-journal holdings. Current Serials Solutions products include 360 Core, its base package for e-resource management, The company is currently developing a new library services platform called Intota. A preliminary product, Intota Assessment, provides tools for data-driven collection management. Like other web-scale discovery products, Summon provides a pre-harvested central index allowing users to search across a library's book and journal holdings through a single search box and provides critical feedback to the vendor. The Summon API and RSS feeds potentially allow deeper, more customized integration into library services; the use of Unicode throughout Summon means that it can be searched in multiple languages (Arabic; Chinese; etc). Summon Topic Explorer—Highlights relevant reference resources and provides recommendations to related topics. Database recommender directs users to

Table 1: Example of how discovery service displays the results

Examples of Known-item and Topical Search Queries	Topical search queries:
Religious and cultural background of north eastern part of India	Religion and culture
National Cultures and Work Related Values The Hofstede Study	solar power coating nanoparticle
Economics contribution of Koutiliya	Koutilyana Arthashathra
How wind and solar energy contribute to Global warming	Solar and wind energy

specialized databases through a combination of library controlled and community-sourced tags and relevance based recommendations.

Content spotlighting, visually distinguishing valuable content by type, content spotlighting dynamically groups' newspaper and image content into distinct visual elements within search results to ease navigation and evaluation of these results and promote unique content in the library's collections. Facet category, Discipline—Supported Authoritative, item-level discipline mapping in the Summon index allows users to zoom in on discipline specific content or combine disciplines for interdisciplinary searching. Direct linking to resources has improved access and usability. Option to exclude citation records has also improved usability and leads to full-text download. Good improvement in coverage of OA content and linking problems mainly caused by withholding of metadata by competitors. it is difficult to integrate with ILS. For example, clear holdings availability and ability for patrons to view their own account using the same interface and Clunky interface. Ongoing problems implementing new titles and the relevance ranking, level of duplication, interface, and index coverage could use improvement and main difficulty with Summon has been in ingesting and displaying catalog records. Issues with article linking through to full text and Provenance of search results (database) unknown until native interface is reached, and also eBook linking is problematic.

Indian Scenario

In India, research Libraries like University Libraries, IIMs, IITs, AIIMS etc are subscribers of electronic journals, electronic books, and databases and their own digital repositories and OPACs and many of them are part of different consortiums. Libraries similar to this array are desperate for Discovery Solution. In this scenario, users are in advantageous position regarding access of resources but often in the confusion, from where to start and which resource to be used to get their information. This force users to depend on Google like search engines to get their information. Many studies show that many of the resources are underutilized due to lack of information to users regarding the availability of such resources in library. Web Scale discovery solutions eliminate this confusion and provide Single Search Box environment to users to retrieve all the relevant information from multiple sources that are subscribed by the Library. Discovery solution can make a difference in reducing the valuable search time of researchers and also better chance in utilizing the near optimal utilization of Library subscribed resources.

Still web discovery service in its early stage in a country like India, while randomly surfing the websites of premier Institutes especially IITs and Central Universities, EDS is the most commonly used discovery service in India. Indian institute of Spices Research, Kozhikode is one of the best examples for Research Libraries in India who adopted Discovery Solution. They have only around hundred FTE., still they subscribed EBSCO Discovery Service in the year 2012, considering the value to researchers and retain the subscription for the third consecutive year. IIT Bombay, Delhi, Guwahati, IIMs of Raipur, Ahmadabad, Kozhikode, Ranchi and JNU (Delhi) is another example which are successfully implemented EBSCO and providing single window search facility for their users.

Conclusion

This study presented the various implementation procedures of web service discovery methods. It is observed from the study that different approaches are used to measure and to estimate the accuracy of the discovere web services. This study compares the search performance of web-scale discovery services of ProQuest's Summon, EBSCO Discovery Service (EDS), OCLC and Primo + Primo Central. There was found to be no significant difference in performance of above mentioned discovery service providers. Because there was no significant difference in the search performance of available discovery service, any decision to purchase one product or the other should be based upon other considerations (e.g., technical issues, cost, customer service, or user interface). Web Scale services are still in its initial stages of development and lots of developments in the features, functionality, level of integration with other systems, scope of content, and soundness of metadata, flexibility of the interface are all evolving and it is expected, will continue to evolve in meeting the needs and expectations today's next generation users. The comparative analysis shows that all the major service providers are extending competitive features and services, but varies in some features and the choice is depends on the concerned library's preference, selecting, evaluating and implementing a web-scale discovery products has taught us much about project effectiveness, communication strategies, implementation processes and ongoing challenges. Such lessons will stand us in good stead not only in this instance but also in the future as we continue to grapple with the ever-increasing rate of technological change and innovation.

References

1. Susan Johns-Smith, Evaluation and Implementation of a Discovery Tool, Kanas Library Association, 2012; 2(1):17-23.
2. Parnab Chatterjee, Debasis Das, Web Scale Discovery Services and Tools with special reference Central Library, IIT Kharagpur, International Journal of Innovative Science, Engineering & Technology, March 2015; 2(3):677-686.
3. Kwon O, Im GP, Lee KC. MACE-SCM: A multi-agent and case-based reasoning collaboration mechanism for supply chain management under supply and demand uncertainties. Expert Systems with Applications. 2007; 33(3):690–705.
4. Grigori D, et al. Ranking bpel processes for service discovery. IEEE Transactions on Services Computing. 2010; 178–92.
5. Jordan D, et al. Web services business process execution language version 2.0. OASIS standard. 2007; 11:10-13.
6. Marshall Breeding, Library Resource Discovery Products: Context, Library Perspectives, and Vendor Positions, Major Discovery Product Profiles, January 2014; 50(1):27-41.
7. Karen Ciccone, John Vickery, Evidence Based Library and Information Practice 10.1, Summon, EBSCO Discovery Service, and Google Scholar: A Comparison of Search Performance Using User Queries, 2015.p.34-49.
8. Suchithra M, Ramakrishnan M. Enhanced web service ranking approach based on non-functional QoS criterion with user preference. National Conference on Computing Techniques (NCCT'15); India. Mar 2015.p.67–72.
9. Guo W-Y. Qu H-C, Hong C. Semantic web service discovery algorithm and its application on the intelligent automotive manufacturing system. 2010 The 2nd IEEE International Conference on Information Management and Engineering (ICIME); IEEE; 2010.p.601–4.
10. Klusch M, Fries B, Sycara K. Automated semantic web service discovery with OWLS-MX. Proceedings of the 5th International Joint Conference on Autonomous Agents and Multiagent Systems and ACM; 2006.p.915–22.
11. Zhou B, et al. Using inverted indexing to semantic WEB service discovery search model. 5th IEEE International Conference on Wireless Communications, Networking and Mobile Computing (WiCom'09); 2009.p.1–4.
12. Aiello M, et al. Web service indexing for efficient retrieval and composition. E-Commerce Technology. The 8th IEEE International Conference on Enterprise Computing, E-Commerce, and E-Services; 2006.p.61–4.
13. Rajendran T, P. Balasubramanie. An optimal agent-based architecture for dynamic web service discovery with QoS. 2010 IEEE International Conference on Computing Communication and Networking Technologies (ICCCNT); 2010.p.1–7.
14. Chukmol U, Benharkat AN, Amghar Y. Enhancing web service discovery by using collaborative tagging system. IEEE 4th International Conference on Next Generation Web Services Practices (NWESP'08); 2008: 54–9.
15. Implementing web scale Discovery Services Special reference to Indian libraries context. By nikesh narayanan, http://www.slideshare.net/nikeshn/implementing-web-scale-discovery-services-nikesh.

STATEMENT ABOUT OWNERSHIP AND OTHER PARTICULARS
"Indian Journal of Library and Information Science" (See Rule 8)

1. Place of Publication	:	Delhi
2. Periodicity of Publication	:	Quarterly
3. Printer's Name	:	**Asharfi Lal**
Nationality	:	Indian
Address	:	3/258-259, Trilok Puri, Delhi-91
4. Publisher's Name	:	**Asharfi Lal**
Nationality	:	Indian
Address	:	3/258-259, Trilok Puri, Delhi-91
5. Editor's Name	:	**Asharfi Lal** (Editor-in-Chief)
Nationality	:	Indian
Address	:	3/258-259, Trilok Puri, Delhi-91
6. Name & Address of Individuals	:	**Asharfi Lal**
who own the newspaper and particulars of shareholders holding more than one per cent of the total capital	:	3/258-259, Trilok Puri, Delhi-91

I Asharfi Lal, hereby declare that the particulars given above are true to the best of my knowledge and belief.

Sd/-
(Asharfi Lal)

Review Article

Indian Journal of Library and Information Science
Volume 11 Number 1, January - April 2017
DOI: http://dx.doi.org/10.21088/ijlis.0973.9548.11117.10

Use of Reading Materials in Social Science in Central Library, Jawaharlal Nehru University, New Delhi

Shiva Kanaujia Sukula*, Rishabh Kumar Jain, K.N. Rao*****

Abstract

The library resources and services are the basic components to serve the readers but the complex nature of resources and modernity in services, sometimes, create a new image of library before its users. The preparation of a library, to a new environment and diverse nature of users' needs, draws attention towards technologies and tools. This paper highlights the presence of library collection, components and various services in general provided as a basic model of university library collection and services. At the same time it examines a university library system in the light of Ranganathan's fifth law of library science i.e. the library is a growing organism. The paper discusses about the strategic actions taken during last financial years to strengthen the library resources and extending the range of library services. The concluding remarks embark the journey of a university library in modern times.

Keywords: Library Resources; Integrated Library System.

Introduction and Background

Though in the very past the 'educational nature', and 'utilitarian nature' (J. P. VAGT, 1965) have been reflected yet the many facets of readers' services are unveiled during the decades of library service. The readers' services range from 'reference assistance' to arranging the information material for the readers as stated on webpage of Readers' Services (The Library of Trinity College Dublin). To provide readers' services in efficient manner the concept of Customer Relationship Management (CRM) has been included (Chyuan Perng, Shiow-Luan Wang, Wen-Chih Chiou; 2009). The technological advancement and approaches like CRM support readers' services in an academic library. Whereas the notion of "library service offerings considered as distinctive signifiers of excellence" (Sasekea Harris, 2016) provides a glimpse into the intricate nature of readers' services, the designing and implementation of readers' services is very significant. Though libraries have been careful for readers' services yet the use of 'integrated library system' has been beneficial for the users in a way to impart many services (Saturday U. Omeluzor, Gloria O. Oyovwe-Tinuoye; 2016). The conventional services have been serving the readers, since a long time yet the suggestions to include 'research data services' (Tibor Koltay, 2016) are innovative and leading towards modernity required for library readers.

Author's Affiliation: *Deputy Librarian ** Professional Assistant *** Assistant Librarian, Central Library, Jawaharlal Nehru University, New Delhi.

Reprint's Request: Rishabh Jain, Professional Assistant, Acquisition Section, Central Library, Jawaharlal Nehru University, New Delhi - 110067.
E-mail: rishabh.jain965@gmail.com,
rishabhjain@mail.jnu.ac.in

Received on 16.01.2017, **Accepted on** 31.01.2017

Objectives

The objectives are following:

i. To reflect the current status of library and its establishment.
ii. To find out the collection building during last five years.
iii. To state about the number of services provided by the library.
iv. To measure the library's preparation for the future services.

Data Collection and Analysis

The data was collected from the concerned sections

with the emphasis on the developments taken place during last five years. The data was collected to reflect the light on various aspects such as library staff, collection, services, basic infrastructure, and budget allocation etc. For social sciences collection development, the major schools have been considered and the data about the titles recommended and purchased for the various schools and centers have been tabulated. The idea rooted in the direction of getting inputs for growth of library in a span of five years as the law 'library is a growing organism' pervades.

A. General:

I. Name of the library - Central Library, JNU

II. Year of establishment- 1970

III. Website address- lib.jnu.ac.in

The above table reflects the primary information about the library as the year of establishment and the web address to locate its resources online and services, too.

B. Library Timing

1.	Normal working days (Monday to Friday)	Round O'clock
2.	Saturday	8AM to 12 Mid Night
3.	Sunday/Holidays	8AM to 8PM

The library serves the users in maximum hours of a typical day. It opens round o'clock to facilitate users by its reading halls availability, and other infrastructural facilities. During weekend, it remains open 8 a.m. to 12 p.m. midnight and on Sunday for twelve hours from morning 8 o'clock till night 8 o'clock.

C. Total Library Staff

	Name of Staff	Numbers
1.	University Librarian	01
2.	Deputy Librarian	03
3.	Assistant Librarian	13
4.	Professional Assistant	29
5.	Semi Professional Assistant	32
6.	Library Attendants	27
7.	Genitors	06

The library is rich in context of human resources. The sufficient number of staff persons delivers the library services, which is prerequisite for a modern library.

As the table shows, the positions of deputy librarians, assistant librarians are considered for administrative and managerial responsibilities.

The senior position staff serves the library users with the support of various professional assistants, semi-professional assistants for technical tasks. The library has 61 number of supporting staff. Also is it visible that the number of library attendants (27) is helpful in discharging the elementary level of services.

D. Size and Growth of Library Collection:

A	Print Documents		B	E-Documents	
1.	Books/Monographs	Yes	1.	CD-ROM/DVDs	Yes
2.	Bound Volume of Journals	Yes	2.	Online Database	Yes
3.	Current Journals	Yes	3.	Online Journals	Yes
4.	Manuscripts	Yes	4.	Microforms	Yes
5.	Maps/Charts/Diagrams	Yes	5.	Video/Audio Cassettes	Yes
6.	Patents	Yes	6.	Others	
7.	Research/Technical Reports	Yes			
8.	Reference Documents	Yes			
9	Seminar/Conference proceedings	Yes			
10.	Standards/Specifications	Yes			
11.	Theses/Dissertations	Yes			
12.	Others				

The library has various kinds of information resources in the field of social sciences and humanities. The variety of information sources cater to diverse demands of users. The presence of print and online sources helps the library users in the services provided within the premises and out of campus as well.

E. Number of E-Books, E-Journals and Online Databases (For the last Five years)

The above table shows number of electronic books, electronic journals and online databases present in library as part of collection. There has been continuous growth in subscribed and purchased electronic

E-Books		E-Journals		Online databases	
Year	Number	Year	Number	Year	Number
2012-13	85907*	2012-13	356	2012-13	24
2013-14	35439	2013-14	379	2013-14	38
2014-15	462	2014-15	330	2014-15	53
2015-16	429	2015-16	117	2015-16	49
2016-17	Under Process	2016-17	67	2016-17	33

*Perpetual and subscribed

resources. The data reflects that the maximum number of electronic books became component of library collection in the year 2012-13. The biggest number in subscription of electronic journals has been during the financial year 2013-14. The online databases are serving the library users.

F. Users' Statistics

The users' statistics shows the number of users as member of library and visitors to find the information. The visitors are also served by the library and a big number of outside professionals, students are facilitated.

S. N.	Users	2012-13	2013-14	2014-15	2015-16
1	Teachers	1874	1948	2012	1937
2	Non-teaching				
3	Research Scholar				
4	P.G. Students				
5.	U.G. Students				
	Visitors	753	1032	1061	991
6.	Special Members	0	0	07	0

** The data given only active members of library

G. Budget Allocation to the Library

S. N.	Years	Books	Journals	Total Spending
1	2012-13	1.7 Cr.	15 Cr.	4,90,47,864.00
2	2013-14	1.7 Cr.		4,41,55,980.00
3	2014-15	1.7 Cr.		8,25,59,223.00
4	2015-16	1.7 Cr.		4,79,85,946.00

The budget allocation for the books and journals is shown by the above table. The total budget for books is 1.7 Crore per year but the budget for journals subscription has been 15 Crore for five years i.e. 2012-13 to 2015-16. The total expenditure for both kind s of resources is also given in the table.

H. Library Services

1.	Reprographic Service	Yes	8.	Indexing Service	Yes
2.	CAS	Yes	9.	Reference Service	Yes
3.	SDI	Yes	10.	Translation service	Yes
4.	OPAC	Yes	11.	Referral Service	Yes
5.	Internet Service	Yes	12.	E-Journals	Yes
6.	Bibliographies	Yes	13.	Automated Circulation	Yes
7.	Abstracting Service	Yes	14.	Others	

A group of services has been designed to serve the users. Though the entire range of services has been developed during a long span of time, the few of them are specific and complex in nature whereas services like automated circulation are routine and basic component of library.

I. Databases Services to the Students and Research Scholars are Provided through

The above table shows kinds of networking and access facilities for the users.

Apart from local area network, the library provides Wi-fi facility along with remote access facility to users.

1.	LAN (Within Library)	Yes
2.	Campus wide network	Yes
3.	Through WIFI within Library	Yes
4.	Through WIFI in whole Campus	Yes
5.	Remote Access	Yes

J. Which Activities are Provided by Library to Enhance Reading Habits of users

1.	User orientation programme (Workshop, Seminar, Conference, lectures)	Yes
2.	Providing Online course materials	-
3.	Open Access to e-Materials	Yes
4.	Providing podcast services (AVDs lectures, YouTube)	-
5.	Providing social networking services (Facebook, blogs, Twitters)	Yes
6.	ICT-Based educational delivery	Yes

To enhance the reading habits of users and get them acquainted with new methods to serve, the library has tried to include ICT based services as well as social networking tools. The experimentation and opting for the best is one of the methods for choosing modern tools.

The Collection Building in Various Schools

The following tables express the number of recommended titles and acquired by the library for the readers. There is a gap in the number of recommended titles and purchased titles. The reason for this gap is marking the priority by the recommending person. The priority one titles are acquired by the library. The below table shows the titles added to various schools (including science and other streams).

	2013		2014		2015	
Name of the School	**Recommended Titles**	***Titles* Acquired**	**Recommended Titles**	***Titles* Acquired**	**Recommended titles**	**Titles Acquired**
AIRF	-	-	3	3	-	-
CSLG	50	35	13	10	45	37
SCMM	-	-	-	-	4	-
SCNS	7	7	3	3	24	20
SCSS	108	75	162	130	83	69
SCIS	6	6	41	34	3	3
SAA	218	150	240	149	21	17
SBT	-	-	6	6	4	2
SC&SS	60	48	79	41	48	27
SES	71	41	64	40	20	18
SLS	-	-	26	9	16	12
SPS	85	58	14	7	69	48
USIC	20	15	-	-	-	-

The Collection Building during Last three Financial Years

The following table shows the data of various Centers of School of International Studies (SIS). There is also reflection of recommended and acquired titles in various centers. During year 2014, there have been less recommendations and acquisitions than previous (2013) and later year (2015).

	2013				2014				2015			
School= SIS Centre's Name	**Recommended Titles**		***Titles* Acquired**		**Recommended Titles**		***Titles* Acquired**		**Recommended titles**		**Titles Acquired**	
CAFS	1											
CES	59		53		36		10		46		18	
CEAS	339		264		69		47		117		84	
CCUS&LAS	180		160		97		53		77		53	
CSCSE&SWPA	251		183									
CIAS	58		31		42		23		120		87	
CILS	294		210		49		23		48		28	
CIPOD	472		340		77		43		46		26	
CIPS	3		2		47		28		27		24	
CITD	34		27		52		25		4		3	
CCPPT	47		30		26		16		57		43	
CSAS	14		12		50		27		18		11	
CSDE					1		1					
CSCSASPS									2		2	
CWAS	424		295		230		115		273		158	
CRCAS	300		183		92		40		63		32	
PIS												
ESP												
HRS					4		4					
CAS	118	**2594**	72	**1862**	39	**911**	26	**481**	108	**1006**	84	**653**

The Acquisitions Made for School of Language, Literature and Culture Studies

For the School of Language, Literature and Culture Studies (SLL & CS), there have been various recommendations and purchases for the books (print). There has been large number of recommendations in the year 2013 but less in year 2014 and 2015. The data shows the remarkable gap in recommended number of titles and purchased. The acquisitions are made as per the priority reflected in the recommendations.

	2013		2014		2015	
SLL&CS Centre's Name	**Recommended Titles**	***Titles* Acquired**	**Recommended Titles**	***Titles* Acquired**	**Recommended titles**	**Titles Acquired**
CAAS	260	225	319	227	52	12
CCSEAS	47	16	8	4	6	6
CES	425	337	505	309	211	123
CFFS			1		2	1
CGS	8	8	81	56	8	7
CIL	2614	1686	398	341	385	267
CJS					3	1
CKS					2	1
GS			1	1		
CL	287	124	181	115	299	149
CPCAS			13		33	24
CRS	425	118	14	10	29	7
CSPILAS	3	**4069** 3	**2517** 19	**1540** 17	**1080** 9	**1039** 7	**605**

School of Social Sciences and Central Library

There have been a good number of books added during last three years in the School of Social Sciences. The data shows the recommended number of titles and acquired in the library during years 2013, 2014 and 2015. The table also lists the books recommended in the Central Library and purchased number of titles.

	2013		2014		2015	
School= SSS Centre's Name	**Recommended Titles**	***Titles* Acquired**	**Recommended Titles**	***Titles* Acquired**	**Recommended titles**	**Titles Acquired**
CESP	56	45	23	13	43	37
CHS	420	290	205	94	218	131
CISLS	39	18	14	16	370	133
CMS	3	2	4	2	26	48
CPHL	721	350	103	55	92	54
CPS	133	110	32	9	88	48
CSDE	5	5	8	4	5	10
CSRD	175	139	154	95	175	115
CSSP	3	3	1		23	4
CSSS	201	166	361	122	85	77
CWS			73	31	1	1
GAE	8	8	18	3	1	1
NEISP	1	1	1	1		
CSMCH	75	60	128	34	38	23
ZHCES	156	**1996** 96	**1293** 104	**1229** 52	**531** 146	**1311** 114	**796**
Central Library		**96**	**40**	59	51	**29**	**19**
Vice Chancellor's Office				1	1	**7**	**6**
Total		**9380**	**6147**	**4391**	**2576**	**3729**	**2332**

Conclusion

There have been efforts by the Central Library at various levels such as creating services, providing the desired information resources especially in the form of printed books (if recommended). The library has been active in creating awareness for maximum usage of library resources particularly in the area of social sciences and humanities. The increasing inclusion of electronic journals and books, reference sources and various research enhancing tools are reflecting the progress being made towards the future. The preparations of library are expressions of the technology-based modernity though following the conventions to embrace new developments.

References

1. Saturday U. Omeluzor, Gloria O. Oyovwe-Tinuoye. "Assessing the adoption and use of integrated library systems (ILS) for library service provision in academic libraries in Edo and Delta states, Nigeria", Library Review, 2016; 65(8/9):578-592.
2. Chyuan Perng, Shiow-Luan Wang, Wen-Chih Chiou. A Conceptual Framework of Library Reader Service from Customer Relationship Management Perspective. International Journal of u- and e-Service, Science and Technology, 2009; 2(1). http://www.sersc.org/journals/IJUNESST/vol2_no1/2.pdf.
3. Sasekea Harris. "Distinctive services in academic librarianship", New Library World, 2016; 117(9/10):596-625.
4. Readers' Services. The Library of Trinity College Dublin. https://www.tcd.ie/library/readers-services/.
5. P. VAGT (1965). Readers'Services. https://www.ideals.illinois.edu/bitstream/handle/2142/6241/librarytrendsv14i2h_opt.pdf?sequence=1.
6. Tibor Koltay. Facing the Challenge of Data-Intensive Research: Research Data Services and Data Literacy in Academic Libraries, in David Baker , Wendy Evans (ed.) Innovation in Libraries and Information Services (Advances in Library Administration and Organization) Emerald Group Publishing Limited, 2016; 35:45-6.

Review Article

Indian Journal of Library and Information Science
Volume 11 Number 1, January - April 2017
DOI: http://dx.doi.org/10.21088/ijlis.0973.9548.11117.11

Big Data: A Bird's Eye View

Vishnu Kumar Gupta*, Pawan K. Saini**

Abstract

Big data is being produced by everybody around us round the clock. Newly emerged big data technology is the biggest invention in the field of computer science and technology during the last decade. We have to create rules and laws to prevent abuse of big data along with new developments of this technology enabling useful capabilities. For information scientists and librarians, big data is a big deal and great challenge, and also a good opportunity to play a significant role in the ever growing universe of big data.

Keywords: Big Data; Data Explosion.

Introduction

The term 'Big data' not only draws a lot of attention but also becomes a hot topic now-a-days. When checking the historical record of big data, there show to be many occasions that will help elaborate its birth. This term was popularized and coined by Roger Magoulas in 2005, when he was "the director of market research at O'Reilly Media and leads a team that builds an open source analysis infrastructure and provides analysis services, including technology trend analysis, to business decision-makers at O'Reilly and beyond [1]." In 2007, this concept earned popularity with the release of "Apache open source project Hadoop beta version [2]."

Big data as a buzzword in the field of information technology used to explain "an oceanic volume of structured and unstructured data, that is too big in size that it is very difficult to process using traditional database and software [3]." The phrase is also known as 'Enterprise big data' in the field of business enterprises. Presently, in most business enterprises, "the data is too large and runs very fast which exceeds current processing capacity. Big data has the sufficient capability to help enterprises to improve their activities and operations, which makes decisions faster and more intelligent. It originated with Web search companies who had the problem of querying very large distributed aggregations of loosely-structured data [4]." Google originated "MapReduce to support distributed computing on large data sets on computer clusters [5]." On the basis of Google's MapReduce, and Google File System (GFS) papers, "Doug Cutting developed Hadoop while he was at Yahoo, and entitled it after his son's stuffed elephant [6]."

Big data is being produced by everybody around us round the clock. Every modern digital technology and social media, and social sites generates it. Smart phones, mobile gazettes and sensor devices disseminate it very fast. It is coming from all the directions from various sources at an alarming speed, and quantity. Analytical capabilities, processing power, and optimal skills are needed to get meaningful value from big data. It is developing a culture in which technologists, CEOs, and business leaders have to join forces to realize real value of data. It deeply enables all human resources to make better decisions, which focuses on customer satisfaction, optimizing operations, preventing frauds and threats, and generating new revenue sources. But accelerating

Author's Affiliation: *Librarian, Deptt. of Bioscience and Biotechnology Library, Banasthali University (Rajasthan)-304022. **Assistant Professor, DLIS, Central University of Haryana, Mahendergarh.

Reprint's Request: Vishnu Kumar Gupta, Librarian, Deptt. of Bioscience and Biotechnology Library, Banasthali University (Rajasthan)- 304022.
E-mail- vishnu5966@gmail.com

Received on 23.11.2016, **Accepted on** 07.12.2016

demand for insights really needs some elementary new approaches and skills. These new approaches and skills are required to completely control the power of big data.

Previous Studies Related to Big Data

Many organizations and enterprises are massively looking to find actionable insights into their data. Various big data projects develop from the need to answer particular social and business-oriented questions. Any organization or enterprise can increase sales, boost efficiency, and make better operations in risk management and customer service with the help of right big data analytics.

Quin Street, which is a Webopedia parent company and founded by Doug Valenti in 1999, extensively surveyed "540 enterprise decision-makers involved in big data purchases to learn which business areas companies plan to use big data analytics to improve operations. About half of all respondents said they were applying big data analytics to improve customer retention, help with product development and gain a competitive advantage. Notably, the business area getting the most attention relates to increasing efficiencies and optimizing operations. Specifically, 62 percent of respondents said that they use big data analytics to improve speed and reduce complexity [19]."

It is a widespread belief that the proper availability and easy access to research data, in particular to 'big data' shows the apex form of knowledge and intelligence, which makes an arena of accuracy, truth, and objectivity. When big data is viewed "as an answer of too many crucial problems and questions, it is considered as an apparatus that warns privacy, shortens civil freedoms, and ushering increased state. The shifts to be expected of big data are probably more subtle than these, even though we cannot see this clearly among our current hopes and fears [20]."

Boyd and Crawford's (2012) understanding of the big data as a phenomenon, explains "acknowledging that the decisive factor is not the attribute of data, but the ability to search, aggregate, and cross-reference large data bases by virtue of the storage and processing capacity of modern information and communication tools and techniques, such as internet, WWW, computers etc. Information literate researcher scholars and information scientists must know that data is no more an exclusive issue for the science, technology and medicine, but it is present in the social sciences, humanities, arts and culture, as well [20]."

Ajana (2015) shows many hot issues in light of the application of big data in the field of immigration management and border security. "Large financial investment in the computing technologies of borders and their securitization continues to be a focal point for many governments across the globe [21]." He focused with a specific instance such technologies, i.e. 'Big Data' analytics. During the last 20 years, "the technology of big data has achieved an unusual popularity among a variety of arenas, such as business, government, scientific and research fields. While big data techniques are often extolled as the next frontier for innovation and productivity, they are also raising many ethical issues [21]."

Data sets containing so much, perhaps some kind of sensitive data, and the tools and techniques to extract and make use of this information give rise to many other chances for illegal use and unauthorized access. Much of our preservation of privacy in society depends on current inefficiencies. For instance, CCTV/video cameras always eyed people in many places, viz. Airport security lines, ATMs, urban intersections, and convenience stores. If these technological players are connected or networked together, and modern sophisticated computing technology makes it possible to correlate and analyze these data streams, the prospect for abuse becomes significant. Furthermore, cloud computing technology becomes a cost-effective tool for malicious agents, e.g., to apply massive parallelism to break a cryptosystem or to launch a zombie/botnet.

A newly developed application of big data is the addition of sensors and other micro electronic devices to engineer to order (ETO) goods such as one of a kind ships and buildings. The proper set up and operation of smart ships and smart buildings function with the help of micro electronic sensor devices. This is necessary to examine what challenges will need to be met before project businesses can achieve informational effects and transformational effects from big data technologies. A study of Fox and Do (2013) reveals "a causal mechanism and causal context for project business big data application. This type of critical realist analysis can be applied to enable better understanding of necessary causal mechanisms and causal contexts for other ICT innovations [22]."

Trottier (2014) finds that big data is always meaningful in use. "While they may be contained in databases in remote locations, big data do not exist in a social vacuum. Their impact cannot be fully understood in the context of newly assembled configurations or 'game-changing' discourses. Instead, they are only knowable in the context of

existing practices. These practices can initially be the sole remit of public discourse shaped by journalists, tech-evangelists and even academics. Yet embodied individual and institutional practices also emerge, and this may contradict or at least complicate discursive assertions. Moreover, the range of devices and practices that make up big data are engaged in a bilateral relation with these practices. They may be a platform to further reproduce relations of information exchange and power relations. Yet they may also reconfigure these relations [23]."

Using two case studies approaches, first, online community specialist groups linked to rural activities, and second, from a policy shift relating to firearm legislation in the English context, Hillyard (2014) describes how the "technologies of big data might apply to rural contexts. It considers the relative advantages and disadvantages of such 'new' innovations [24]." He provides "insight into the rural context and makes a case that such locales are not immune from the influence of the data verse. The appearance of 'big data' is not without political implications. The case of UK firearm legislation reform demonstrates the implications of policy falling short of its potential and how a social science analysis can unpack the operation of power as well as position the debate more broadly [24]."

Prescott (2014) illustrates how Nielsen Holdings, a global company, reacted to transforms in their optimal competitive industry brought about by latest developments in computing technology. This study shows "the strategic management decisions that enabled Nielsen to regain its competitive advantage. It furthermore describes the functioning of the resource-based view (RBV) of strategy, dynamic capabilities framework, and digital data genesis (DDG), in a turbulent business environment [25]."

Girtelschmid and his team (2014) propose and evaluate "a novel system architecture for Smart City applications which uses ontology reasoning and a distributed stream processing framework on the cloud [26]." Generally, automated inference and semantic modeling methodologies are applied in the field of Smart City. When applied in large scale, semantic models faced performance problems. They addressed "the problem domain by using methods from Big Data processing in combination with semantic models. The architecture is designed in a way that for the Smart City model still traditional semantic models and rule engines can be used. However, sensor data occurring at such Smart Cities are pre-processed by a Big Data streaming platform to lower the workload to be processed by the rule engine [26]."

According to Wiseman (2014), "the development of a knowledge society in the Arabian Gulf is a nested and contextualized process that relies upon the development of nation-specific knowledge economies and region-wide knowledge cultures. The role of internationally comparative education data and mass education systems in the Gulf as mechanisms for the development of knowledge economies, societies, and cultures are discussed and debated in relation to the unique contextual conditions countries operate within. The role of big data and mass education in creating expectations for achievement, accountability, and access is shown to significantly contribute to the development of knowledge societies by providing the infrastructure and capacity for sustainable change, which potentially leads to the institutionalization of knowledge acquisition, exchange, and creation in the Gulf and beyond [27]."

Rogers and Gravelle (2011) feels that "As the government's strategy for the implementation of the 'Big Society' gains momentum within an increasingly difficult financial framework. They discuss some of the major implications of this approach for partnership working in crime and disorder reduction. It considers whether the approach is a totally new one or merely an extension of previous government policy, while considering some of the advantages and disadvantages of extending the 'Big Society' ideology [28]. While considering the key problems of implementing such an approach, the authors also emphasizes the opportunities that might show themselves for enhanced community consultation in the delivery of partnership working.

What is Big Data: a Technology or a Volume?

As mentioned above, the phrase 'Big data' might be representing the very huge volume of data, which is not always true. This phrase, particularly used by technologists, business enterprises and vendors, may refer to the technology that requires managing the large amount of data. This term is originated with the origin of World Wide Web and Web search engine enterprise groups, viz. Microsoft, Yahoo, Google, etc., who required handling extremely big distributed collections of loosely structured data. Everyone leave digital files of his daily activities. E-mails are saved in corporate information systems; social media sites updates are filed; and phone conversations and chatting are saved and stored in digital formats.

According to McKinsey, big data is defined as "datasets whose size is beyond the ability of typical database software tools to capture, store, manage, and analyze [29]." Edd Dumbill of O'Reilly Media refers to it as "data that exceeds the processing capacity of

conventional database systems. The data is too big, moves too fast, or doesn't fit the structures of your database architectures [29]."

We are producing huge volume of data that are quantitatively very difficult to imagine. Several things that have changed are now able to analyze more complex varieties of data such as video recordings in CCTV, including photo images and conversation; smart phone records of conversations, etc. In the universe of big data, the following "4 Vs are characterized to define big data:

Volume– the huge amount of data generated every moment;

Velocity– the speed at which new data is generated and moves around. Credit card fraud detection is a good example where millions of transactions are checked for unusual patterns in almost real time;

Variety– the increasingly different types of data from financial data to social media feeds, from photos to sensor data, from video capture to voice recordings; and

Veracity– the messiness of the data, just think of Twitter posts with hash tags, abbreviations, typos and colloquial speech.

So, we have a lot more data than ever before, in more complex formats, that are often fast moving and of varying quality- why would that change the world? The difference is that we now have tools that allow us to analyze vast amounts of data by breaking the task of processing very large data sets down into smaller tasks that are run in parallel using a large cluster of computers [7]."

Examples of Big Data

Some explicit examples of big data are petabytes (2^{10} terabytes), exabytes (2^{10} petabytes), zettabytes (2^{10} exabytes), and yottabytes (2^{10} zettabyte) of data containing of billions to zillions of records of a majority of people from various sources, viz. World Wide Web (WWW), marketing and sales figures, customer care centre, social media sites, telecommunication and mobile companies' data, and so on so far. This data may be considered as loosely structured data which is generally incomplete, unfinished and properly not accessible.

Big Data Explosion: How Measuring the Big Data?

According to IDC "1.8 zettabytes (which is equal to 1.8 trillion GBs) of information was generated by the World in 2011, which is enough data to fill 57.5 billion 32GB Apple iPads. That is enough iPads to build a Great iPad Wall of China twice as tall as the original. In 2012, it reached 2.8 zettabytes and IDC now forecasts that we will generate 40 zettabytes (ZB) by 2020 [8]."

As explained earlier and looking at the "sheer volume of 1.8 zettabytes of data, which is equivalent to:

- Every person in the United States of America tweeting 3 tweets per minute for 26,976 years nonstop.
- Every person in the world having more than 215 million high-resolution MRI scans per day.
- More than 200 billion HD movies (each 2 hours in length)—would take 1 person 47 million years to watch every movie 24x7.
- The amount of information needed to fill 57.5 billion 32GB Apple iPads. With that many iPads we could:
  - Create a wall of iPads, 4,005-miles long and 61-feet high extending from Anchorage, Alaska to Miami, Florida.
  - Build the Great iPad Wall of China—at twice the average height of the original.
  - Build a 20-foot high wall around South America
  - Cover 86% of Mexico City.
  - Build a mountain 25-times higher than Mt. Fuji [10].

The quantity of data is rapidly growing at a dangerous and exciting speed. In the words of Eric Schmidt, Google's Executive Chairman: "From the dawn of civilization until 2003, humankind generated five exabytes of data. Now we produce five exabytes every two days…and the pace is accelerating [10]."

The main driving forces behind this never stopping and tremendous growth are driven by modern Information and Communication (ICT) and money. "New information taming technologies are driving the cost of creating, capturing, managing and storing information down to one-sixth of what it was in 2005. Additionally, since 2005 annual enterprise investments in the Digital Universe—cloud, hardware, software, services, and staff to create, manage, store and generate revenue from the information—have increased 50% to $4 trillion (USD) [11]."

It is very surprising fact that "data is exploding, but how much quantum of data is out there? Gartner predicts that enterprise data will grow 650 percent in the next five years, while IDC argues that the world's information now doubles about every year and a half. Twitter was the fastest growing social network in 2008 by 1382 % [12]." Again, according to the Gartner,

"the total number of text messages sent in 24 hours is more than 6,700,000,000, which exceeded the total population of the planet [12]."

Now, consider the following candid facts to understand the data explosion. "Every minute of every day people on this Earth create:

(i) Over 204 million email messages;

(ii) More than 2 million Google search queries;

(iii) About 48 hours of new YouTube videos;

(iv) 684,000 bits of content shared on Social Networking Site Facebook;

(v) Over 100,000 tweets; and

(vi) US $ 272,000 spent on e-commerce [13]."

Structured Data

Structured Data is data that "belongs to a fixed field within a record or file. It includes data containing in relational databases and spreadsheets. Structured data initially depends on creating a data model- a model of the types of business data that will be recorded and how they will be stored, processed and accessed. This includes defining what fields of data will be stored and how that data will be stored: data type, such as numeric, currency, alphabetic, name, date, address; and any restrictions on the data input, such as number of characters; restricted to certain terms such as Mr., Ms. or Dr.; M or F [14]."

Generally, structured data is managed by using a programming language, called Structured Query Language (SQL). SQL is basically programmed by International Business Machines Corporation (IBM) in the beginning of 1970s for handling, searching, querying, and answering data in relational database management systems (RDBMs).

An advantage of structured data is that it can be easily entered, stored, analyzed, accesses, and queried. Some decades ago, due to the high input cost and performance constraints of storage and processing, spreadsheets and relational databases using structured data were the only way to efficiently and effectively manage data. At that time, any data or information that could not properly fix within a compressed organized structure would have to be fitted and stored on traditional methods on papers in a traditional filing cabinet.

Unstructured Data

Big data is directly embedded with unstructured data and simply means massively huge data sets that are very hard to manage and analyze with conventional old methods, tools and techniques. Big data includes both structured and unstructured data, but IDC estimates "that 90 percent of big data is unstructured data [15]." Several methods and tools are designed to manage and analyze big data, which can easily manage unstructured data.

Unstructured data generally refers to "information that doesn't reside in a traditional row-column database. As one may expect, it is the opposite of structured data, the data stored in fields in a database. Unstructured data files often contain text and multimedia content [16]." Some examples of unstructured data are web sites, e-mails, word processing documents, videos files, photos, audio files, Power point presentations, and several other varieties of academic, social, political, and business related documents. Here it is important to know that when these kinds of records might have an own internal structure, they are yet considered 'unstructured' doe to the data they have does not fit clearly in a data set or database. Some specialists calculated that "80 to 90 percent of the data in any organization is unstructured and the amount of unstructured data in organizations is growing faster than structured databases [16]."

Semi-Structured Data

Semi-structured data is a bridge between the two. It is considered as a kind of structured data, but lacks the rigid data model structure. With semi-structured data, tags and markers are used to recognize some certain components within the data, but the data do not have a rigid structure. For instance, now word processors (software) may contain metadata presenting the name of the author, and the creation date, along with the heap of the document just being unstructured text. E-mails contain the sender, recipient, date, time and other fixed fields added to the unstructured data of the email message content and any attachments. Photos and other graphics can be tagged with keywords such as the creator, date, location and keywords, making it possible to organize and locate graphics. Extended Mark-up Language (XML) and other markup languages are generally applied to handle semi-structured data.

Big Data Analytics

Big data analytics refers to "the process of collecting, organizing and analyzing large sets of data to discover patterns and other useful information. Big data analytics will help organizations to better understand the information contained within the data and will also help identify the data that is most

important to the business and future business decisions. Big data analysts basically want the knowledge that comes from analyzing the data [17]."

As technology to cut down data silos and analyze data improves, business may be changed in all sorts of ways. According to *Datamation*, "today's advances in analyzing big data allow researchers to decode human DNA in minutes, predict where terrorists plan to attack, determine which gene is mostly likely to be responsible for certain diseases and, of course, which ads you are most likely to respond to on Facebook. The business cases for leveraging big data are compelling. For instance, Netflix mined its subscriber data to put the essential ingredients together for its recent hit House of Cards, and subscriber data also prompted the company to bring Arrested Development back from the dead [18]."

Another example is from the largest mobile carriers in the world. Orange, a French company launched its "Data for Development project by releasing subscriber data for customers in the Ivory Coast. The 2.5 billion records, which were made anonymous, included details on calls and text messages exchanged between 5 million users. Researchers accessed the data and sent Orange proposals for how the data could serve as the foundation for development projects to improve public health and safety. Proposed projects included one that showed how to improve public safety by tracking cell phone data to map where people went after emergencies; another showed how to use cellular data for disease containment [19]."

Conclusion

Big data is neither a fixed material nor it have enchanted power to avail latest business analytics on its own. Big data is also not a complete technology. However, it is a paradigm change in the level of thinking on how to achieve insight from data with augmented volumes and various continue changing formats.

Big data is an umbrella term used for complex data sets and traditional data processing techniques are inadequate to handle them. Some challenges to manage these data sets are capture, analysis, storage, search, curation, sharing visualization, privacy, and transfer of data. Experts and technologists of this arena have only started to see its power to gather, manage, and process data in everyone's life. In short, any discussion about big data could not be complete without describing the augmenting aspects about individual's freedom. Several aspects have been presented, viz. how credit card companies, retailers, search engine providers and mail or social media sites make use of our private data. All in all, every big thing, big idea, big business model, big organization, big society, big country, big money, big technology, big problem, and big solution is driven by big data. Undoubtedly, newly emerged big data technology is the biggest invention in the field of computer science and technology during the last decade. We have to create rules and laws to prevent abuse of big data along with new developments of this technology enabling useful capabilities.

For information scientists and librarians, big data is a big deal and great challenge, and also a good opportunity to play a significant role in the ever growing universe of big data. Information scientists and librarians are fully skilled, and aware with the service-oriented knowledge to help and support universities, businesses, nonprofit organizations, and governments.

References

1. http://www.oreilly.com/pub/au/2717
2. http://en.wikipedia.org/wiki/List_of_Apache_Software_Foundation_projects
3. http://www.webopedia.com/TERM/B/buzzword.html
4. http://wikibon.org/wiki/v/Enterprise_Big-data
5. http://en.wikipedia.org/wiki/MapReduce
6. http://en.wikipedia.org/wiki/Doug_Cutting
7. http://analyticsweek.com/big-data-the-mega-trend-that-will-impact-all-our-lives-bernard-marr-linkedin/
8. Richard L. Villars and Carl W. Olofsons, (2011), "Big data: What it is and why you should care?", IDC Report.
9. http://www.emc.com/about/news/press/2011/20110628-01.html
10. http://analyticsweek.com/big-data-the-mega-trend-that-will-impact-all-our-lives-bernard-marr-linkedin/
11. http://www.emc.com/about/news/press/2011/20110628-01.html
12. Raymond Paquet, (2010), "Gartner Webinar: technology trends you can't afford to ignore", Gartner Webinar.
13. http://www.webopedia.com/quick_ref/just-how-much-data-is-out-there.html
14. http://www.webopedia.com/TERM/S/structured_data.html

15. Richard L. Villars and Carl W. Olofsons, (2011), "Big data: What it is and why you should care?", IDC Report.
16. http://www.webopedia.com/TERM/U/unstructured_data.html
17. http://www.webopedia.com/TERM/B/big_data_analytics.html
18. http://www.ultramaxit.com/big-data-analyics/
19. http://www.webopedia.com/TERM/B/big_data_analytics.html
20. D. Boyd and K. Crawford. "Critical questions for big data: provocations for a cultural, technological, and scholarly phenomenon", Information, Communication and Society, 2012; 15(5):662-679.
21. Btihaj Ajana. "Augmented borders: Big Data and the ethics of immigration control", Journal of Information, Communication and Ethics in Society, 2015; 13(1):58-78. DOI: http://dx.doi.org/10.1108/JICES-01-2014-0005.
22. Stephen Fox and Tuan Do. "Getting real about Big Data: applying critical realism to analyse Big Data hype", International Journal of Managing Projects in Business, 2013; 6(4):739-760. DOI: http://dx.doi.org/10.1108/IJMPB-08-2012-0049.
23. Daniel Trottier. Big Data Ambivalence: Visions and Risks in Practice, in Martin Hand, Sam Hillyard (ed.) Big Data? Qualitative Approaches to Digital Research (Studies in Qualitative Methodology, Emerald Group Publishing, 2014; 13:51-72. DOI: 10.1108/S1042-319220140000013004.
24. Sam Hillyard. 'Where No-One Can Hear You Scream': An Analysis of the Potential of 'Big Data' for Rural Research in the British Context, in Martin Hand , Sam Hillyard (ed.) Big Data? Qualitative Approaches to Digital Research (Studies in Qualitative Methodology) Emerald Group Publishing, 2014; 13:231-249. DOI: 10.1108/S1042-319220140000013014.
25. Michael E. Prescott. "Big data and competitive advantage at Nielsen", Management Decision, 2014; 52(3):573-601. DOI: http://dx.doi.org/10.1108/MD-09-2013-0437.
26. Sylva Girtelschmid , Matthias Steinbauer , Vikash Kumar , Anna Fensel , Gabriele Kotsis. "On the application of Big Data in future large-scale intelligent Smart City installations", International Journal of Pervasive Computing and Communications, 2014; 10(2):168-182. DOI: http://dx.doi.org/10.1108/IJPCC-03-2014-0022.
27. Alexander W. Wiseman (2014) "Strategically planning the shift to a Gulf knowledge society: The role of big data and mass education" in Alexander W. Wiseman , Naif H. Alromi , Saleh Alshumrani (ed.) Education for a Knowledge Society in Arabian Gulf Countries (International Perspectives on Education and Society) Emerald Group Publishing, 2014; 24:277-304.
28. Colin Rogers and James Gravelle. "Partnership working in the Big Society", Safer Communities, 2011; 10(2):26-31. DOI: http://dx.doi.org/10.5042/sc.2011.0183.
29. http://radar.oreilly.com/2012/01/what-is-big-data.html.

Review Article

Indian Journal of Library and Information Science
Volume 11 Number 1, January - April 2017
DOI: http://dx.doi.org/10.21088/ijlis.0973.9548.11117.12

Challenges for Librarianship in 21st Century

Rajeev R. Paithankar*, Maroti Mane**

Abstract

Education is cited as the catalyst for Development, Poverty ,Reduction, Nutrition Improvement, Health Gains, Gender Equality and Empowerment ,Water and Energy Sustainability, Economic Growth, Inequality Reduction, Environmental Protection and Resilience and Promotion of peaceful just inclusive societies by UNESCO. Thus, the academic institutions provide education and that education is embedded in Library. As we all know library is the hart of every academic Institution, like that, the Library is playing role of hart as a purifier, giving pure blood to body, library strains good, original, essential information to readers. In ICT era, the computer technology flourished and so, with use of this technology the librarian and information professionals save their time, money and energy and give quality services to users. Today, the librarians role in changing day by day , it changes library structures, services their challenges too. Librarians always maintain a balance between traditional library as well as modern virtual library. There are so many challenges but the librarians have to overcome them and prove their efficiency.

Keywords: Impact of ICT; Changing Role of Library Professionals.

Introduction

In United Nations Educational, Scientific and Cultural organization report (UNESCO). Education is cited as the catalyst for Development, Poverty Reduction, Nutrition Improvement, Health Gains, Gender Equality and Empowerment, Water and Energy Sustainability, Economic growth , Inequality Reduction, Environmental protection and Resilience and Promotion of peaceful just inclusive societies.

As UNESCO Said in their report, Education is for improvement of all kinds of human beings, that education is imbedded in academic institution and the libraries are therefore helping hands for that institution. Libraries are catering to serve the need of the students as well as other clienteles of particular institution. The Instruction always relies on the libraries for providing various services, technologies and tools.

Librarians play a vital role and work as a bridge between the students and libraries and strive to give full satisfaction to users. With the advent of Information Communication Technology, the role of library and information professionals are changing day by day . ICT stress on the new ways of learning, Web based e-learning, digitization of resources enables dissemination of services. In the information explosion, digitization of resources enables dissemination of services. In the information explosion, librarians play a role as a leader who comes up with the information flood and provide good and essential information for the user's satisfaction.

Impact of ICT

In 21st century, Information Communication Technology flourished, so it is possible to reduce the time, energy money of libraries as well as users. Computers are using for large quantities of data manipulation. It is a possible solution to the problem of retrieving a small number of relevant documents from among the thousands availability on the subject of interest to the users.

Author's Affiliation: *Librarian & Research Guide **Research Scholar, Toshniwal ACS College, Sengaon.

Reprint's Request: Rajeev Rameshchandra Paithankar, Librarian, Toshniwal Arts, Commerce & Science College, Sengaon, Dist.Hingoli - 431542 Maharashtra.
E-mail: rajivpaithankar123@gmail.com

Received on 26.12.2016, **Accepted on** 09.01.2017

Information Communication Technologies are more oriented towards individual use at home and work. We the librarians and information professionals and the institutions are offering services and giving opportunity to read a book at same time through computers and internet.

Traditional libraries are having the stock of books, Journals, Projects, Thesis, Dissertation, Serial, Periodicals, Reference books, Maps, Manuscripts but now the scenario has charged and they collect print as well as non-print material. They have consortia of books as well as E-print , E-journals, E-books, CD's, Floppies and many more Due to the growth of internet the vision of gathering all human knowledge together in one place and the library without walls or virtual library exists..The assumption is that, everybody will obtain instant access to all recorded information in the world through the nearest library.

Computers are used in the education and research in all fields and the students through their e-mail addresses and websites adopt in the regular use of technology and the opportunities it provides. Traditionally the librarians bought books and print material made them available through library facilities but now libraries and information professionals acquire and secure ownership of digital content, stores on local services and make it accessible to a largest community. Librarians attempt as protocols permit to ensure long term access to the digital collection through license conditions and through practices to create back up and redundancy and to migrate the content over time. The library may also preserve and archive content that is not accessible to users .

Libraries usually bring expertise in information dissemination and use. Organizing and providing access to information is the classic role of libraries but on the impact of ICT it changes.

Changing Role of Librarians and Challenges

In the era of ICT and influence of computers ,the users are growing with their different needs. They are not always acquainted with various tools for seeking right information in information flood. So, the duties of staff and librarian are to demolish the chaos of users and give them clear information. Sometimes it is not possible so, they may suggest or give referral services. In the privatization of academic institution and non grant condition, librarians have done their jobs in fewer grants. They are not allowing using costly sources and handle various open sources software's for getting the information and knowledge.

Many users do not know what their library has and the particular source, who satisfy their needs within the little time span, so, the librarians duty is to orient or introduce the library to new students and make them aware of what the library have, Where the particular subjects are arranged and how many copies of any particular book.

Concept of virtual Libraries is on a rise in the 21st century. It challenges traditional library because the new sources are available to organize and collect the information and with the help of internet, students gate huge amount of data within seconds. When the library is connected to another libraries than it is very facilitate to students. With the advent of computer, the libraries having full access to all kinds of materials. It is available to students within less cost . Librarians must check the availability of proper services is provided through their staff.

In 21st century, there is evaluation in the technology. For attracting students, various librarians are using new techniques and tools. Use of Wi-Fi, Android phone, Tablet Pc's, new version of mobile phones is used to attract students. The librarians are sending SMS for the Book Alerts, New Articles clippings, New Arrivals of books to teachers as well as users of libraries,. Libraries are not always fulfilling the needs of students who are the member of library but also try to satisfy the outside. But the developments in the electronic library creating barriers for outsiders in the case of university library. There are restrictions of access in licensing agreements for external students on electronic information source.

The new challenge for libraries and librarians is to sustain the capabilities developed through standard based bibliography processed with taking advantage of new access strategies; the library make balance between traditional library as well as modern virtual library. Therefore, the key role of librarians is to act as public access to the internet and have skilled staff to guide people in the use of new technologies and to deliver education and learning.

Public libraries are not behind academic libraries. There are not always aware of automation of libraries and computerized service but they are progressive in the matter of local people, children education. They are one stop ahead regarding awareness making in the people and other mobs for taking education and raise the literacy.

They develop mobile libraries for particular area, fix the day and dates and giving them books, various documents to deprived children and also physically abnormal. Governments make and push some rules

and regulations for the visually handicapped people. So the libraries of all kinds give the chance to educate them. Language is the challenge in front of librarians because the academic libraries only having many material in English and subjects wise but mainly in English therefore it needs to take regional language books in libraries.

For attracting the students and to overcome with the problem of non-usability of libraries, librarians must take serious role or action for involving students to be in the education which imparting in the college, so the librarians make a plans for that and arrange book Execution, Make a plans for that and arrange Book Exhibition, Monthly Book Review talks, Book Donation Scheme, Book Bank Scheme ,Celebrating 'International Book Day', inform the students for giving book on their Birthday occasion are the traditional ways.

Now, use of ICT era, Librarians give and provide more and more services to students. Using internet now we can update ourselves and then make aware to the students through providing Blogs, Wikipedia's, Cloud computing services, uses Web 2.0, Bibliotheca are helping tools for us. Face the new challenges and overcome to them, it's a responsibility of Librarian.

References

1. http://world.einnews.com/.
2. Gopal Krishnan, Impact of Information Technology Services in Libraries, Auther Press, Delhi, 2003.p.-2,3.9,12,29,30,50.

Guidelines for Authors

Manuscripts must be prepared in accordance with "Uniform requirements for Manuscripts submitted to Biomedical Journal" developed by international committee of medical Journal Editors.

Types of Manuscripts and Limits

Original articles: Up to 3000 words excluding references and abstract and up to 10 references.

Review articles: Up to 2500 words excluding references and abstract and up to 10 references.

Case reports: Up to 1000 words excluding references and abstract and up to 10 references.

Online Submission of the Manuscripts

Articles can also be submitted online from http://rfppl.co.in/customer_index.php.

I) First Page File: Prepare the title page, covering letter, acknowledgement, etc. using a word processor program. All information which can reveal your identity should be here. use text/rtf/doc/PDF files. Do not zip the files.

2) Article file: The main text of the article, beginning from Abstract till References (including tables) should be in this file. Do not include any information (such as acknowledgement, your name in page headers, etc.) in this file. Use text/rtf/doc/PDF files. Do not zip the files. Limit the file size to 400 Kb. Do not incorporate images in the file. If file size is large, graphs can be submitted as images separately without incorporating them in the article file to reduce the size of the file.

3) Images: Submit good quality color images. Each image should be less than 100 Kb in size. Size of the image can be reduced by decreasing the actual height and width of the images (keep up to 400 pixels or 3 inches). All image formats (jpeg, tiff, gif, bmp, png, eps etc.) are acceptable; jpeg is most suitable.

Legends: Legends for the figures/images should be included at the end of the article file.

If the manuscript is submitted online, the contributors' form and copyright transfer form has to be submitted in original with the signatures of all the contributors within two weeks from submission. Hard copies of the images (3 sets), for articles submitted online, should be sent to the journal office at the time of submission of a revised manuscript. Editorial office: Red Flower Publication Pvt. Ltd., 48/41-42, DSIDC, Pocket-II, Mayur Vihar Phase-I, Delhi – 110 091, India, Phone: 91-11-22754205, 45796900, 22756995. E-mail: author@rfppl.co.in. Submission page: http://rfppl.co.in/article_submission_system.php?mid=5.

Preparation of the Manuscript

The text of observational and experimental articles should be divided into sections with the headings: Introduction, Methods, Results, Discussion, References, Tables, Figures, Figure legends, and Acknowledgment. Do not make subheadings in these sections.

Title Page

The title page should carry

1) Type of manuscript (e.g. Original article, Review article, Case Report)
2) The title of the article, should be concise and informative;
3) Running title or short title not more than 50 characters;
4) The name by which each contributor is known (Last name, First name and initials of middle name), with his or her highest academic degree(s) and institutional affiliation;
5) The name of the department(s) and institution(s) to which the work should be attributed;
6) The name, address, phone numbers, facsimile numbers and e-mail address of the contributor responsible for correspondence about the manuscript; should be mentoined.
7) The total number of pages, total number of photographs and word counts separately for abstract and for the text (excluding the references and abstract);
8) Source(s) of support in the form of grants, equipment, drugs, or all of these;
9) Acknowledgement, if any; and
l0) If the manuscript was presented as part at a meeting, the organization, place, and exact date on which it was read.

Abstract Page

The second page should carry the full title of the manuscript and an abstract (of no more than 150 words for case reports, brief reports and 250 words for original articles). The abstract should be structured and state the Context (Background), Aims, Settings and Design, Methods and Materials, Statistical analysis used, Results and Conclusions. Below the abstract should provide 3 to 10 keywords.

Introduction

State the background of the study and purpose of the study and summarize the rationale for the study or observation.

Methods

The methods section should include only information that was available at the time the plan or protocol for the study was written such as study approach, design, type of sample, sample size, sampling technique, setting of the study, description of data collection tools and methods; all information obtained during the conduct of the study belongs in the Results section.

Reports of randomized clinical trials should be based on the CONSORT Statement (http://www.consort-statement. org). When reporting experiments on human subjects, indicate whether the procedures followed were in accordance with the ethical standards of the responsible committee on human experimentation (institutional or regional) and with the Helsinki Declaration of 1975, as revised in 2000 (available at http://www.wma.net/e/policy/l 7-c_e.html).

Results

Present your results in logical sequence in the text, tables, and illustrations, giving the main or most important findings first. Do not repeat in the text all the data in the tables or illustrations; emphasize or summarize only important observations. Extra or supplementary materials and technical details can be placed in an appendix where it will be accessible but will not interrupt the flow of the text; alternatively, it can be published only in the electronic version of the journal.

Discussion

Include summary of key findings (primary outcome measures, secondary outcome measures, results as they relate to a prior hypothesis); Strengths and limitations of the study (study question, study design, data collection, analysis and interpretation); Interpretation and implications in the context of the totality of evidence (is there a systematic review to refer to, if not, could one be reasonably done here and now?, What this study adds to the available evidence, effects on patient care and health policy, possible mechanisms)? Controversies raised by this study; and Future research directions (for this particular research collaboration, underlying mechanisms, clinical research). Do not repeat in detail data or other material given in the Introduction or the Results section.

References

List references in alphabetical order. Each listed reference should be cited in text (not in alphabetic order), and each text citation should be listed in the References section. Identify references in text, tables, and legends by Arabic numerals in square bracket (e.g. [10]). Please refer to ICMJE Guidelines (http://www.nlm.nih.gov/bsd/uniform_requirements.html) for more examples.

Standard journal article

[1] Flink H, Tegelberg Å, Thörn M, Lagerlöf F. Effect of oral iron supplementation on unstimulated salivary flow rate: A randomized, double-blind, placebo-controlled trial. J Oral Pathol Med 2006; 35: 540-7.

[2] Twetman S, Axelsson S, Dahlgren H, Holm AK, Källestål C, Lagerlöf F, et al. Caries-preventive effect of fluoride toothpaste: A systematic review. Acta Odontol Scand 2003; 61: 347-55.

Article in supplement or special issue

[3] Fleischer W, Reimer K. Povidone iodine antisepsis. State of the art. Dermatology 1997; 195 Suppl 2: 3-9.

Corporate (collective) author

[4] American Academy of Periodontology. Sonic and ultrasonic scalers in periodontics. J Periodontol 2000; 71: 1792-801.

Unpublished article

[5] Garoushi S, Lassila LV, Tezvergil A, Vallittu PK. Static and fatigue compression test for particulate filler composite resin with fiber-reinforced composite substructure. Dent Mater 2006.

Personal author(s)

[6] Hosmer D, Lemeshow S. Applied logistic regression, 2nd edn. New York: Wiley-Interscience; 2000.

Chapter in book

[7] Nauntofte B, Tenovuo J, Lagerlöf F. Secretion and composition of saliva. In: Fejerskov O, Kidd EAM,

editors. Dental caries: The disease and its clinical management. Oxford: Blackwell Munksgaard; 2003. p. 7-27.

No author given

[8] World Health Organization. Oral health surveys - basic methods, 4th edn. Geneva: World Health Organization; 1997.

Reference from electronic media

[9] National Statistics Online—Trends in suicide by method in England and Wales, 1979-2001. www.statistics.gov.uk/downloads/theme_health/HSQ 20.pdf (accessed Jan 24, 2005): 7-18. Only verified references against the original documents should be cited. Authors are responsible for the accuracy and completeness of their references and for correct text citation. The number of reference should be kept limited to 20 in case of major communications and 10 for short communications.

More information about other reference types is available at www.nlm.nih.gov/bsd/uniform_requirements.html, but observes some minor deviations (no full stop after journal title, no issue or date after volume, etc).

Tables

Tables should be self-explanatory and should not duplicate textual material.

Tables with more than 10 columns and 25 rows are not acceptable.

Table numbers should be in Arabic numerals, consecutively in the order of their first citation in the text and supply a brief title for each.

Explain in footnotes all non-standard abbreviations that are used in each table.

For footnotes use the following symbols, in this sequence: *, ¶, †, ‡‡,

Illustrations (Figures)

Graphics files are welcome if supplied as Tiff, EPS, or PowerPoint files of minimum 1200x1600 pixel size. The minimum line weight for line art is 0.5 point for optimal printing.

When possible, please place symbol legends below the figure instead of to the side.

Original color figures can be printed in color at the editor's and publisher's discretion provided the author agrees to pay.

Type or print out legends (maximum 40 words, excluding the credit line) for illustrations using double spacing, with Arabic numerals corresponding to the illustrations.

Sending a revised manuscript

While submitting a revised manuscript, contributors are requested to include, along with single copy of the final revised manuscript, a photocopy of the revised manuscript with the changes underlined in red and copy of the comments with the point to point clarification to each comment. The manuscript number should be written on each of these documents. If the manuscript is submitted online, the contributors' form and copyright transfer form has to be submitted in original with the signatures of all the contributors within two weeks of submission. Hard copies of images should be sent to the office of the journal. There is no need to send printed manuscript for articles submitted online.

Reprints

Journal provides no free printed reprints, however a author copy is sent to the main author and additional copies are available on payment (ask to the journal office).

Copyrights

The whole of the literary matter in the journal is copyright and cannot be reproduced without the written permission.

Declaration

A declaration should be submitted stating that the manuscript represents valid work and that neither this manuscript nor one with substantially similar content under the present authorship has been published or is being considered for publication elsewhere and the authorship of this article will not be contested by any one whose name (s) is/are not listed here, and that the order of authorship as placed in the manuscript is final and accepted by the co-authors. Declarations should be signed by all the authors in the order in which they are mentioned in the original manuscript. Matters appearing in the Journal are covered by copyright but no objection will be made to their reproduction provided permission is obtained from the Editor prior to publication and due acknowledgment of the source is made.

but no objection will be made to their reproduction provided permission is obtained from the Editor prior to publication and due acknowledgment of the source is made.

Abbreviations

Standard abbreviations should be used and be spelt out when first used in the text. Abbreviations should not be used in the title or abstract.

Checklist

- Manuscript Title
- Covering letter: Signed by all contributors
- Previous publication/ presentations mentioned, Source of funding mentioned
- Conflicts of interest disclosed

Authors

- Middle name initials provided.
- Author for correspondence, with e-mail address provided.
- Number of contributors restricted as per the instructions.
- Identity not revealed in paper except title page (e.g. name of the institute in Methods, citing previous study as 'our study')

Presentation and Format

- Double spacing
- Margins 2.5 cm from all four sides
- Title page contains all the desired information. Running title provided (not more than 50 characters)
- Abstract page contains the full title of the manuscript
- Abstract provided: Structured abstract provided for an original article.
- Key words provided (three or more)
- Introduction of 75-100 words
- Headings in title case (not ALL CAPITALS). References cited in square brackets
- References according to the journal's instructions

Language and grammar

- Uniformly American English
- Abbreviations spelt out in full for the first time. Numerals from 1 to l0 spelt out
- Numerals at the beginning of the sentence spelt out

Tables and figures

- No repetition of data in tables and graphs and in text.
- Actual numbers from which graphs drawn, provided.
- Figures necessary and of good quality (color)
- Table and figure numbers in Arabic letters (not Roman).
- Labels pasted on back of the photographs (no names written)
- Figure legends provided (not more than 40 words)
- Patients' privacy maintained, (if not permission taken)
- Credit note for borrowed figures/tables provided
- Manuscript provided on a CDROM (with double spacing)

Submitting the Manuscript

- Is the journal editor's contact information current?
- Is the cover letter included with the manuscript? Does the letter:

1. Include the author's postal address, e-mail address, telephone number, and fax number for future correspondence?
2. State that the manuscript is original, not previously published, and not under concurrent consideration elsewhere?
3. Inform the journal editor of the existence of any similar published manuscripts written by the author?
4. Mention any supplemental material you are submitting for the online version of your article. Contributors' Form (to be modified as applicable and one signed copy attached with the manuscript)

Revised Rates for 2017 (Institutional)

Title	Frequency	Rate (Rs): India		Rate ($):ROW	
Community and Public Health Nursing	3	5000	4500	357	300
Dermatology International	2	5000	4500	357	300
Gastroenterology International	2	5500	5000	393	340
Indian Journal of Agriculture Business	2	5000	4500	500	450
Indian Journal of Anatomy	4	8000	7500	571	500
Indian Journal of Ancient Medicine and Yoga	4	7500	7000	536	500
Indian Journal of Anesthesia and Analgesia	4	7000	6500	500	450
Indian Journal of Biology	2	5000	4500	357	300
Indian Journal of Cancer Education and Research	2	8500	8000	607	550
Indian Journal of Communicable Diseases	2	8000	7500	571	500
Indian Journal of Dental Education	4	5000	4500	357	300
Indian Journal of Emergency Medicine	2	12000	11500	857	800
Indian Journal of Forensic Medicine and Pathology	4	15500	15000	1107	1050
Indian Journal of Forensic Odontology	2	5000	4500	357	300
Indian Journal of Genetics and Molecular Research	2	6500	6000	464	400
Indian Journal of Hospital Administration	2	6500	6000	464	429
Indian Journal of Hospital Infection	2	12000	9000	857	800
Indian Journal of Law and Human Behavior	2	5500	5000	393	350
Indian Journal of Library and Information Science	3	9000	8500	643	600
Indian Journal of Maternal-Fetal & Neonatal Medicine	2	9000	8500	643	600
Indian Journal of Medical & Health Sciences	2	6500	6000	464	410
Indian Journal of Obstetrics and Gynecology	4	9000	8500	643	600
Indian Journal of Pathology: Research and Practice	4	11500	11000	821	780
Indian Journal of Plant and Soil	2	65000	60000	4623	4100
Indian Journal of Preventive Medicine	2	6500	6000	464	410
Indian Journal of Research in Anthropology	2	12000	11500	857	800
Indian Journal of Surgical Nursing	3	5000	4500	357	300
Indian Journal of Trauma & Emergency Pediatrics	4	9000	8500	643	600
Indian Journal of Waste Management	2	9000	8000	643	579
International Journal of Food, Nutrition & Dietetics	3	5000	4500	357	300
International Journal of Neurology and Neurosurgery	2	10000	9500	714	660
International Journal of Pediatric Nursing	3	5000	4500	357	300
International Journal of Political Science	2	5500	5000	550	500
International Journal of Practical Nursing	3	5000	4500	357	300
International Physiology	2	7000	6500	500	450
Journal of Animal Feed Science and Technology	2	78000	70000	5571	5000
Journal of Cardiovascular Medicine and Surgery	2	9500	9000	679	630
Journal of Forensic Chemistry and Toxicology	2	9000	8500	643	600
Journal of Geriatric Nursing	2	5000	4500	357	300
Journal of Medical Images and Case Reports	2	5000	4500	357	300
Journal of Microbiology and Related Research	2	8000	7500	571	520
Journal of Nurse Midwifery and Maternal Health	3	5000	4500	357	300
Journal of Organ Transplantation	2	25900	25000	1850	1700
Journal of Orthopaedic Education	2	5000	4500	357	300
Journal of Pharmaceutical and Medicinal Chemistry	2	16000	15500	1143	1100
Journal of Practical Biochemistry and Biophysics	2	5500	5000	393	340
Journal of Social Welfare and Management	3	5000	4500	357	300
New Indian Journal of Surgery	4	7500	7000	536	480
New Journal of Psychiatric Nursing	3	5000	4500	357	300
Ophthalmology and Allied Sciences	2	5500	5000	393	340
Otolaryngology International	2	5000	4500	357	300
Pediatric Education and Research	3	7000	6500	500	450
Physiotherapy and Occupational Therapy Journal	4	8500	8000	607	550
Psychiatry and Mental Health	2	7500	7000	536	490
Urology, Nephrology and Andrology International	2	7000	6500	500	450

Terms of Supply:

1. Agency discount 10%. Issues will be sent directly to the end user, otherwise foreign rates will be charged.
2. All back volumes of all journals are available at current rates.
3. All Journals are available free online with print order within the subscription period.
4. All legal disputes subject to Delhi jurisdiction.
5. Cancellations are not accepted orders once processed.
6. Demand draft / cheque should be issued in favour of "Red Flower Publication Pvt. Ltd." payable at Delhi
7. Full pre-payment is required. It can be done through online (http://rfppl.co.in/subscribe.php?mid=7).
8. No claims will be entertained if not reported within 6 months of the publishing date.
9. Orders and payments are to be sent to our office address as given above.
10. Postage & Handling is included in the subscription rates.
11. Subscription period is accepted on calendar year basis (i.e. Jan to Dec). However orders may be placed any time throughout the year.

Order from

Red Flower Publication Pvt. Ltd., 48/41-42, DSIDC, Pocket-II, Mayur Vihar Phase-I, Delhi - 110 091 (India), Tel: 91-11-22754205, 45796900, Fax: 91-11-22754205. E-mail: sales@rfppl.co.in, Website: www.rfppl.co.in