INDIAN JOURNAL OF LIBRARY AND INFORMATION SCIENCE

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.

Subscription Information

	One Year
India	Rs.5000
All Other Countries	$ 200

Discount for agents 10%. Orders and subscriptions send to the following address of **Red Flower Publication Pvt. Ltd, Delhi.**

Published, Owned & Edited by

Asharfi Lal
41/48, DSIDC, Pocket-II
Mayur Vihar Phase-I
P.O. Box 9108,
Delhi - 110 091(India)

Printed at

R.V. Printing Press
C-97, Okhla Industrial Area
Phase-1, New Delhi

Corresponding address
Red Flower Publication Pvt. Ltd.
41/48, DSIDC, Pocket-II, Mayur Vihar Phase-I
P.O. Box 9108, Delhi - 110 091(India)
Phone: 91-11-65270068/48042168, Fax: 91-11-48042168
E-mail: redflowerppl@vsnl.net, Web:www.rfppl.com

Indian Journal of
Library and Information Science

September-December 2009; Volume 3 Number 3

Contents

Information technology availability and its utilisation by academic staff of Covenant University, Nigeria

***Niran Adetoro, **Christopher Nkiko**

*Department of Library and Information Science, Tai Solarin University of Education, P M B, 2118, Ijebu- Ode, Nigeria, E-mail: niranadetoro@yahoo.com

**Ag, University Librarian, Covenant University, Canaan Land, Ota Nigeria.
E- Mail: chrismoj3@yahoo.co.uk

Abstract

Information technology (IT) availability in organizations may not necessarily translate to utilization. This study therefore investigated the availability and utilization of IT among the academic staff of Covenant University Nigeria. Survey research design was adopted. Using total enumeration technique, data were collected from the academic staff in all the 16 academic departments in the institution using a questionnaire tagged Information Technology Availability and Utilization Questionnaire ITAUQ (a=0.72). All the 300 academic staff in the university were sampled, however, 175 questionnaire were eventually retrieved and used for the study. This represents 58.3% response rate. The study found that internet (=3.37; SD=0.97), computers (=3.06; SD = 1.47), Online/CD-ROM databases (= 2.97; SD = 1.17), photocopiers (=2.93; SD=1.30); local area network (=2.47; SD=1.60), audio-visuals (=2.47; SD=1.36) and printers (=2.14; SD=1.48) were available; while computers (=3.76; SD=0.73), internet (=3.53; SD=1.10), photocopiers (=2.74; SD=1.40), printers (=2.70; SD=1.41) and Online/CD-ROM databases (=2.06; SD=1.59) were found to be frequently utilized. IT availability had significant relationship with IT utilization (r=0.666; P<0.01). There was no significant difference in the utilization of IT resources based on gender (t=0.1745, df=173; P>0.05). The study recommends periodic upgrade of IT resources and staff IT skills improvement through training.

Keywords: Information technology (IT); information technology availability; utilization, academic staff; Covenant University.

Introduction

Information technology (IT) utilization in academic institutions of learning can act as a catalyst for staff productivity and a means of improving institutional services. IT use has gained global prominence as one of the key tools for the actualization of organizational objectives. IT refers to the acquisition, processing, storage and dissemination of vocal, pictorial, textual and numerical information by micro-electronic based combination of computing and telecommunication (Langley and Shain, 1985).

IT is now regarded as one of the three fundamental assets of an organization (Watson, 1987). According to Prichard (1987), it is important that an enterprise develop the capacity to use IT creatively to collect, make sense of and disseminate information. Most organizations are now dependent on IT (Foster, 1993).Academic institutions such as universities are no exception. Today's academics must have the capability to deploy IT to facilitate effective teaching, learning and research functions. Universities can also utilize IT towards achieving effective and efficient institutional resources management (Ekireghwo, 1998)

The achievement of the foregoing depends largely on the availability of these technologies. This is why academic institutions have now realized the need for IT as it relates to job performance and now make IT available to their staff. It is apt to state here that the availability of IT in a University or an organization may not translate to its utilisation though studies such as

Reprints Requests :Dr. Niran Adetoro. Ph.D
Department of Library and Information Science, Tai Solarin University of Education, P M B, 2118, Ijebu- Ode, Nigeria
niranadetoro@yahoo.com

(Received on 10.4.09, accepted on 26.6.09)

Melott (2003) and Haliso (2007) had shown that IT availability can positively influence utilisation. Indeed, it is expedient to say that IT availability and its functionality may precipitate utilization.

The National Universities Commission (NUC) in Nigeria adjudged Covenant University as the foremost private University in Nigeria; going by its accreditation exercise of 2005. The institution so far has provided and encouraged the use of IT among its staff and students. This study investigates IT resources availability as a correlate of its utilization among academic staff of Covenant University.

Statement of the Problem

The availability and utilization of IT by academic staff in universities is crucial to job performance, increased productivity and attainment of organizational objectives. Observations suggest that utilization of IT by academic staff of Covenant University may have dwindled and this cast doubts on the range of IT resources availability in the institution and the frequency of their utilization.

Research Questions

The under-listed research questions were raised for the study

What are the IT resources available at Covenant University?

What is the frequency of IT utilisation by academic staff of Covenant University?

Hypotheses

The following hypotheses were formulated and tested at 0.05 level of significance.

Ho_1: There is no significant relationship between IT availability and utilization by academic staff of Covenant University.

Ho_2: There is no significant difference in the frequency of IT utilization by academic staff of Covenant University based on their gender.

Literature Review

Ekireghwo (1998) defined IT as the application of computing, micro-electronics and telecommunication technologies and how these are used to collect, store, process, retrieve and disseminate information. IT are generally needed to ease the acquisition, storage and dissemination of relevant information to the right users at the right time; irrespective of locations in the most effective and efficient manner (Mohammed, 2001). This line of thought and definitions has been supported by American Library Association (1983), Langhley and Shain (1985), Marghalani (1987), Zaman (1993) and Oketunji (2001) to mention a few.

With IT, Universities are now building new opportunities and improving staff productivity. This requires an IT management structure that will apply available and emerging technologies such as personal computers, databases, local area networks for achieving organizational objectives (Prichard, 1987).

Rosenberg (1997) submits that utilisation of IT by African universities for information management and access has become prevalent. Other related studies with reports on the positive use of IT for information management in universities include Horton and Ilcheva (1995), Adeniran (1997), Chisenga (1997) and Formson (1999). Availability of IT in organizations does not necessarily translate to utilization though IT functionality has correlation with utilization (Chisenga, 2004). Indeed studies such as Gardner (1994), Jimba (2000), Melott (2003) and Haliso (2007) have evidence to the effect that IT availability positively influence utilization.

Davis, Bagozzi and Warshow (1989), Compeau and Higgins (1995) had highlighted that organizations and individuals have utilized available IT for attainment of organizational and individual goals while Goodhue and Thompson (1995) and Goodhue (1995) had focused their studies on task-technology fit.

Subair and Kgankenna (2002) studied the utilisation of IT by agricultural researchers and reported that IT is well valued and consequently used. Other related studies include Goense, Hofstee and Van Bergeijk (1996) and Armarteifio (2001).

Odesanya and Ajiferuke (2000) reported that availability and use of IT by advertising agencies in Lagos was encouraging. IT resources were available and functioning in the agencies and IT usage led to increased productivity, profit levels and customer satisfaction.

Idowu and Mabawonku (1999) investigated the application of IT in Nigerian Research and

University libraries with positive findings in terms of level of IT availability and utilization while Winter, Chudoba and Gutek (1998); Jones, Sprague, Nankivell and Richter (1999); Adekunle, Omoba and Tella (2007) all found a correlation between attitude towards IT and its utilization. These studies, also corroborated by Jones (2007) reinforce the significance of positive attitude towards the deployment, availability and utilization of IT in organizations.

Methodology

Research Design

The study is based on survey research method.

Population

The study population is the academic staff of Covenant University which comprised of lecturers spread across the institutions sixteen (16) academic departments and the librarians in the University library. The academic records unit of the university puts the population of academic staff at three hundred (300).

Sample and Sampling Procedure

The study employed the total enumeration method in which all the 300 academic staff in the 16 departments were sampled. Questionnaires were distributed to all the 300 staff. Some of the questionnaires were not returned while others were found to be defectively filled. In all 175 questionnaire were found usable for the study. This represents a response rate of 58.3%.

Instrument

A self constructed questionnaire tagged Information Technology Availability and Utilization Questionnaire (ITAUQ) was used for data collection. The instrument had three sections A-C with eight items. Section A elicited biographical information from respondents, section B gathered information on IT availability while section C focused on IT utilization. Sections B and C were all structured on a four point likert rating scale.

Validity and Reliability

For the validity of instrument, IT experts in Covenant University examined the questionnaire which led to useful corrections, additions and suggestions. The reliability of instrument was determined using test-retest method. A reliability co-efficient of (a = 0.72) was derived on the section on IT availability while (a = 0.73) was derived for the section on IT utilization. The reliability scores were obtained using Cronbach Alpha test.

Data Analysis

The data gathered were analyzed using mean, standard deviation, Pearson product moment correlation and t-test analysis.

Result

Research question 1

What are the IT resources available at Covenant University?

For the purpose of making decision, IT resources with a mean score of (=2.0) and above was considered as available and vice-versa. The study showed that IT resources available at Covenant University includes: Internet (=3.37; SD=0.97); Computers (=3.06; SD=1.47) Online and CD-ROM databases (=2.97; SD=1.17); photocopiers (=2.93; SD=1.30); local area network (=2.47; SD=1.60); audio-visuals (=2.47; SD=1.36) and printers (=2.14; SD=1.48) while Fax machine (=1.47;SD=1.17) Modem (=1.41; SD=1.39); Microfilm (=1.28; SD=1.14 and Microfiche (=1.17; SD=1.18) were considered not available.

This result reveals clearly that an appreciable variety of IT resources are available at Covenant University for staff use.

Table 1. IT Resources availability at Covenant University

IT Resources	$\overline{X}$ mean	Standard Deviation	Decision
Internet	3.37	0.97	AV
Computers	3.06	1.47	AV
Online/CD-ROM Databases	2.97	1.17	AV
Photocopiers	2.93	1.30	AV
Local area networks	2.47	1.60	AV
Audio-visuals	2.47	1.36	AV
Printers	2.14	1.48	AV
Fax machine	1.47	1.17	NA
Modem	1.41	1.39	NA
Microfilm	1.28	1.14	NA
Microfiche	1.17	1.18	NA

Decision

AV = Available

NA = Not Available

Research Question 2

What is the frequency of IT resources utilization by academic staff of Covenant University?

In providing answer to the above question, the respondents were asked to rate their utilization of IT resources on a four point scale of Daily, weekly fortnightly and monthly. The result revealed that the frequently used IT resources were Computers (=3.76; SD = 0.73); Internet (3.53; SD = 1.10) Photocopiers (= 2.74; SD = 1.40); Printers (= 2.70, SD = 1.41), Online and CD-ROM databases (= 2.06; SD = 1.59). The less utilized IT resources includes Local Area network (= 1.67; SD = 1.48); Audio visuals (= 1.67; SD = 1.66) Microfilm (= 0.94; SD = 1.10) Modem (= 0.87; SD = 1.30) Fax (= 0.83; SD= 1.25) and Microfiche (= 0.68; SD = 0.95).

Table 2 Ranked order of IT resources utilization by academic staff of Covenant University

IT Resources	$\overline{X}$ mean	Standard Deviation	Rank
Computers	3.76	0.73	1
Internet	3.53	1.10	2
Photocopiers	2.74	1.40	3
Printers	2.70	1.51	4
Online/CD-ROM databases	2.06	1.59	5
Local area networks	1.67	1.48	6
Audio-visuals	1.62	1.66	7
Microfilm	0.94	1.10	8
Modem	0.87	1.30	9
Fax	0.83	1.25	10
Microfiche	0.68	0.95	11

n = 175

Test of hypotheses

Hypothesis 1

There is no significant relationship between IT availability and its utilization by academic staff of Covenant University.

Table 3. Correlation between IT availability and utilization

Variables	N	Mean (x)	Std. Deviation	R	Sig. Value	Remark
IT availability	175	27.2627	8.9680	0.666**	000	P<0.01
IT utilization	175	23.7086	6.1905			

**Correlation is significant at 0.01 level (2 tailed)

r= 0.666; p<0.01

Decision: significant

The analysis showed significant relationship between IT availability and its utilization by academic staff of Covenant University. The analysis revealed a correlation co-efficient value r=0.666; p<0.01. This mean the hypothesis is rejected.

Hypothesis 2

There is no significant difference in the level of IT utilization by academic staff of Covenant University based on their gender.

Table 4. T-test comparison of utilization of IT resources based on academic staff gender

Gender	N	Mean ($\bar{x}$)	Std. Deviation	df	t-cal	Sig. Value (2 tailed)	Remark
Male	135	23.2667	6.8166	173	-1.745	0.083	p>0.05
Female	40	25.2000	2.8930				

Significant at 0.05 level

t-cal =0.1745; df = 173; p>0.05

Decision: Not significant

This result showed no significant difference between male and female academic staff IT resources utilization in Covenant University. The analysis revealed a t-test value t=0.1745, df=173; p>0.05. This indicates that the hypothesis is hereby accepted.

Discussion

This study revealed that computers, internet, on-line and CD-ROM databases, photocopiers, local area network, audio-visuals and printers are available for use by academic staffs of Covenant University. These IT resources can help to enhance job performances and to ensure productivity. This finding is in consonance with Horton and Ilcheva (1995), Rosenberg (1997) and Chisenga (1997).

The frequently utilized IT resources are also computers, internet, photocopiers, printers and online/CD-ROM databases. This result is consistent with the findings on availability of IT resources. It can be inferred that academic staffs at Covenant University actually utilize the available IT resources. This is in agreement with Melott (2003) and Jimba (2000) who found that a wide range of available IT resources were utilized by agricultural scientist in Nigeria. The less utilized IT resources include fax, modem and microforms. This is also in agreement with the result on IT resources availability and therefore may be due to their non-availability and non-use at Covenant University.

This study also found that IT resources availability had positive relationship with IT utilization. In effect, IT availability at Covenant University has positive influence on its utilization. This corroborates the findings of Odesanya and Ajiferuke (2000), Oluwatoyin (2003) and Haliso (2007) that IT availability will most times bring about the utilization.

Further, it was revealed that there was no significant difference in the utilization of IT resources by the academic staffs based on their gender. In essence, sex or gender is not a factor that will influence IT utilization.

Conclusion and Recommendation

The availability of IT resources at Covenant University can be described as appreciable going by the number of IT resources available in the institution. This study has established that IT resources are adequately utilised by the academic staff in their daily activities. However, there is

always enough room for improvement. IT resources availability resulted in its utilization and there was no difference in the utilization of IT resources based on gender of academic staff.

It is therefore recommended that Covenant University management should periodically upgrade the institution's IT resource profile in terms of increase in the range of IT resources available with a view to sustaining the level and frequency of utilization for optimum job performance.

The academic staff members should also be encouraged to always improve upon their IT skills through organized on-the-job and off-the-job training in form of workshops and conferences.

References

1. Adekunle, P.A., Omoba, R.O and Tella, A. Attitude of librarians in selected, 2007.
2. Nigerian Universities towards the use of ICT. Library philosophy and practice. from http// libr.uw.edu:2000/lpp/tella3htm. Accessed on 21-2-2007.
3. Adeniran; O.R. Computerization efforts in Botswana libraries: A state of the art Review. African Journal of library, Archives and Information Science. 1997; 17(2): 125-132.
4. Amarteifio, J.O. African Women and Information technology: challenges and prospects in the New Millennium. Paper presented at GASAT 10th conference held in Copenhagen, Denmark, 2001; 2-3 July.
5. American Library Association. The ALA Glossary of Library and Information Science. Chicago ALA, 1983; 183.
6. Chisenga, J. Implementing and using electronic mail at the National University of Lesotho. African Journal of library, Archives and information science, 1997; 7-(2): 105-115.
7. Chisenga, J. The use of information and communication technology (ICT) in African public libraries: A survey of ten countries in Anglophone Africa. INASP. U.K, 2004.
8. Compeau, D.R. and Higgins, C.A. Computer self-efficacy: Development of a measure and initial test. MIS Quarterly, 1995; 23 (2): 189-211.
9. Davis, F.D, Baggozzi R. P and Warshaw, P.R. Use acceptance of computer technology: A comparison of two theoretical models. Management Science, 1989; 35 (8): 982-1002
10. Formson, J.W. The impact of information technology on the cataloguingprocess at the University of Botswana Library. African Journal of Library, Archives and information science, 1979; 9 (1) 17-26.
11. Gardner, B. (1994): Ensuring information technology utilization in developing countries. Gaborone: Botswana Pty Ltd, 1994.
12. Goense, D, Hofstee J.W. and Van Bergeijk, J. An information Model to describe system for spatially variable field operations. Computers and Electronics in Agriculture, 1996; 22(2): 85-95.
13. Goodhue, D.L and Thompson R.L. task Technology fit and individual performance. MIS Quarterly, 1995; 19 (2): 213-236.
14. Haliso, Y (2007): Availability and utilization of information and communication technology and job performance in academic libraries in South West, Nigeria. Unpublished Ph.D. Thesis University of Ibadan.
15. Horton, and Ilcheva, S. A University on the World Wide Web: A case study of the University of Natal, South-Africa. African Journal of library, Archives and information science, 1995; 5 (2): 99-108.
16. Idowu, A.O and Mabawonku, I. Information technology facilities and application in some Nigerian research and University Libraries. African journal of library, Archives and information science, 1999; 9(1): 27-35.
17. Janes, J. Digital reference: Reference Libraries, Experience and Attitudes. Journal of American society for information science and Technology, 2002; 53(7): 549-566.
18. Jimba, S.W. Assessment of the use of information technology among scientists in selected agricultural libraries unpublished Ph.D. Thesis University of Ibadan, 2000.
19. Jones, B. Sprague M, Nankivell, C and Richter K, Staff in the new library. Skill needs and learning choices. Findings from training the future, a public library research project. London: British Library British library research and innovation report, 1999; 152.
20. Langley, and Stain M. eds. Macmillan dictionary of information technology London: Macmillan, 1985.
21. Melott, E.A. A survey of ILS usage. Rural libraries, 2003; 231: 35-37.
22. Mohammed, Z. Information technology education in Nigerian library and information science schools and the challenges of the digital age. In

P.O Fayose and KIN Nwalo eds. Information technology in library and information science education in Nigeria Ibadan: NALISE, 2001; 67.

23. Odesanya, O.A and Ajiferuike I. Information technology usage by advertising agencies in Lagos, Nigeria. African Journal of Library, Archives and information science, 2000; 10 (2): 113-123.
24. Oluwatoyin, O.D (2003): Resource availability, utilization and academic achievement of students in selected secondary schools in Ibadan, Nigeria Ibadan Journal of Educational Studies, 2003; 3(1 & 2): 40-47.
25. Prichard, E.L. Information technology (IT) for competitive advantage: understanding the developing paradigm and selling the case. In R. Watson ed. Information management in competitive success: state of the art report. England: Pergamon InfoTech, 1987.
26. Watson, R. Linking information systems (IS) with business. In R. Watson .ed. Information Management in Competitive success: State of the art report. England: Pergamon InfoTech, 1987.
27. Winter, S.J; Chudoba, K. and Gutek, B.A. Attitudes towards computers: when 46. they do predict computer use? Information and management, 1998; 314(5): 275-84.
28. Zaman, H.B (1993): Information technology and education. Information Development, 1993; 9 (3): 142-146.

Red Flower Publication Pvt. Ltd.

New Company of *World Information Syndicate*

We are pleased to introduce our new company **(i.e. Red Flower Publication Pvt. Ltd. (RFPPL). The RFPPL** is a sister concern company to our ten years old company **World Information Syndicate (WIS)** serving all over the India and several western and neighboring countries.

Ten years ago we established a subscription agency as **World Information Syndicate**. Since then our team of associates has offered a wealth of knowledge and experience, providing service and benefits to our clients and customers.

The Red Flower Publication Pvt. Ltd. is a Medical and Scientific publishing group has been formed to deliver service with the highest quality, honesty and integrity. We continue to work to maintain a matchless level of professionalism, combined with uncompromising client service. **The Red Flower Publication Pvt. Ltd.** strives to exceed your expectations.

Over 80% of our business comes through the referrals of satisfied clients, a strong testament to our client service. We appreciate your support in the past, and with a new name and a new look. We are looking forward to serving you even better in the years to come.

The Red Flower Publication Pvt. Ltd. is a newly formed medical and scientific publishing company led by **Asharfi Lal** founder of **World Information Syndicate** based in Delhi. **The RFPPL** publishing twelve peer-reviewed indexed medical and scientific journals that provides the latest information about best clinical practices and new research initiatives.

Chairman and Principal of **The Red Flower Publication Pvt. Ltd**, is the founder and president of **WIS** a leading subscription agency in India. **The World Information Syndicate** published and distributed highly respected journals from all over the world to all over the world. **The Red Flower Publication Pvt. Ltd** will be publishing journals on the field of medicine and science like Library and Information Science, Neurology, Neurosurgery, Pediatrics, Genetics, Social Welfare, Management, Ayurveda, Yoga, Forensic Medicine, Dentistry, Pathology and Surgery.

The World Information Syndicate's leadership has more than 10 years of experience in the field of academic publishing and marketing that includes extensive success in building and leading editorial teams and developing innovative service offerings.

All twelve journals since June 2009 being published by **The Red Flower Publication Pvt. Ltd,** which were previously published by **World Information Syndicate.**

The Red Flower Publication Pvt. Ltd
41/48, DSIDC, Pocket-II, Mayur Vihar, Phase-I, Opp. Police Station
P.O. Box No. 9108, Delhi - 110 091 (India)
Tel: 91-11-65270068, 48042168, Fax: 91-11-48042168
E-mail: redflowerppl@vsnl.net, Website: www.rfppl.com

Internet usage by faculty and students of TITS, Bhiwani, Haryana

***Sanjay K. Kaushik, **Dalvir Sharma**

*Senior Assistant Librarian, Maharshi Dayanand University, Rohtak 124001

E-mail: kaush_s@rediffmail.com

**Junior Librarian, Govt. College, Jhajjar, Haryana

Abstract

The present paper is an output of a study conducted to know the use of internet by faculty and students of Technological Institute of Textile and Sciences (TITS), Bhiwani, Haryana. The data was collected through a structured questionnaire. One hundred seventy one useable questionnaires were received. The data is subjected to Chi-square test. The findings indicate that two-third of the respondents daily use internet and little less than one-third respondents use it twice or thrice a week. About a majority of respondents spent one to five hours a week on internet searching. Most of the respondents use internet in the institute either in the library or in the computer section or in the department. A majority of respondents are often motivated for keeping themselves abreast of latest information. Two-third of the respondents mentioned that they browse the required information on internet through the search engines.

Introduction

The mode of information has been changing since the time immemorial. With the advancement in the Information and Communication Technology it has taken a digital shape. Nowadays, internet is considered as the prime source of every kind of information. Although it is an issue of debate, but still it is true to some extent. Internet comes to the mind of anyone who requires some information at the first instance.

The information may be about some book, journal, Air or train fair and bookings, hotel reservations, biographical detail of a great personality, an image of great personality, geographical information about a place, map of any place, etc. This shows that the intense use of internet in every sphere of life has taken place. The area of Research and Teaching is not an exception to it. The students, researchers and faculty in every discipline nowadays use internet for academic and social purposes. They now search the OPACs available on internet of even foreign libraries like Library of Congress.

Reprints Requersts: Dr. Sanjay K Kaushik
Senior Assistant Librarian, Maharshi Dayanand University, Rohtak 124001
E-mail: kaush_s@rediffmail.com

(Received on 16.05.09, accepted on 05.10.09)

The use of internet in study, research and teaching plays a vital role in the changed environment. The faculty and students of Engineering are also using internet for various purposes. The present study is an attempt to know the use of internet by faculty and students of Technological Institute of Textile and Sciences (TITS), Bhiwani, Haryana.

Objectives

The major objectives of the study are:

To know the degree of internet use by faculty and students of TITS, Bhiwani.

To identify the time devoted for Internet searching.

To study their purpose of using the Internet.

To determine the motivational factors.

To know whether they are able to locate the desired information on Internet.

To assess internet facilities provided by TITS.

To study problems faced by them in using Internet.

Related Literature

Biradar and others (2008)[1] indicated that majority of students used internet twice in a week and 31.25% faculties use it every day. The majority of students as well as faculties use internet for study/ teaching purpose. The

findings reveal that only yahoo and google are the most popular and widely used search engines. **Asemi (2005)**[2] shows that all the respondents were using the Internet frequently because all faculties were provided connection to the Internet. It was revealed that the researchers of the university were getting quality information through the Internet. Fifty-five percent of the respondents searched for scientific information through the Internet because the university library had provided access to various databases and online journals for all the students and staff. **Mishra, Yadav and Bisht (2005)**[3] revealed that a majority of the students (85.7%) used the Internet. Out of the Internet users 67.7% were male students and 32.3% female students. The findings of the study also showed that 61.5% of the males and 51.6% of the females used Internet for preparing assignments. A majority of the respondents i.e. 83.1% male and 61.3% female respondents indicated that they faced the problem of slow functioning of Internet connection.

Robinson (2005)[4] found that most of the African-American college students (76%) had used the Internet for more than three years. The use of the Internet for most African-American college students occurred at school or at the work place with 49% of the responses at home. 47% of the responses indicated that they spent an average of two hours per day on-line. A small percentage of the students spent 5-6 hours per day on the Internet. 43% of the students used the Internet primarily to learn and find school resources. **Rajeev Kumar and Amritpal Kaur (2004)**[5] indicated that 46.7% teachers and 36.7% students daily use the internet. About 90% respondents use internet at their college. Yahoo is found as the favorite search engine. Only 31.7% respondents were fully satisfied, whereas 36.7% were partially satisfied with internet facilities.

Methodology

To obtain the data from the selected sample, a structured questionnaire was designed. The sample selected for the study included the faculty and students of Technological Institute of Textile and Sciences(TITS), Bhiwani. The questionnaires were distributed among 225 faculty members and students. Out of which as many as 171 filled in useable questionnaires were received back. The data so obtained was coded and analyzed with the help of SPSS (Statistical Package for Social Sciences).

Results

The data pertaining to the various aspects of Internet usage received from the respondents is being analysed under various headings.

Frequency of Internet Use

Use of internet becomes the routine of life now-a-days. The students are expected to use internet frequently. Almost two-third of the respondents daily use internet, little less than on-third use internet twice or thrice a week, only 8 respondents use internet once a week and seven

Table 1. Gender X Frequency of Internet Use

						Total	Calculated value	DF	Table value
		Daily	2-3 Times a week	Once a week	Once a month				
	Male	75	26	2	3	106	12.326	3	7.81
	Female	30	25	6	4	65			
Total		105	51	8	7	171			

once a month. The calculated value (12.326) of chi-square of Gender X frequency of internet use is higher than the table value (7.81) at 5% probability level for 3 degree of freedom. Hence there is a significant difference among the respondents on the basis of their gender regarding frequency of internet use. .

Time Spent on Internet

About a majority of respondents spent one to five hours a week on internet searching, twenty five respondents spent less than one hour a week, thirty two respondents spent six to ten hours a week, fourteen respondents spent eleven to fifteen hours a week. Only sixteen respondents

spent more than fifteen hours a week on internet searching. The calculated value (8.761) of chi-square of Gender X Weekly time Spent on internet is less than the table value (11.07) at 5% probability level for 5 degree of freedom. Hence null hypothesis is accepted and there is no significant difference among the respondents on the basis of their gender regarding time spent on internet.

Table 2. Gender X Weekly Time Spent on Internet

							Total	Calculated value	DF	Table value
		< 1 hour	1-5 Hrs	6-10 Hrs	11-15 Hrs	16-20 Hrs	> 20 Hrs				
	Male	13	49	20	11	4	9	106	8.761	5	11.07
	Female	12	35	12	3	3		65			
Total		25	84	32	14	7	9	171			

Purpose of Using Internet

There can be different purposes of internet use for different kind of persons. Some may use internet for chatting, others may use it for e-mails and some others may use it for academic purpose, etc. The use of internet by faculty and students of Technological Institute of Textile and Sciences, Bhiwani is mainly for academic purpose. Sixty one (35.67%) respondents use internet for academic purpose, twenty two (12.87%) for receiving and sending e-mail and eighty seven (50.88%) respondents for all three. Only one respondent use internet for chatting purpose. The calculated value (7.172) of chi-square of Gender X Purpose of internet use is less than the table value (7.81) at 5% probability level for 3 degree of freedom. Hence null hypothesis is accepted and there is no significant difference among the respondents on the basis of their gender regarding purpose of internet use.

Table 3. Gender X Purpose of Internet Use

						Total	Calculated value	DF	Table value
		E-mail	Chatting	Academic	All three				
	Male	10		35	61	106	7.172	3	7.81
	Female	12	1	26	26	65			
Total		22	1	61	87	171			

Place of Internet Use

In TITS there are various places where faculty and students can use internet facilities. Most of the respondents use internet in the institute either in the library or in the computer section or in the department. The use of internet at cyber café is negligible. Only sixteen respondents use internet at their home. The calculated value (8.708) of chi-square of Gender X Place of internet Use is less than the table value (9.49) at 5% probability level for 4 degree of freedom. Hence null hypothesis is accepted and there is no significant difference among the respondents on the basis of their gender regarding place of internet use.

Table 4. Gender X Place of Internet Use

							Total	Calculated Value	DF	Table Value
		Library	Computer Section	Deptt.	Home	Cyber cafe				
	Male	25	55	17	7	2	106	8.708	4	9.49
	Female	9	27	16	9	4	65			
Total		34	82	33	16	6	171			

Staff Assessment

The staff in the internet sections of TITS is found cooperative, well informed, well trained and up-to-date. However, less than one fourth respondents think that the staff needs to be further trained.

Table 5. Gender X Staff Assessment

						Total	Calculated Value	DF	Table Value
		Well Trained	Well Informed	Up-to-date	Need further training				
	Male	29	25	19	33	106	10.080	3	7.81
	Female	20	24	14	7	65			
Total		49	49	33	40	171			

The calculated value (10.08) of chi-square of Gender X Staff Assessment is higher than the table value (7.81) at 5% probability level for 3 degree of freedom. Hence null hypothesis is rejected and there is significant difference among the respondents on the basis of their gender regarding staff assessment. It may be noted that more male respondents as compared to the females feel that the staff needs further training.

Motivational factors

Among the various motivational factors of the internet use the important ones are: To keep abreast of latest information, to develop and maintain contacts, time saving, faster communication, obtaining reprints and sending papers to the conferences/ seminars and journals, etc. A majority of respondents are often motivated for keeping themselves abreast of latest information, eighty one respondents are often motivated for faster communication, seventy six respondents are often motivated for developing and maintaining contacts, and fifty eight are often motivated for time saving. Around one third respondents are moderately motivated for developing and maintaining contacts, time saving, and faster communication. One hundred twenty six respondents are least motivated to use internet for sending the papers, one hundred and seven respondents are least motivated for obtaining the reprints, fifty two respondents are least motivated for time saving and around thirty respondents are least motivated for keeping abreast, developing and maintaining contacts, and faster communication. The calculated value of Gender X Motivational factors is less than the table value at 5% of probability for 2 degree of freedom. Hence the null hypothesis is accepted and there is no significant difference among the respondents on the basis of their gender regarding motivational factors.

Table 6. Gender X Motivational Factors

	Least	Moderately	Often	Total	Calculated value	DF	Table Value
Keep abreast	33	43	95	171	.577	2	5.99
Develop/ maintain contacts	34	61	76		1.362		
Time Saving	52	61	58		.616		
Faster communication	30	60	81		.581		
Obtain reprints	107	44	20		4.674		
Send papers	126	32	13		1.364		

47 Internet as Source of Information

Most of the respondents assess the Internet as a Source of information as Excellent and good. Only eleven assess it as satisfactory and two as unsatisfactory. The calculated value (1.62) of Gender X Internet as a Source of Information is less than the table value (7.81) at 5% of probability for 2 degree of freedom. Hence the null hypothesis is accepted and there is no

significant difference among the respondents on the basis of their gender regarding assessment of internet as a source of information.

Table 7. Gender X Internet as a Source of Information

					Total	Calculated value	DF	Table Value
	Unsatisfactory	Satisfactory	Good	Excellent				
Male	2	6	22	76	106	1.62	3	7.81
Female		5	15	45	65			
Total	2	11	37	121	171			

Methods of Browsing

Search engines are the programs which search the information available on the web. A number of search engines are available on internet like: rediff, google, yahoo, altavista, etc. If an internet user know the web address of the site which he wishes to visit then he can directly type the address in the address bar. If anyone do not know the address, still no need to worry, search engines are there to help. Two-third of the respondents mentioned that they browse the required information on internet through the search engines, forty-three respondents mentioned that they type the address directly in the address bar. There are only few respondents who use subscription databases, advertisements, catalogues, TV and Radio, etc. Again the calculated value (4.106) of Gender X Methods of Browsing is less than the table value (9.49) at 5% of probability for 4 degree of freedom. Hence the null hypothesis is accepted and there is no significant difference.

Table 8. Gender X Methods of Browsing

						Total	Calculated value	DF	Table Value
	Typing address directly	Using subscription databases	Using search engines	Using advt, catalogues, etc	Multimedia means like TV, Radio, etc.				
Male	30	5	66	4	1	106	4.106	4	9.49
Female	13	1	49	1	1	65			
Total	43	6	115	5	2	171			

Frequently used search Engines

Internet users become habitual of using the same search engine. It depends upon the individual requirements and likeness. The facilities provided by these search engines are more or less same with some technical differences. Three search engines are found frequently being used by faculty and students of TITS, Bhiwani. The most frequently used search engine is google. Almost ninety percent of the respondents frequently use google. Seventeen respondents frequently use yahoo and only one respondent frequently uses rediff. Hence we can say that google is a very popular search engine among the respondents. The calculated value (3.515) of Gender X Frequently used search engines is less than the table value (5.99) at 5% of probability for 2 degree of freedom. Hence the null hypothesis is accepted and there is no significant difference.

Table 9. Gender X Frequently Used Search Engines

				Total	Calculated value	DF	Table Value
	Google	Rediff	Yahoo				
Male	98		8	106	3.515	2	5.99
Female	55	1	9	65			
Total	153	1	17	171			

Locating the Desired Information

The material available on the internet is like a huge sea and searching is a tedious job. Moreover the relevancy of material retrieved is a big issue. However, the users can increase the relevancy by applying certain internet search techniques. Still a vast literature appears when you search even a small topic. Majority of respondents frequently able to locate the desired information on internet, about one third respondents are sometime able to locate the desired information and only eight respondents are rarely able to locate the desired information on internet. The reason for inability of locating the required information may be the complicacy of internet or the lack of expertise of respondents. Interestingly, the calculated value (6.073) of Gender X Ability of Locating the desired Information is higher than the table value (5.99) at 5% of probability for 2 degree of freedom. Hence the null hypothesis is rejected and there is statistically significant difference among the respondents.

Table 10. Gender X Ability to Locate Desired Information

				Total	Calculated value	DF	Table Value
	Frequently	Sometimes	Rarely				
Male	69	31	6	106	6.073	2	5.99
Female	32	31	2	65			
Total	101	62	8	171			

Working Conditions of Systems

The computer systems and other peripherals installed for internet surfing are amenable to wear and tear. Hence these can sometimes be down or not working. Majority of respondents very frequently and frequently found the systems down.

Table 11. Gender X Functioning of Systems

					Total	Calculated value	DF	Table Value
	Very frequently	Frequently	Sometimes	Rarely				
Male	14	42	33	17	106	.683	3	7.81
Female	6	28	20	11	65			
Total	20	70	53	28	171			

Fifty three respondents mentioned that they occasionally found the systems down and twenty eight respondents rarely found the systems down. In this way we can say that the system maintenance of TITS, Bhiwani have a scope for improvement. The calculated value (.683) of Gender X Functioning of Systems is less than the table value (7.81) at 5% of probability for 3 degree of freedom. Hence the null hypothesis is accepted and there is no significant difference.

Speed of Internet

The speed of internet depends upon the bandwidth of the internet service provider and the RAM size of the computer on which internet is being used. However the load on a particular site may also slow down the speed. Speed is an important factor while assessing the services for internet surfing. The faculty and students of TITS, Bhiwani are not satisfied over the speed of internet. Sixty nine respondents assess the speed as medium, fifty four assess it as slow and twenty nine respondents assess the same as very slow. Only nineteen respondents have assessed the speed as fast. Hence there is need for the improvement of speed. It may be noted that the calculated value (11.990) of Gender X Speed of Internet is higher than the table value (7.81) at 5% of probability for 3 degree of freedom. Hence the null hypothesis is rejected and there is statistically significant difference among the respondents.

Table 12. Gender X Speed of Internet

					Total	Calculated value	DF	Table Value
		Fast	Medium	Slow	Very slow			
	Male	8	38	35	25	106	11.990	3	7.81
	Female	11	31	19	4	65			
Total		19	69	54	29	171			

Overall Satisfaction

Majority of respondents are partially satisfied with the overall functioning of internet services, fifty three respondents are least satisfied and only twenty respondents are fully satisfied. The results indicate that there is a need for improvement in the internet services provided by TITS, Bhiwani. As internet is such a powerful source of information in this era of Information Technology, so steps should be taken to improve the services at the earliest. The calculated value (.808) of Gender X Overall Satisfaction is less than the table value (5.99) at 5% of probability for 2 degree of freedom. Hence the null hypothesis is accepted and there is no significant difference.

Table 13. Gender X Overall Satisfaction

				Total	Calculated value	DF	Table Value
		Fully	Partially	Least			
	Male	11	60	35	106	.808	2	5.99
	Female	9	38	18	65			
Total		20	98	53	171			

Conclusion

Keeping in view the data analysis, we can say that the faculty and students of TITS, Bhiwani frequently use Internet. They spend little time on Internet. The purpose of using Internet is mainly academic. They use Internet in the institute and the use of Internet at home is very low. The staff of Internet sections is cooperative, Well trained, well informed and up-to-date. The main motivational factors for Internet use are keeping abreast of latest information and faster communication. They think that the Internet is an excellent source of information. Most of them browse Internet by using the search engines. Google is the most used search engine. Most of the respondents are able to locate the desired information on Internet. The working condition of the systems is not good and this should be improved immediately. Speed of the Internet also needs to be enhanced. The respondents are not fully satisfied with the overall Internet facilities of TITS, Bhiwani. Hence we can say that with the advancement in the information technology, the institutes of higher learning are required to keep the pace with these advancements. Now-a-days the speed of Internet is no problem and the authorities of TITS have to explore the various options for faster speed.

References

1. Biradar (B S), Rajeshekhar (G R) and Kumar (B T Sampath). Use of Search Engines for retrieval of Scholarly Information: A Case Study. IASLIC Bulletin, 2008; 53(4): 215-222.
2. Asemi (A). Information searching habits of Internet users: A case study on the Medical Sciences University of Isfahan, Iran. Webology, 2, 1. http://www.webology.ir/2005/v2n1/a10.html. Accessed on 14th November 2008.
3. Mishra (O P), Yadava (Neelam) and Bisht (Kamini). Internet Utilization Pattern of Undergraduate Students. University News, 2005; 43(13): 8-12.
4. Robinson (Jannie W). Internet Use among African-American College Students: An Exploratory Study. http://proquest.umi.com/pqdlink?did=845778131&Fmt=7&clientId=79356&RQT=309&VName=PQD. Accessed on 15th November 2008.
5. Rajeev Kumar and Amritpal Kaur. Use of internet by Teachers and Students in Shaheed Bhagat Singh College of Engineering and Technology: A Case study. Journal of Library and Information Science, 2004; 29(1&2): 81-94.

CONFERENCE CALANDER

40th IASA 2009 Annual Conference

20 to 25 September 2009
Athens, Greece

Website: http://www.iasa2009.com
Contact name: Mr. Nikos Dargonakis

International Conference on Applied Business Research

21 to 25 September 2009
Valletta (St. Julians), Malta

Website: http://www.icabr.com
Contact name: Jana Drahosova

International Conference on Academic Libraries Conference Centre, University of Delhi,
October 5, 2009 – October 8, 2009

C/o University Librarian, Central Library, North Campus
University of Delhi
Delhi 11 00 07

The Computer World Congress, 2nd International Conference on Emerging Trends in Engineering & Technology (ICETET- 09)

11 to 16 October 2009
Shanghai, China

Website: http://www.icetet.org
Contact name: Dr. Rajiv V. Dharaskar, General Chair, ICETET 09

Allied Academies Fall 2009 International Conference

14 to 16 October 2009
Las Vegas, NV, United States

Contact name: Trey Carland

People in the Information Profession: Inaugural CAVAL Conference

15 to 16 October 2009
Melbourne, Victoria, Australia

Website: http://www.caval.edu.au/hrconference.html
Contact name: Richard Sayers

Concept of digital libraries: role of digital right management in the fair use of digital material

***S. S. Joshi, *Vinod Kumar**

*Assistant Librarian,

Guru Jambheshwar University of Science & Technology, Hisar -125001

Abstract

A digital library is a collection of library material converted to machine readable format for preservation or instant access. There was the requirement of such a technology which may safeguard the interests of the copyright holders by restricting the access of digital contents. DRM serves the purpose. It has also been stated as the saviour of intellectual property. The paper will discuss the concept and benefits of the digital libraries. DRM, its advantages, disadvantages and role in the libraries shall also be discussed in the paper.

Key words: Digital library, DRM

Concept of Digital Computers

Modern computers are digital computers because they operate on binary digits 0 and 1.They understand the information which contains 0s and 1s.In the case of alphanumeric information the alphabets are coded in binary digits. In digitized text each alphanumeric character is represented by a specific eight-bit sequence called byte. Computers do not operate on analog quantities directly. If any analog quantity is to be processed it must be converted into digital quantity before processing. The output of a computer is also digital. If any analog quantity is to be processed it must be converted into digital quantity before processing. If analog output is needed the digital output has to be converted into analog quantity? If output is to be displayed in the form of text, the digital output is converted to alphabets. The component which changes alphanumeric characters to binary format and binary format to alphanumeric character are the essential parts of a digital computer. The computers used in the library transmit data in digital format. (Ram, 1995).

Introduction of Digital Libraries

Digital Library is the place where information is stored in digital format and can be retrieved on networks. This is totally a library with managed information. The data when organized systematically becomes a digital library collection. Digital library can be of any size. It can be of small size or it can be of bigger size. Different people can use different software as per their requirements. The main problem in digitization is the resistance to change. People still want to keep themselves engaged in traditional type of methods. They still believe in such type of information, which has to be organized, stored and disseminated. They still need to find information that others have created and to use it for study and reference. The main thing is that the form of the expression of information and the methods to organize it are influenced by the technology.

Every day the quality and the quantity of the collection available in the digital form nurture and the supporting technology also improves. This brings change in the mental attitude of the people. To develop a digital library, technologies are available in the society. It depends upon the people how they utilize these technologies. Two important groups remain available for this innovation. One group comprises of informational professionals comprising of librarians, information Scientists and publishers etc. The other community comprises of the people who are technically trained in computers and networking etc. The interaction between these two communities is must. People of computer field are not well conversant with the

Reprints Requests: Dr. S. S. Joshi, Vinod Kumar, Assistant Librarians, Guru Jambheshwar University of Science & Technology, Hisar -125001

(Received on 29.09.09, accepted on 10.10.09)

basic tools of librarianship. Same way librarians too have little knowledge of computers, which is a dangerous thing. However there should be clear understanding between these communities. This is a consequence of digital libraries becoming a recognized field of research, but more important factor is the increasing involvement of the users. Technological advancement has made electronic information available to every user. Readers have now direct access to the information without any intermediate .Many developments are coming from various groups who develop digital libraries for their own use. Technology influences the economic and social aspects of information and vice versa. The technology of digital libraries is developing fast, moreover with the information explosion the attitude of the people are also changing (Joshi and Kumar, 2006)

Need for the digital libraries (Arms, 2005)

The basic reason for personification of digital libraries is a fact that information can be retrieved in a better way in comparison to the past. In traditional libraries there was a concept of short range and long range reference services, in which time is taken to provide the information to the users. But in digital libraries the concept has totally been changed and the users can retrieve the information sitting on the personal computers from the whole world. Some of the benefits of the digital libraries are stated as under:-

The world has become closure

With the advent of the internet one can retrieve information sitting anywhere in the world. With the inception of broadband services speed of the internet has also been increased. On the other hand to get the information out of the printed material in conventional library is cumbersome and time consuming.

It is pleasant to see information on the computer

With technological advancement, the quality of presentation of information on the screen of the monitor has been improved. People feel comfortable looking the information on the screen rather searching the information on printed material.

Information storage is cheaper through computer than paper

Conventional libraries occupy big space having huge staff. This increases the overall cost of the information .On the other hand storing information on the computer as compared to storing it on documents is much cheaper.

Digital library is accessible to every user

In traditional library user need to visit the library for the sake of information .On the other hand a digital library brings the information to the users. The digital library exists where there is a personal computer with a network connection.

Shared information

In digital libraries information readily remain available on net, which can be easily shared by many users in a single instance. On the other hand if the information is retained on a paper it is very difficult to use the same simultaneously.

Information can be updated

Printed materials are always difficult to update, because the whole document need to be reprinted and the old version need to be replaced. With the help of the computer updating of information is very easy. These days online versions of various books are available, whenever they are revised they just need to be installed on the computer.

Information is readily available

The information in digital library is always accessible. There is no opening and closing time schedule for the digital library. User can retrieve any information at any time .There is no chance of pilferage of library material. No possibility of miss-shelving of library material. It does not mean that digital libraries are always perfect. The speed of the network may be slow or there may be any technical problem in networking. In traditional libraries information is not available always or at any time .This problem has been solved by the digital libraries.

Access is possible from anyplace anytime

In digital library computers are connected through the networking. It is very easy to sitting anywhere at any time. User need not to do much effort to search the information. That is easily

available on single click.

Improved searching

Searching has become very improved with the advent of digital libraries. Users need not required to search the books on shelves. They can search the reading material available in the whole world by sitting at one place.

Promotes E-learning

With the inception of digital libraries users are using E- resources to satisfy their information thrust hence promoting to the E-learning.

Promotes paperless society

In digital libraries paper is not requires to store or retrieve the information .Information is stored on the CD-Rom, Hard dicks, Pen drive etc. Hence promotes the paperless society.

Instant downloading

In digital environment information can be downloaded instantly. Moreover when a key word is entered to search any information search engine provides a large number of hits enabling the user to store a large volume of data. .

Concept of Digital Right Management and its need

Digital Rights Management (DRM) can be described as the technology of control over the access of digital contents. This is used by the publisher /software developers to curb the unauthorized usage of their digital material. Today this is an issue of great significance. It is being stated as the saviour of intellectual property rights. It ensures the secure digital supply system. (Braid Andrew.2004) Digital Rights Management is also called ECMS or electronic copyright management system. This is a technology which manages the rights with regard to information. But lot of controversy is there. Some says that DRM is essential to protect the rights of the publishers to curb the duplication of their digital material. At the same time DRM ensures that copyright owners receive adequate income for the material distributed over Digital Right Management System. The Free Software Foundation suggest that use of the word 'Right' is misleading and suggest that Digital Restriction Management should be used instead of Digital Right Management. (wikipedia.) Due to the information explosion and huge availability of information in digital format and the increasing possibility of copying the information, put into danger the existence of copy right issues. Technological inventions are taking place these days to safeguard the intellectual property .These innovations controls the access to the digital contents ensuring that only permitted person may access the digital information so that the interests of the publishers may be protected. Earlier Libraries purchase the copy of the book for the use of its clientele and the same was used till it remained in the library. But digital information is governed by the license/contract and only those can access the digital information that has the authorization from the publisher by any mean. Locking the contents of digital material is really a great challenge for the world for the fair use of the digital contents. People are not aware of the critical issue of digital rights and librarians can come forward to make them aware in this regard. Three main reasons have been considered for the implementation of the DRM:

i. Publishers are not in direct control when supply is through a third party
ii. They fear that inappropriate use might result
iii. They fear erosion of their subscription base". (Braid, 2004)

With the advent of internet technology it is very easy to copy any of digital material. Some of the copyright owners are afraid that their copy right works will be misused. This is why the need of digital right management is felt. With the help of DRM, copy right owners have control over the access of their works. Thus, DRM is very helpful to reduce the misuse of digital material for the copyright owners. This will also increase their earnings, because users need to pay for each access and use of work they wish to make. DRM will also helpful to find out the usage of the digital material, which can provide the distributor of the DRM with unique marketing information not otherwise available. Following has been rightly remarked about the DRM: "With Digital Rights Management?…, Christopher May, an expert on intellectual property, argues that digital rights management (DRM) is a technology that we all need to understand: we should be aware of the reasons why it is

propagated, but also the underlying dangers. Although in a brief and succinct manner, a number of these potential dangers and especially the political impact on the global society are brought to the attention of the reader" (Fourie, 2008).

Presently many of the DRM systems are available in the market e.g. Apple's Fair Play and Microsoft's Windows Media DRM and work is still in progress to develop more systems and to improve available systems. The DRM system developed today is totally a proprietary item for which owner and user need to buy a particular technology or device.

DRM and Standardization

As the technology advancement took place, efforts are made to standardize the DRM components. The more the system will be user friendly; the more consumers will prefer to buy the infrastructure related to it. If more consumers buy such equipments, more contents will be made available for the DRM system, because as the demand increases, after passing a certain point it will lead to positive feedback effects. This will also result in the dominancy of that DRM system and competing DRM systems starts fading out of the market. Whenever a company launches any system first time in the market, it cashes all the opportunities related to it. Companies are now interested in standardizing DRM components. They want to create widely accepted DRM standards, for positive feedback effect.

Fair use of Digital Contents

Digital material can be distributed infinitely. Copyright owners and publishers are using DRM to protect their material from unauthorized usage." For instance most DRM technology today binds the content object to a specific device. This is usually a one for one relationship that is, the PDF can only be read on the PC, it was downloaded to, or the MP3 may be only be played on one specific mobile device" Today we play and share our CDs and DVDs with our near and dears . Considering this copyright owners are looking for other forms of digital fair use in view of the effects of locking the digital contents on their revenues (Davis and Lafferty, 2002).

Security of DRM systems

The DRM systems are also not safe .They can also be hacked. This is due to these threats many countries have signed treaties to establish anti circumvention laws at global level like WIPO copyright treaty and the WIPO performances and phonograms treaty. But this legal protection is controversial for many points of views.

1. It can limit the access
2. It can deny the use in fair cases also
3. Jeopardize the long term preservation of information
4. Conflict with consumer expectations
5. Negative impact in the areas of Open Source Software

Copyright law and Digital Right Management issue

Now the question is that we shall have fair use. Copyright law will still identify our rights to fair use. Copyright law is flexible and one is allowed to make his own judgment. But with DRM it is not possible to use these rights. Digital Right Management implements the copyright law and on the other hand it also controls the contents and protects the digital material. DRM protects the digital contents through the license. The permission to access the digital material under DRM is not like copyright law; they are like the grants that can be expressed in a computer environment. The license under DRM may allow you to copy six pages of digital material and if one wants to copy more than six copies, thinking that it comes under the purview of fair use, the software will not allow this .You will be allowed to copy six pages of that digital content.

The next major difference between the DRM and copyright law is that copyright law sets few policies for replication .Authorized right holders are allowed to make copies of the material. On the other hand DRM works opposite "where copyright law is an expression of "everything that is not forbidden is permitted," DRM takes the approach of "everything that is not permitted is forbidden." In Digital Right Management

permission for copy/print is specifically granted, if the right for the same is not given then the system will not allow copy/print any digital contents. This is the important feature of the software developed for the purpose. The major disadvantage of the DRM system is that software developed for the purpose does not recognize the future changes which make them incompatible with the innovations which are going to take place in future. For the successful working of DRM system either future innovation should be taken in to the account by the software developers or periphery should be left to incorporate that changes. (Coyle, 2003).

DRM and Libraries

There is no hesitation to say that DRM has a fabulous impact on libraries. Presently DRM softwares are in its early stages and time is required for the development of sophisticated softwares. It is thought that long run impact of the DRM can not be predicted today as the technology is in its prime stage. Some general cautions need to be taken into consideration so that library lending may not be affected. Presently the need of the hour is that the systems which are developed for the sale of intellectual works should be changed into the lending system as it is identical to a short term sale transaction. Moreover policy makers should always consider the interests of the libraries before framing the policies for Digital Right Management. (Coyle, .2003).

Conclusion

Thus it can be concluded that though emergence of digital libraries are the boon for the users but side by side it has negative impact on copyright owners/publishers. As material is easily available on net any body can violate the copyright act. Digital Right Management can be very helpful to safeguard the rights of the copyright owners. But this is not much useful to fight with piracy. However it is also not an easy task to deal with the misuse of digital material on net. DRM developers should be given much protections and flexibility so that they may be motivated to develop result oriented DRM systems. This may be built in which fair use privileges and legal right to information can be managed. Every new system when originated has its own pro and cons. But as the time passes with technological advancement and competitive innovations they start giving positive results. Moreover the policy makers should also make the policies in such a manner that it may not hamper the services of the libraries

References

1. Arms, William Y. Digital Libraries. Delhi: Ane, 2005; 4-16.
2. Braid, Andrew. The use of a digital rights management system in a document supply service. Interlarding & document supply, 2004; 32 (3): 189-191.
3. Coyle, Karen "The Technology of Rights: Digital Rights Management" based on a talk originally given at the Library of Congress, November 19, 2003.
4. Davis, Denise, M and Lafferty, Tim. "Digital right management: implications for libraries". The bottom line: managing library finances. Delhi, 2002; 15(1): 18-23. Delhi. New Age, 1995; 1-43.
5. Fourie, Ian."Digital Rights Management: The Problem of Expanding Ownership Rights". Oxford: Chandos, 2008.
6. http://en.wikipedia.org/wiki/Digital_rights_management
7. Joshi, S.S, and Kumar, Vinod. "Collection development of digital libraries: Recent trend", 52nd all India conference on of Indian Library association, December, 26-29; 2006: 56-63.
8. Ram, B. "Computer fundamentals: architecture and organization" New Delhi: Wiley Eastern, 1995.

Collection development in digital environment: a case study

***Samir Kumar Jalal, **V. Vishwa Mohan**
*Asst. Librarian, Central Library, Birla Institute of Technology, Mesra, Ranchi, Email: jalal_gtz@yahoo.co.in, **Prof. & Head, DLIS, Osmania University, Hyderabad

Abstract

Collection development in digital library environment is still a burning topic. Many lessons can be learnt concerning issues of collection development in digital environment from the case study of different kinds of libraries. The paper reflects the status of the progression of digitization of Osmania University Library. The paper tries to highlight some salient features of collection development aspects such as procurement of printed as well as digital documents in order to find out the present trends in collection development. The paper is an extension and findings of M. Phil Dissertation reflecting a case study of Osmania University Digital Library, Hyderabad

Keywords Collection Development, Digital Library, Digitization, University Library

Introduction

With the rapid development of information and communication technologies (ICTs) and the advent of Internet, the whole publishing world is revolutionized with print to digital environment. The transition had been reflected greatly in Library and Information Centers, which are being transformed gradually from Traditional Library to Hybrid Library to Digital Library and finally to Virtual Library. The development started in late 1980s and then got momentum in 1990s in developed countries. The developing countries are also slowly moving to the digital environment. Digital Libraries had emerged as a leading edge technological solution to the persistent problems of enhancing access, enduring archive and expanding the dissemination of information. Since the rapid move to a digital environment had changed the taste and preferences of users. Non-availability of documents in print form, opportunities of accessing documents sitting at home forced the libraries to shift gradually from print to digital medium. So is the case of Osmania University Library.

Collection development is backbone to any library and information center, whether it is public, academic or special library. Collection development is defined as systematic building of information resources in a library and information center. Collection development in digital environment (Demas, 1994,1998; Lee, 1999) is the gradual building up of collections in digital form. Besides, it includes subscription of e-journals and databases with a flavor to archival facility. The aim of collection development is to facilitate access to some of e-journals, e-resources, e-conferences proceedings, databases (full-text and bibliographic databases) to the users on request basis within the campus of the university library.

In the first decade of 21st century, the digital library environment is a perfect blend of internal resources (i.e. institutional resources) and external resources like those, which are having access rights from the publishers through subscription. In digital library environment, some resources are "born digital" and others are needed to be digitized through the process of conversion of printed materials using modern technology. The organization of digital materials is done using metadata like Dublin Core to provide seamless access to the users.

Many institutes have taken digital library initiatives since 1998. But, most popular and big initiative came from the Government of India in collaboration with Carnegie Mellon University (CMU) under the name of 'Digital Library of India (DLI)'(http://dli.iiit.ac.in) project to provide full-text access to large number of books having cultural heritage of the country.

Reprients Requests: Mr. Samir Kumar Jalal
Asst. Librarian, Central Library, Birla Institute of Technology, Mesra, Ranchi, Jharkhand

(Received on 2.1.09, accepted on 18.6.09)

Background of the Study

Let us have a brief outline of Osmania University (OU) to make a clear concept of the study. With a sprawling campus of nearly 1600 acres, buildings of majestic beauty and architectural splendor, Osmania University is perhaps the largest higher education system in the country. There are approx. 30,000 students in the university and its affiliated colleges. Its faculty and staff members are nearly 1000. It is multi-disciplinary university offering rich and varied courses in the field of Humanities, Arts, Social Science, Law, Engineering, Commerce, Business Management, Engineering and Technology, Information Technology and Oriental Languages. So far as library is concerned, Osmania University has one Central Library and more than 64 departmental libraries. Now, the library committee re-allocates budget under different sub-heads such as Books, Journals, Furniture, Maintenance, Digital Library, and Binding etc. The Central Library is having a collection of more than four lakhs of books, 250 printed journals, many e-journals, e-resources, databases, more than 6000 PhD & M Phil Thesis, important rare collections etc.

The University is having a project under the umbrella of "Digital Library of India (DLI)" [http://dli.iiit.ac.in/] project, which is funded by Million Book Project (MBP), Scientific Adviser to the Government of India, Carnegie Mellon University, UK and International Institute of Information Technology (IIIT) Hyderabad. In this project, there are 8 partners from AP, which are as follows:

1. IIIT, Hyderabad (Nodal Center)
2. State Central Library, Hyderabad (Member)
3. Telegu University (Member)
4. Salarjung Museum (Member)
5. University of Hyderabad (Member)
6. Osmania University (Member)
7. City Central Library (Member)

Based on the recommendation of the selection Committee, Osmania University Central Library has decided to go for digitization of at least one lakh of books, which are categorized as rare documents, old books, out of copyrighted books and deteriorated books. For this purpose, 10 imported scanner from Germany costing Rs.20,00,000 each are installed to scan the books. There are 30 people and one project coordinator to IIT Hyderabad (Nodal Center) who uploads the data in http://dli.iiit.ac.in/ after verification. It has been observed that the Osmania University digitization project is going on smoothly and in right direction.

Literature Review

According to Lancaster (1981), "25% percent of reference books will be in electronic form by1990; 50 percent of existing abstracting services will be available only in electronic form by the end of year 2000; 25 percent pf periodicals in science and technology, humanities will be available in digital form by 2005". Covi and Cragin (2004) in their article on "reconfiguring control in library collection development: a conceptual framework for assessing the shift towards electronic or digital collections". They tried to point out the systematic evaluation of non-use of electronic resources. Jones (1999) commented in his article that the collection development in electronic environment presents added new dimension to the traditional library. The university of Hyderabad started project in 2003 and now it is working under the umbrella of 'Digital Library of India'. Indian Institute of Technology Kharagpur took initiative to make available reading materials on Aerospace and Science and Technology to the users suing its digital library. CORE Project deals with the digitization of journals, magazines and articles. The New Zealand Digital Library Project is a research programmes at the university of university of Waikato whose aim to develop underling technology for digital library and make it publicly available so that others can create their own digital library.

Objectives of the Study

1. To find out what types of collection will be developed under digital environment to meet the demands of users;
2. To find out the policy and process of collection development in digital environment;
3. To find out the impact of digital materials on procurement of print materials;

4. To find out the issues and challenges involved in collection development under digital environment.

Based on the objectives data are collected on the aspects such as: a) data related to digitizing the documents on various languages, b) data related to procurement of books and journals in the printed environment, and c) data related to e-resources. It is a direct method of data collection and the type of data is of Primary Data or Raw Data. The Graphical representation of the data reveals the trend of progress of digitization and also the book procurement during last 5 years i. e 2001-2005. The method of data collection is adopted here is observation, interview and personal contact method. It is a direct method of data collection and the type of data is of primary data or raw data. The graphical representation of the data reveals the trend of progress of digitization and also the book procurement during last 5 years i. e 2001-2005. The data have been collected in detail on book procurement, electronic resources, and digitization during June to Dec 2006.

Trends in OU Digital Library

The Osmania University Digital Library is housed in the ground floor of the Central Library Campus. The digital library has been started in Jan 2005 in the form of project under the name of "Digital Library of India". The following Table-1 describes the growth of scanning at each month during Jan 2005 to Dec 2006. But, the project is still continuing. From the above figure, it has been seen that the scanning of documents is done highest in the month of July 2005 with 747102 pages [see Table-1]. It has also been observed that the progress of scanning is positive upto July 2005 and then the rate of scanning the documents are reducing. It has been drawn the attention that in last three months i.e. Oct, Nov & Dec 2006 the scanning of books are almost negligible due to pending processing works. The following table shows the number of books scanned in different languages during the period of 2005-2006.

Table 1. No. of Books Scanned during 2005 to 2006

Digital Library - Osmania University: 2005- 2006		
Months	No of Books Scanned	No of Pages Scanned
Jan-05	709	250453
Feb-05	1741	592192
Mar-05	1552	551338
Apr-05	1895	664203
May-05	1790	629350
Jun-05	1968	710646
Jul-05	2136	747102
Aug-05	2946	721589
Sep-05	1949	621890
Oct-05	896	360365
Nov-05	972	472936
Dec-05	1593	556614
Jan-06	2484	610340
Feb-06	2154	450080
Mar-06	1516	307532
Apr-06	870	266415
May-06	1021	348063
Jun-06	375	137443
Jul-06	352	127558
Aug-06	22	9552
Sep-06	6	2047
Oct-06	0	0
Nov-06	0	0
Dec-06	40	1580
Total	**28987**	**9139788**

The above table deals with the number of books scanned along with the number of pages during the period i.e. 2005-2006. It has been reflected in the table that there is not a single document scanned during October and November 2006. The above table shows that there is a huge low rate of scanning during the last quarter of the year 2006. It may be due to the pending work of document editing, processing, and quality checking works. Besides, it has also been found low output of scanning due to some trouble in scanner. In fact, the project is still going on with the same set of staff members.

Table 2. Language-wise book scanned during 2005-2006

Language	*No of Books Scanned*	*No of pages Scanned*
Arabic	1178	369669
English	**13887**	**5150324**
Hindi	4596	1214174
Kanada	2357	489280
Marathi	2299	532049
Sanskrit	838	248060
Tamil	263	73666
Telegu	1285	255430
Urdu	**215**	**91674**
Total	**26918**	**8424326**

The above table-2 describes that under the OU Digital Library Project, the maximum number of books (i.e. 13887) scanned in English Language, whereas the least number of books (i.e. 215) scanned in Urdu Language. The reason may be the English language book is having a lion share of the total collection of the library.

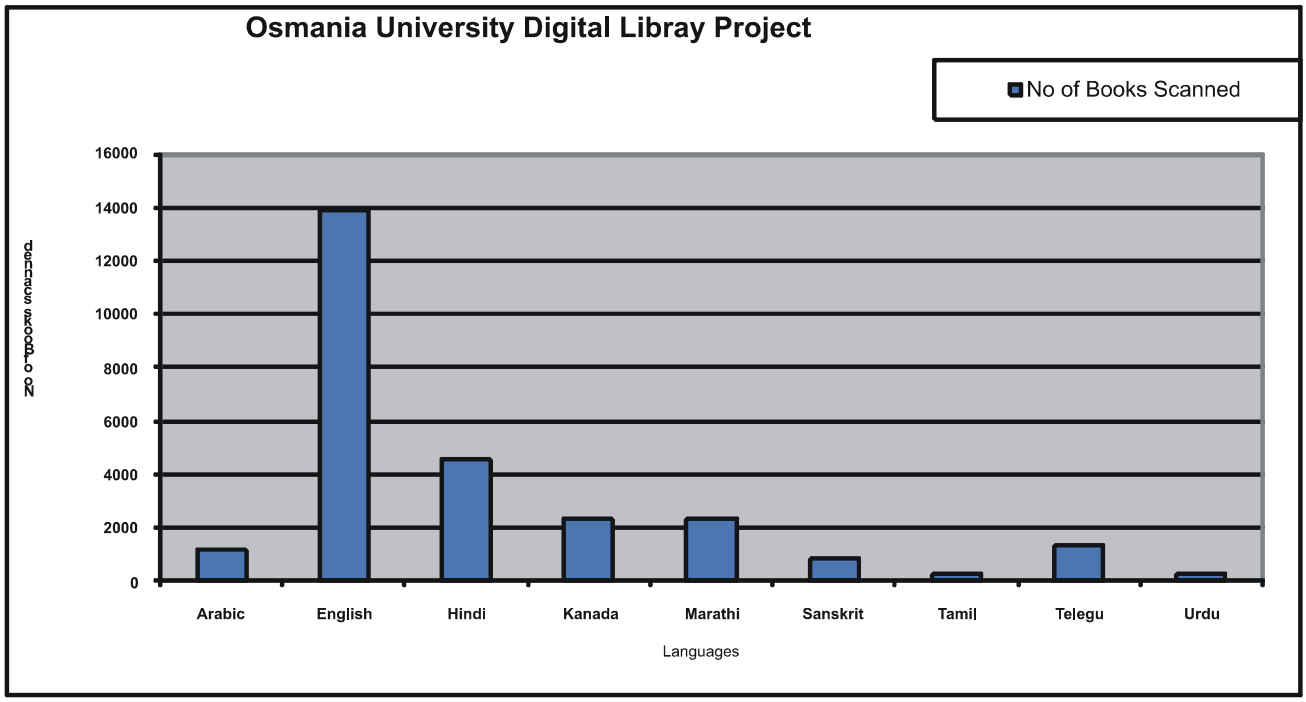


Fig. 1. Describes the language-wise book scanned during 2005-2006

The above figure clearly demonstrates that English language books are scanned highest in number i.e. 13887, which is approximately of 50% of total books scanned during 2005-2006. Besides, it has been seen that Urdu language books are scanned lowest in number i.e. 215, which is nothing but 0.78%. It has been seen that procurement of books and journals are also

going on simultaneously with the retrospective conversion of old and rare materials of the OU Library in order to keep the cultural heritage intact. To satisfy the users' need, the OU authority has decided to spend some amount to procure the books as well as printed journals in following years.

Table 3. Procurement of Books during 2001-2007

Year	No of Books Purchased	Amount Spent in Rs
2001	**2273**	819917
2002	**2051**	828887
2003	**2521**	853963
2004	**2373**	855500
2005	**2530**	871145
2006	**2620**	871145
2007	**2650**	871145

The trend of book purchase of Osmania University Central Library for last seven years does not change much. In other words, the study finds out that there is stability in the printed book procurement although there is a procurement of e-journals and databases. The above figure shows the trend in book procurement during 2001 to 2007. It reflects that there is a moderate increase in book procurement over the past seven years. It has also been seen that in the year 2002, there is a little decrease in the number of books procurement although there is an increase in budget by one lakh rupees.

The following table-4 shows the procurement of journals both Indian and international and budget year marked during 2001-2007. There is a sharp decrease in budget allocation from 2001 to 2007 (objective-3). In 2001, the total amount of Rs.7, 42,000 has been allocated to purchase both national, international journals and magazines for the central library of Osmania University, whereas in 2006, the figure was, Rs. 6, 35,000 which means there is a decrease in budget allocation by 14.50% in 2006. It has been seen from the table-4 that equal amount had been sanctioned for the year 2001 and 2002 for the journal procurement. But, there is a decrease by Rs, 22,000 in the year 2003 and 2004. From 2004 onwards, there is a decrease in budget for the printed journals both national and international. The reason may be that the attention is given to procure the e-journals and e-resources(objective-3), CD-ROM databases etc. The following table clearly demonstrates the sharp decrease in foreign journal procurement i.e. from 84 to 51. It has also been noticed that there is a huge decrease in India journal (printed) procurement in 2006 compared to 2001. The reason may be the impact of digital collection and enhanced accessing of e-resources.

Table 4. Distribution of Journals during 2001-2007

Year	*Foreign Journal*	*Indian Journal*	*Amount Spent (Rs.)*
2001	84	145	742000
2002		151	742000
2003	72	128	720000
2004	47	165	720000
2005	50	165	635000
2006	51	127	635000
2007	61	135	753000

The above table explains that there is a gradual decrease in journal procurement during 2001 to 2003 but from 2003 onwards there is a sharp decrease in the procurement of foreign journals whereas a sharp increase in the procurement of Indian Journals. It is noticeable that there is a decrease of 37.5% in foreign journal procurement during 2001 to 2007.

E-Resources of Osmania University

The Osmania University Library has the following E resources. These can be accessed through (http://wwww.osmania.ac.in/e-

journals.htm) using valid IP-address through the university campus only. All the following resources are free to the OU users. These can be categorized as follows: -

INDEST - E-journals Consortium

J-GATE Journals (http://j-gate.informindia.co.in).

1. It is an electronic gateway to global e-journal literature.
2. J-gate provides access to millions of journals article available online offered by 5000 publishers. It has coverage of 15517 e-journals with links to full-text at publishers site.
3. It also covers 3921 open-access online journals and maintained links to them
4. It covers 671 online journals which are not available in print version

ASME Journals

1. It covers more than 70 international journals spreader over around 30 subjects;
2. It mainly covers mechanical engineering

IEEE Journals

1. It is the biggest portal of electronic as well as printed journals collection.
2. It has more than 1000 e-journals, which are of very high quality peer-reviewed journals
3. Through IEEE explorer, journals can be accessed through user name and password

INFLIBNET Journals (http:// unicat.inflibnet.ac.in/econ/mindex.htm)

1. INFLIBNET is providing a great service to all universities, who are the member of **INFLIBNET;**
2. INFLIBNET is providing access to many journals to the member universities through UGC Infonet e-journals consortium. Under UGC INFONET, the Osmania University is providing service to the users through the following publishers
3. Chemistry.org; Institute of Physics; E-Kluwer; Portal Press; Blakwell Publishers; Annals Reviews-Gate; Springer Link; Science Online; APS (American Physical Society); Taylor & Francis; Oxford University Press; Royal Society of Chemistry; Project Muse.

E-Physics(http://ephysics.ephysics.ucla.edu)

ABC's of Motion; Cause of motion; E&MI; Wave and light-sound; Heat & Matter; Mathematical physics & Application Physics.

Issues and Challenges

The following are some of the important issues and challenges faced during digitization process with regard to collection building in the OU central library.

Technical Process: One of the important issues related to the collection development is technical process. In digital library environment, cataloguing and classifying the digital document is a real problem. Therefore, it's a great challenge for the library professionals to organize the digital documents and making them accessible to the users. Besides, the digitization process at OU Library is in progress, therefore, lots of technical difficulties have to be faced by the staffs. The Osmania University Digital Library Center has the capacity of 30 computers with high configuration (Compaq & Acer, P4, RAM 700MB, Intel 3.0 GHz). There are 10 scanners, which have been brought from Germany (Model No. Zeutscher OS-5000) each costing Rs.20, 00,000. The scanner is very powerful and having a capacity of scanning 500 pages per hour. It can scan A3, A4 & A2 type of pages. Scanning is done in gray scale with 600 dpi. All the scanners are having zooming facility. Each scanner can scan approx 30,000 pages per day. In order to perform better in scanning, it is required to maintain the room temperature at negative (-), if not possible at least 170 C using Air Conditioning. But, the limitation of the scanner is that the scanning of the pages cannot be done with colour.

Manpower: Another serious challenge for OU Library is the lack of sufficient and quality manpower. As the society is moving from print environment to digital environment day-by-day, the Osmania University Library had taken up the digitization project in Jan 2005 under the umbrella of 'Digital Library of India'. Due to the insufficient trained manpower in the university library, the project has been outsourced to Trinaina Informatics Pvt Ltd, Hyderabad. They have provided 30 employees who are working

under this project including one project leader. In developing countries, efficient manpower is one of the genuine problems faced by most of the libraries. But in the case of Osmania University, manpower have been supplied by Trinainya Informatics Ltd, which is been supported by CMU and Govt. of India. Therefore, there is no dearth of regular manpower, which is allotted to provide regular services.

Financial: Financial problem is the main problem of any library in developing countries. Similar is the case of OU library. It has been seen that the budget allotted to library is either gradually decreasing or constant. Therefore, it failed to comply with the demand of increasing number of users and tremendous growth of publishing literature. But in the case of digital library project, the finance is not a problem. The digitization project of Osmania University is supported by Office of the Principal, Scientific Advisor, Government of India; Ministry of Communication and Information Technology, National Science Foundation (NSF) and Carnegie Mellon University (CMU). In true sense, the OU library has been facing a serious problem in continuing the existing foreign journals year after years. It has been found from the study that there is a sharp decline in the subscription of foreign journals. The project running cost can be estimated: Each employee average salary is Rs. 3000/- and Project Leader gets approx Rs. 6000/-. Therefore, monthly expenses for the salary of the staff is Rs. (30*3000 + 6000)= Rs. 96,000 per month.

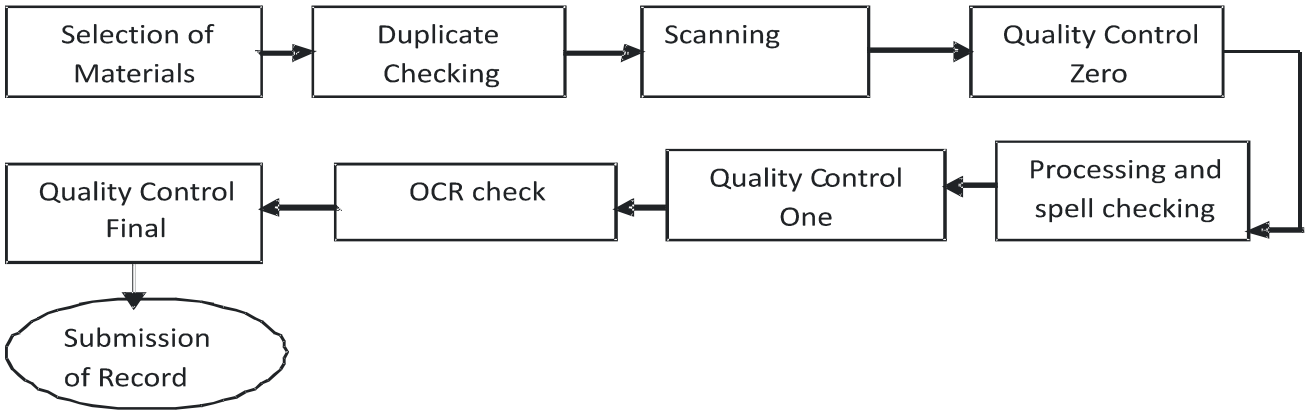
Archives: The fundamental challenge to all the libraries that is associated with the digital libraries is archiving the digital documents and its related issues. Archiving the documents in any form is one of the crucial tasks of any library and information center. With the influence of rapid changing technologies, it is a challenging task to the library for preserving the print as well as digital documents. At present, Osmania University is having digital library project to scan one-lakh books. Under agreement, it has been decided to hand over the digital copy of the book to IIIT, Hyderabad who uploads the document onto the DLI website i.e. http://dli.iiit.ac.in/ . On the Other hand, OU Library used to archive the scanned document in the form of CD-ROM in order to provide access to the users through LAN. So far as e-journals are concerned, the archival problems are the same as others. There is no archival facility, instead there is only option is to provide access to the users as long as the university is subscribing them from publishers site. The archival is made by the publishers not by the subscribers.

Copyrights: The copyrights of intellectual assets are another crucial problem towards building the digital library. Before scanning the documents, it is required to take the permission from the authors to make it widely available. It's really a challenging task. All the books that are currently available online have either been checked against their copyright re-registration directory in which books prior to 1963, which are not re-registered are deemed to be out of copyright. However, in case of possible error in copyright checking, if the author or publisher sends a written request for removal to the webmaster, Regional Mega Scanning Center, IIIT, Hyderabad, then the documents can be withdrawn from the site.

Acceptability: Librarians and many users have not yet accepted the electronic media or the digital media to completely replace the print media. The readers are still comfortable to use print journals, magazines, books rather than e-journals, e-books. However, the research community is using and depending on the electronic sources especially Internet and digital library in order to get faster information and save time. Even computers with best resolution cannot match the print equivalent for reading.

Quality Assurance: There are three types of quality control process executed before final submission of the digitized pages to the Nodal center i. e IIIT, Hyderabad generally at the end of each month.

Fig. 2. Digital document editing and quality cycle



Therefore, it is a herculean task to check the quality of the digital document and spell checking. Since in the above cycle, it has been shown three stages of quality assurance, so there is a high chance of error-free digital document. It requires a lot of patience and attention of the employee.

Infrastructure: Regarding infrastructure hardly anyone thinks about until something goes wrong. It's the computer we rely on to provide information, news, scanning and distribution of resources over the network. It's sure that it is not possible to build a Digital Library without infrastructure. In simple terms, Infrastructure we mean the followings

1. **Server;**
2. Software and Hardware (server, storage device,, CD/DVD writers, Power Backup);
3. Clients (there are 29 client systems which are connected to the server);
4. Networks (clients are connected through LAN);
5. Building block with furniture and fixture;
6. High speed Internet connectivity.

Building Digital Collections: The most important component of digital library is the digital collection. A digital library can have a wide range of resources. It may contain both paper-based conventional documents or documents in digital form. It is a challenging task for the library professionals for building up the balanced digital collection in the library. The digital collection comprises of e-journals, electronic databases (bibliographic and full-text), e-books, scholarly articles, manuals, downloaded materials from Internet, theses and dissertations, patents etc. Another important aspect of building digital collection is buying access to external digital resources (Arora, 2001). It's a real challenge for the libraries to build a real digital library. Majority of the collection is nothing but having access to the digital collection by the commercial publishers, scholarly societies. Most well-known commercial publishers of traditional journals such as Elsevier Science, Kluwer Academic Press, Academic Press, Springer, Wiley Inter Science, ACM, IEEE, IEE are making their publications available online through websites.

Metadata: Metadata is in simple terms data about data. Therefore, it is essential to assign metadata to each and every digitized document. But, It is essential to assign metadata to each scanned document for easy searching and retrieval. Generally, Dublin Core metadata element set is used for standardization. After final quality control check, metadata are used to assign against each document. Therefore, it is a challenging task for the employee to maintain the metadata for all documents.

Image Processing: Generally, the book consists of text, images and graphics. During the scanning it may happen sometimes that images did not appear prominent. In such a case, lot of editing works need to be done. The graphical level of each image was checked with the original and if there is any discrepancy then it is required to scan separately. It is also required sometimes to edit the image using Adobe Photoshop or

other photo editing software. The images were checked in terms of clarity, legibility, colour. The graphics level of each image was checked with the original. The images, which have come brighter, were tonned down to match the actual. The unwanted stain mark worm marks were removed.

Findings, Discussion and Conclusion

Findings: Following are some of the finding of the case study of the Osmania University Digital Library:

1.It has been found from the case study of Osmanai University, Hyderabad that there exists a composite collection comprising of print documents as well as digital one. There are many users accessing thousands of full-text e-journals through INDEST consortium. Besides, the university has taken a keen initiative of digitizing the part of its collection under the supervision of DLI Projects

2.It has been noticed through the study that there is a decrease in 37 in the procurement of printed foreign journals whereas lot of foreign e-journals have been given access to the users.

3.Another findings is that although there is no clear-cut policy for developing composite collection (objective-2) regarding digitization there is an implied/ informal policy by which collection development is smoothly going on.

4.It is known fact that copyright is the real hurdle for undergone digitization. But, the OU Library does not have any policy constraint, manpower problem and copyright problem because the university and the Government of India are encouraged for digitization of records of knowledge that form the cultural heritage of the country because digitization is the best way of disseminating and preserving the cultural heritage of the country. The books under digitization are not coming under copyright issue because the university digitizes books, which are free from copyright.

Discussion

Generally, as the nature and feature of collection development in university environment dramatically changed, the e-book (Jalal, 2001) and e-journals are dominating the gradually by increasing its share in budget. It has been found from the above study that although e-resources has increased a lot but budget on print books procurement did not reduced proportionally. It may take some more years. Case & Jakubs (1999) argued the importance of international resources in today's environment and described some initiatives by the Association of Research Libraries (ARL) to improve global access to information.

Conclusion

Atkinson (2003) recommended that the best way to restore the free flow of scholarly communication is for universities to take control of scholarly process. The present digital environment demands university libraries to participate actively in creation and management of digital resources and become digital publishers. Lynch (2003), former head of California Digital library sees 'institutional repositories' as containing a wide variety of information format:' intellectual works of faculty and students' both research articles and teaching materials and documentation of the activities of the institutions and performances, ongoing research projects and its outcome. These are and can become the integral part of collection development for the universities. The Osmania University Central Library is really took an interest to develop the digital collection through Digital Library of India Project and giving access to e-resources to its users. Therefore, the users of the university are habituated to use more and more digital documents including e-resources. Besides, the rich cultural heritage and rare documents can be preserved and may be given access to users globally.

References

1. Arora, J. (2000). Building digital data capture. Workshop on Digital Library: Managing convergence, continuity and change, Bangalore, 2001.
2. Association of Research Libraries (ARL) Collections Programmes. (http://www.arl.org/collect)
3. Atkinson, R.. A new world of scholarly communication. The Chronicle of higher education, 2003; 50(11): 16.
4. Case (M) and Jakubs, D. Building the global collection: world-class collection development. A chronicle of the AAU/ARL, Global resources programme. Journal of Library Administration, 1999; 28(1): 63-80.
5. Covi, L.M & Cragin, M.H. Reconfiguring control in library collection development: a conceptual framework for assessing the shift

towards electronic collections. Journal of American Society for Information Science and Technology, 2004; 55(3): 312-325.
6. Demas, S. Collection development for the electronic library: A Conceptual and Organizational model. Collection Management, 1994; 12(3): 71-80.
7. Demas, S. What will collection development do? Collection Management, 1998; 22(3/4): 151-9.
8. Digital Library of India. http://dli.iiit.ac.in
9. Jalal, S.K. Electronic Book: A Kind of Digital Resources. In. Content Creation and Management in Digital Resources.CALIBER-2001, Pune, March-15-16, 2001; 24-31.
10. Jones, D. Collection development in the digital library. Science and Technology Libraries. 1999; 17(3/4): 27-37.
11. Lancaster, F.W. The evolving paperless society and its implications for libraries. International Forum on Information and Documentation, 1981; 7(4): 3-10.
12. Lee, S. Collection development in a digital environment. Journal of Library Administration, 1999; 28(1): 1-112.
13. Lynch, C. Institutional Repositories: essential infrastructure for scholarship in the digital age. ARL monthly 226. http://www.arl.org/newsltr/226/ir.html, 2003.
14. Osmania University Home page. http://www.osmania.ac.in

Awareness & usage of e-journals among teaching staff in the faculty of engineering and technology (FEAT) Annamalai University

***K. Praveena, **M. Nagarajan**

*Lecturer, **Professor & Head

Department of Library & Inf. Science, Annamalai University, Annamalai Nagar, T.N.

Abstract

We are living in the age of information which is available in many formats .This article deals with the awareness and usage of e - journals among the teachers of higher education particularly university who are responsible for providing quality education and to provide the current information and latest trends on higher education.

E-Journals are gaining widespread acceptance in most if not all disciplines and fields of study. This article explores the mode and frequency of search adopted by teachers of FEAT*, the preferred place, purpose of access for information using e- journals adopted by the teachers of FEAT* and how technologies and the growing acceptance of e - journals offer an opportunity to rethink their form and function as a medium to scholarly communication among teaching staffs in FEAT, Annamalai University .

Keywords E-journal, E-journal usage, mode of search, accessing e- journals

Introduction

The higher education libraries are becoming digital libraries moving from print based information to an electronic environment.

FEAT (Faculty of Engineering & Technology)

The application of Information Technology particularly due to internet there has been a shift in comparative growth from traditional print journal to e-journals. Because of this there is a surge in the number of e -journals available to the users which is available through internet. Libraries now need to adopt to technology and initiate changes to keep up with their users changing needs and expectations.

Need for the study

E-Journals are very important source for scientific research and development. This resource is used for qualitative research, to improve the quality of teaching and to update the knowledge. E-journals are gaining widespread acceptance in most if not all disciplines and fields of study, therefore it is imperative to find out the awareness and usage of e-journals among university teachers who are responsible for providing quality education and to provide the current information and latest trends on higher education.

Reprients Requerests: K. Praveena
Lecturer,Department of Library & Information Science, Annamalai Univeristy
Annamalai Nagar - 608 002, T.N.
E-mail: praveenakrish07@yahoo.co.in

(Received on 10.4.09, Accepted on 20.6.09)

Objectives of the study

1. To find out the awareness and frequency of using e- journals among teachers of FEAT Annamalai University
2. To find out the mode of search for information using e-journals adopted by the teachers of FEAT, Annamalai University.
3. To find out the place of access to information using e-journals among the teachers working in FEAT, Annamalai University.
4. To identify the purpose of using e- journals
5. To find out the most commonly used search engine among the teachers of FEAT*, Annamalai University

Hypothesis

1. There is significant difference among teachers of FEAT in their frequency of using e- journals.
2. There is significant difference among teachers of FEAT in their mode of search while accessing information using e-journals.

3. There is significant difference among teachers of FEAT* in their place of access to e- journals through internet.

Methodology

The investigator has constructed a questionnaire which contains 2 sections, Section A pertaining to personal data and Section B contain questions regarding the awareness and usage of internet, library and e journals.

Faculty of Engineering and Technology (FEAT), Annamalai University has 8 Departments of various branches of Engineering and has about 500 teachers. The questionnaire were distributed to 100 teachers in FEAT*, out of which 90 questionnaires were filled and returned which includes 45 lecturers, 25 Readers and 20 Professors. Random sampling technique was adopted. Simple percentage analysis and "f" test are used to analyse the data.

F test is used to find out the significant difference on more than 2 variables. In this study the investigator has used F test to find out the significant difference among Lecturers, Readers and Professors, regarding the frequency and mode of search, and place of access among the teachers of FEAT, Annamalai University

Analysis and Interpretation

From table-1 the Mean and Standard deviation regarding the mode of search adopted by Lecturers, Readers and Professors are found to be 1.8, 1.72, 1.75, 0.79, 0.79, 0.72 respectively.

The calculated "F" value is 0.09 which is less than table value. So the hypothesis is rejected and is concluded that there is no significant difference among teachers in their mode of search for information using e-journals.

Bar diagram-1 shows the preferred mode of search for information was through 'title' among the Lecturers, Readers and Professors, followed by subject mode of search and advance search.

From table-2, the Mean and Standard deviation regarding the frequency of search adopted by Lecturers, Readers and Professors are found to be 1.33, 1.36, 1.40, 0.48, 0.49. 0.50 respectively

The calculated "F" value is 0.13 which is less than table value. So the hypothesis is rejected and is concluded that there is no significant difference among teachers in their frequency of referring e-journals.

Bar diagram-2 shows that almost all the Lecturers, Readers and Professors were regularly searching for information using e-journals, whereas most of the Professors were occasionally use e-journals for searching information.

Table-3.1 indicates the Mean and Standard deviation scores regarding library as the place of access for information adopted by Lecturers, Readers and Professors are found to be 1.93, 2.04, 2.00, 0.81, 0.84 , 0.86 respectively

The calculated "F" value is 1.53 which is less than table value, so the hypothesis is rejected and is concluded that there is no significant difference among teachers in their place of access for information using e-journals.

Table-3.2 indicates the Mean and Standard deviation scores regarding 'department' as the place of access of information adopted by Lecturers, Readers and Professors are found to be 1.78, 1.80, 2.00 , 1.02, 1.08, 1.17 respectively

The calculated "F" value is 0.31 which is less than table value, so the hypothesis is rejected and is concluded that there is no significant difference among teachers in their place of access for information using e-journals.

Table-3.3 indicates the Mean and Standard deviation scores regarding 'house' as the place of access of information adopted by Lecturers, Readers and Professors are found to be 2.84, 2.84, 2.45, 0.88, 0.90, 0.89 respectively

The calculated "F" value is 1.53 which is less than table value, so the hypothesis is rejected and is concluded that there is no significant difference among teachers in their place of access for information using e-journals.

Table-3.4 indicates the Mean and Standard deviation regarding Internet café the place of access for information adopted by Lecturers, Readers and Professors are found to be : 3.44, 3.32, 3.55, 0.87, 0.99 , 0.83 respectively.

The calculated "F" value is 0.38 which is less than table value, so the hypothesis is rejected and is concluded that there is no significant difference among teachers in their place of access

for information using e-journals.

Table - 4 shows the purpose of using e-journals and it could be found that 22

(24.4%) Lecturers, 7 (7.7%) Readers and 12 (13.3%) Professors use e- journals for research work, 13 (14.3%) Lecturers, 10 (11%) Readers, and 2 (2.2%) Professors use for writing articles, 7 (7.7%) lecturers, 3 (3,3%) Readers and 2 (2.2%) Professors use e- journals for teaching purpose, 3 (3.3%) Lecturers, 5 (5.5%) Readers, and 4 (4.4%) Professors use e- journals for updating information .

Table - 5 shows the commonly used search engine among the teachers of FEAT Annamalai University and it could be found that 24(26.4%) Lecturers, 15 (16.5 %) Readers and 12 (13.3%) Professors use Google search engine, 10 (11%) Lecturers, 7(7.7%) Readers, and 5 (5.5 %) Professors use Yahoo search engine , 6 (6.6 %) lecturers, and 3 (3,3%) Readers use alta Vista search engine, 5 (5.5%) Lecturers, and 3 (3.3%) Professors use ask.com search engine.

Findings

The study reveals that there is no significant difference in their mode of search, frequency of search and places of access for information using e- journals among the teaching staff in FEAT, Annamalai University

Most of the Lecturers and Professors use e-journals for research purpose, while Readers use it for writing article, Google is the most commonly used search engine followed by Yahoo among the teachers of FEAT, Annamalai University

Conclusion

The teachers to thrive in the electronic environment in the digital era should embrace with new electronic environment. The new technologies should be made aware to them so that they can make better use of e - resources. It can lessen the burden by reducing their physical visit to the library and can access information using e-journals from their own reading table.

References

1. C.Busha, S.P. Harter, " Research Methods in Librarianship Techniques and Interpretation" Sandiego Academic Press, 1980.
2. Harly Hahn, "The Internet Complete Reference", New Delhi,.Tata McGraw-Hill, 1996.
3. Asok Jambhekar, "Internet For Libraries & Information Centers New Delhi ",Tata McGraw-Hill, 2000.
4. C.L. Borgman, " From acting locally to thinking globally: A Brief history of Library Automation" Library quarterly, vol 67, No.3,1997, pp 215 - 220
5. T A Brooks, Post modern information science and its journal. Journal of the American society for Information Science, 1999; 50(11): 1030-1031.
6. J. Ashling The future of Scholarly e-publishing, Information Today, 2005; 22(6): 33-34.
7. P.Saravanan, A. Lawrence Mary, " Teachers approach to internet and online information rsources"IASLIC bulletin, 2007; 52(3): 150-157.
8. M G Sreekumar, Library Capacity building through E-journal consortia in the Indian scenario" 7th MALIBNET convention proceedings, New Delhi, 2005; 55- 62.

Red Flower Publication Pvt. Ltd.

(A new company of **World Information Syndicate**)

We are pleased to introduce our new company (i.e. **Red Flower Publication Pvt. Ltd. (RFPPL)**. The **RFPPL** is a sister concern company to our ten years old company World Information Syndicate **(WIS)** serving all over the India and several western and neighboring countries.

Ten years ago we established a subscription agency as **World Information Syndicate**. Since then our team of associates has offered a wealth of knowledge and experience, providing service and benefits to our clients and customers.

The Red Flower Publication Pvt. Ltd. is a Medical and Scientific publishing group has been formed to deliver service with the highest quality, honesty and integrity. We continue to work to maintain a matchless level of professionalism, combined with uncompromising client service. **The Red Flower Publication Pvt. Ltd.** strives to exceed your expectations.

The Red Flower Publication Pvt. Ltd. is a newly formed medical and scientific publishing company led by Asharfi Lal founder of World Information Syndicate based in Delhi. The RFPPL publishing twelve peer-reviewed indexed medical and scientific journals that provides the latest information about best clinical practices and new research initiatives.

All twelve journals since June 2009 being published by **The Red Flower Publication Pvt. Ltd**, which were previously published by **World Information Syndicate**.

Agency Discount: 10%

List of Publications:

Title	Freq	Rate (Rs.): India	Rate ($):ROW
Asian Journal of Pediatrics & Medical Genetics	*4*	*4500*	*200*
Indian Journal of Ancient Medicine and Yoga	*4*	*5000*	*200*
Indian Journal of Dental Education	*4*	*2000*	*200*
Indian Journal of Emergency Pediatrics	*4*	*4000*	*200*
Indian Journal of Forensic Medicine & Pathology	*4*	*8000*	*200*
Indian Journal of Forensic Odontology	*4*	*2000*	*200*
Indian Journal of Library and Information Science	*3*	*5000*	*200*
International Journal of Neurology & Neurosurgery	*4*	*5000*	*200*
Journal of Aeronautic Dentistry	*4*	*2000*	*200*
Journal of Social Welfare and Management	*4*	*5000*	*200*
New Indian Journal of Surgery ***(New)***	*4*	*8000*	*200*
Physiotherapy and Occupational Therapy Journal	*4*	*5000*	*200*

For further information please visit : www.rfppl.com

Order To

Red Flower Publication Pvt. Ltd.
41/48, DSIDC, Pocket-II, Mayur Vihar, Phase-I
P.O. Box No. 9108, Delhi - 110 091 (India)
Tel: 91-11-65270068, 48042168, Fax: 91-11-48042168
E-mail: redflowerppl@vsnl.net, Website: www.rfppl.com

Management of service quality in agricultural university libraries

Vinod Kumar
Assistant Librarian
Guru Jambheshwar University of Science & Technology, Hisar, Haryana
E-mail: vinugju@yahoo.com

Abstract

The librarians in the present age find themselves in a position where they may not be satisfied with the traditional orientation of offering books and periodicals but where they also have to consider their target users. With the advent of new communication technologies, shrinking budget, increasing cost of reading materials, globalization of supply, competitive and professional environment, unending and unlimited informational expectations of the users from the library have forced the libraries, including the agricultural university libraries to manage the library operations in order to provide quality library services. Discuss the concept of quality and its application in the library. The present study involves the concept of measuring service quality and how the SERVQUAL model can be helpful in measuring the service quality of library. Discusses the views of agricultural university librarians in managing the library service quality

Introduction

The university library is to support teaching, learning and research by providing adequate current resources, quality service and user education to its clientele, consisting of students, faculty and the university community. The expanding student intake, rising cost of print materials and the proliferation of electronic resources has increased the pressure of demand on the library to provide high quality resources and services (Kaur, Mohamad and George 2006). Historically, library quality has been regarded as "synonymous with collection size--an assessment of what the library has--rather than with what the library does" (Hernon & Ellen Altman, 1998).

Quality

Quality has become the buzzword and symbol of survival and growth in manufacturing and commercial sector and has raised its wings in information sector. Escalating costs of information products, shrinking budget and increasing fees have enhanced the accountability of university libraries. Application of IT in libraries has extended the scope of library services and accordingly enhanced the expectations of users for high quality information services. All these problems posed serious challenges for efficient information management, which calls for immediate concern of university libraries to have a careful investigation of skills, management philosophy, expectations and perceptions of customers. Quality, therefore, is no more an option but an urgent need for survival and growth in the prevailing competitive environment. It is the need of the hour that Library should increase the quality of Library services as per the expectations of its users.

Actually, it is the customer, who decides whether a particular service is a quality service or not. If customers say it is quality service, then it is. If they do not, then it is not. If a firm is claiming that, it is providing a quality service and its customers are not satisfied with that service, then it has no meaning at all of firm's claim. It does not matter what an organization believes about its level of service. According to Sarkar (1995) "quality of a product or service is the ability of the product or service to meet customers' requirements". Brophy and Counlling (1997) defined quality as the value of goods and services that meets customer needs and expectations at a cost that represents value. According to American National Standards Institute (ANSI) and American Society for Quality Control (ASQC), "Quality is the totality

Reprints Requests: Mr. Vinod Kumar
Assistant Librarian, Guru Jambheshwar University of Science & Technology, Hisar
E-mail: vinugju@yahoo.com

(Received on 14.5.09, Accepted on 19.07.09)

of features and characteristics of a product or service that bears on its ability to satisfy stated or implied needs." This widely adopted definition of quality instead of being operations focused is customer focused. At the centre of this definition is satisfaction of customer's needs. When a firm's offer is able to meet or exceed customer expectation, the firm has delivered quality. There has to be a marked shift from a technical to a customer orientation in the delivery of service. All libraries may provide the same type of service but the delivery of that service will differ from place to place depending on its uniqueness (Thapisa and Gamini 1999)

Quality Concept in Library

By the 2nd half of 1980s libraries were considered good or bad by its holdings of books and journals, number of professional and non-professional staff, annual budget, etc. These measures were adequate when the primary function of libraries was to acquire books and journals. Pritchard concluded, "the future vitality of libraries in academia will be dependent on whether they can dynamically and continually prove their value to the overall educational endeavor.

The primary focus of a library is service, and service quality is the most studied topic in marketing research during the past decade. The world 'quality' emerges from the latest trend in business and industry but it is closely linked with existing research and practice in the libraries. Library effectiveness - an earlier term for quality has provided an important building block on which advancement in library quality management can be based.

The Element of quality service in libraries is implicit in the 'Five Laws of Library Science' as stated in 1931by Dr. S.R. Ranganathan, who is regarded as the father of Library Science in India. The Fourth Law of Library Science 'Save the time of the Readers' reflects that library users are the axiom of the library service system.

Orr' (1973) in his classic study introduced the concept of 'library goodness' and suggested 'quality' of library service and 'value' of library service as the determinants of library goodness. He further clarified that quality may be understood in the terms of "how good is the library" and value in terms of "what good does it do". Orr presented that 'resources' of a library determine its 'capability'; the 'capability' determines its 'utilization', and the 'utilization' determines its 'beneficial effects', and the 'beneficial effects' in turn determine the 'resources'. The quality of a library may be determined on the basis of resources, capability, and utilization, whereas value is determined on the basis of utilization and beneficial effects. In his opinion 'effectiveness' and 'benefits' were closer in meaning to the term 'quality' and 'value' respectively but in literature effectiveness and benefits were having wider connotations. De Prospo (1973) described library effectiveness as a measure of library collections, facilities and staff. Du Mont pointed out that the service which satisfies to a high degree information and research needs of faculty, students and other users and contributes to the success of educational and development goals of the institutes in an effective manner is known as quality of service. Line doubted the quality/ value distinction made by Orr in 1973. He pointed out the involvement of subjectivity element in judging quality and value. He defined four measures: benefits (long-term), effectiveness (short term), cost effectiveness (value for money), cost benefit (long term benefits for money).

Brophy and Coulling pointed out that from effectiveness point of view quality and value are separate but from quality management point of view both the questions of library goodness are not separable because customer can judge both quality and value. Quality and effectiveness are doing right things only, whereas Girja Kumar considered quality as doing things right and total quality as doing right things only. Accordingly, quality or effectiveness is one of the measures of studying library performance. Other measures of total performance or total quality of library are efficiency, cost effectiveness, economy, market penetration, impact, costs, productivity, appraisal, etc. Efficiency means doing thing rightly. It also means getting something done quickly, and at minimum cost.

The system components provide the framework for formulating the definition of quality and quality management. In other words, quality is the ability or capability of

library services, products and consultation to meet the requirements of users. Quality management is defining the library user (customer), understanding his requirements, finding out library's capability, and in case of mismatch changing either the customer definition or capability of library and specifying library's requirements to university authorities, external venders and suppliers and internal staff.

SERVQUAL- A Measuring Rod of Service Quality

In the early 1980s, the impetus to measure and evaluate service quality arose from the marketing discipline. A repeated theme in the marketing literature is that service quality, as perceived by consumers, is a function of what customers expect and how well the firm performs in providing the service. Recognizing the centrality of customer perceptions of service quality, academicians sought to devise methods to assess customer views of quality service empirically (Cook and Thompson). Among the most popular assessments tools of service quality is SERVQUAL, an instrument designed by the marketing research team of Parasuraman, Berry and Zeithaml (PB&Z). Through numerous qualitative studies, they evolved a set of five dimensions which have been consistently ranked by customers to be most important for service quality, regardless of service industry. These dimensions are defined as follows:

Tangibles: appearance of physical facilities, equipment, personnel, and communication materials;

Reliability: ability to perform the promised service dependably and accurately;

Responsiveness: willingness to help customers and provide prompt service;

Assurance: knowledge and courtesy of employees and their ability to convey trust and confidence; and

Empathy: the caring, individualized attention the firm provides to its customers.

The three collaborators concluded that quality could be viewed as the gap between perceived service and expected service, and their work eventually resulted in the Gap Theory of Service Quality, that is,

Q = P - E

(Where Q = Quality, P and E are Customers' Perceptions and Expectations of particular product/service)

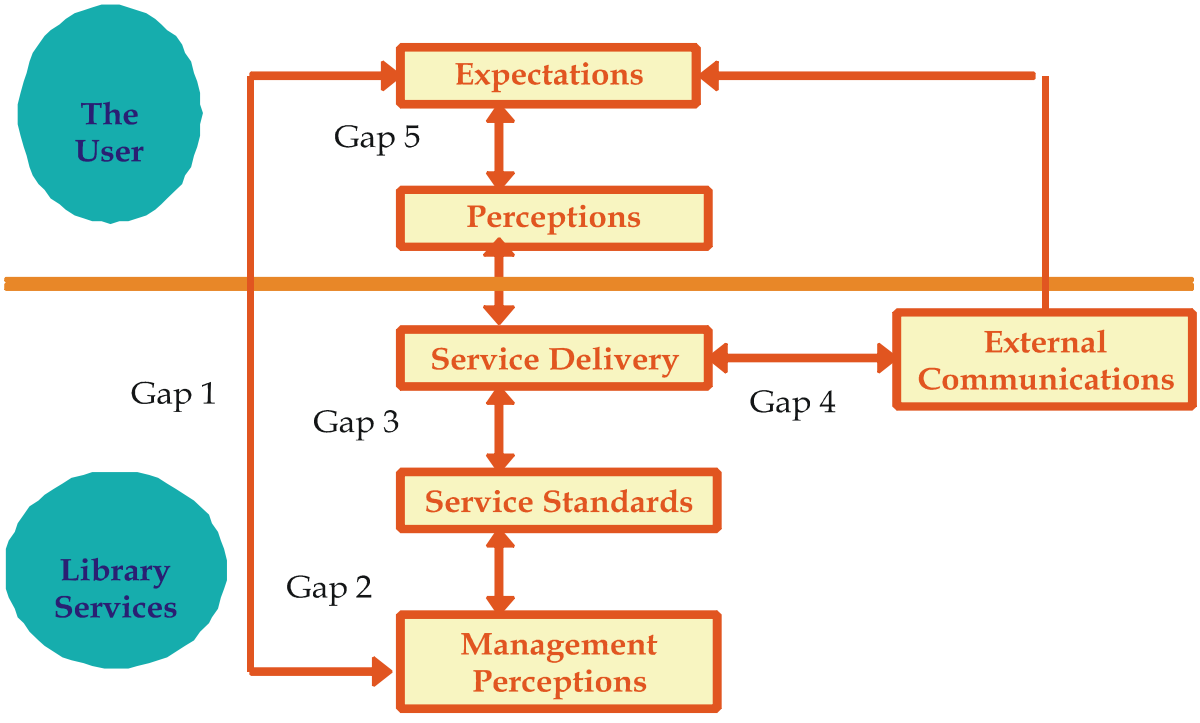


Fig. 1. The Gaps Model of Service Quality

PB & Z identified following five quality gaps:-

Gap 1: Difference between actual user expectations and management's idea or perception of user expectations;

Gap 2: Mismatch between manager's expectations of service quality and service quality specifications;

Gap 3: Gap between the service quality specifications and the delivery of service;

Gap 4: Differences between service delivery and external communication with the users;

Gap 5: Difference between Expected and Perceived Quality

SERVQUAL is a survey instrument to measure the gap between customers' expectation for excellence and their perception of actual service delivered. The SERVQUAL instrument helps service providers to understand both customer expectations and perceptions of specific services, as well as quality improvements over time. It may also help target specific service elements requiring improvement, and training opportunities for staff. Introduced in 1988, SERVQUAL has been used in replication studies in a wide range of service industries: health care, banking, appliance repair, and several other professions including libraries.

PB&Z's customer-based approach for conceptualizing and measuring service quality offers an alternative for defining the quality of library services. It emphasizes the service nature of libraries, in which the traditional collection-based criteria of quality may be part of, but not the entire component, of excellence. Service quality contributes to value experienced by customers. Value becomes an outcome of excellent service. The SERVQUAL instrument, modified for use in library service settings, provides an outcome measure for managers to gauge their service activities.

Methodology

The study is designed to know the views of the Librarians/ Heads of the Agricultural University Libraries on total quality management in order to provide quality library services. Keeping in view the purpose of the study a questionnaire using 5-point Likert scale was designed for collecting the data. The questionnaire was designed after going through related theories, methods and conclusions of related studies and experience of author in providing services to the library patron.

Scope of the Study

The present study is made to know the view of Librarians / Heads of the Libraries in Agricultural University Libraries on total quality management in four states of Northern India namely Punjab, Haryana, Himachal Pardesh and Uttarakhand. The selected libraries are:-

1. Punjab Agricultural University Library Ludhiana (Pubjab).
2. CCS Haryana Agricultural University Library Hisar (Haryana)
3. Y S Parmar Univerisity of Horticulture and Forestry, Solan (Himachal Pardesh)
4. Gobind Ballabh Pant University of Agriculture and Technology, Pant Nagar (Uttarakhand)

Management of Service Quality

Management of quality in libraries seems to be of recent origin but actually element of quality management in libraries is implicit in the 'Five Laws of Library Science' as stated in 1931by Dr. S.R. Ranganathan, who is regarded as the father of Library Science in India. The Fourth Law of Library Science 'Save the time of the Reader' has similar implications as are advocated in the TQM process. His explanation for the term 'Documentation' as pinpointed, exhaustive and expeditious organization and retrieval of information is what is the sum and substance of the TQM approach in library context. Regarding applicability of TQM in library and information centres' can be described in terms of three functions - Acquisitions of Information; Organization of Information and Dissemination of Information.

The concept of quality management originated in Japan and later moved into the USA and the UK, initially in the manufacturing sector. Since then, the theory of quality management has been growing fast. It has become a management philosophy in its own right and has taken shape in a series of international standards in the ISO 9000 series. The philosophy is increasingly being applied in the service sector, including libraries.

Library and information managers (LIMs) are these days deluged with advice as to how to acquire and organize learning resources and satisfy the complex and ever-increasing information needs of their users (Moghaddam and Moballeghi, 2008).

The study includes Librarians' view regarding following five attribute of management:-

1. Leadership
2. Strategy and Policy
3. Staff Management
4. Process Management and;
5. Resource Management

Leadership

The quality of library services is greatly influenced by the performance of the employees and Leadership reflects the employee's performance. Hence, the leadership also influences the quality of library services. The following questions were asked from the Librarians/ Heads of the University Libraries:- Leadership plays a vital role in providing effective and efficient library services

1. I prefer to work as facilitator and motivator rather as authoritarian
2. I consider the importance of different teams for the improvement of processes, Procedures and practices.
3. I recognize performances on team basis rather on individual basis.
4. I believe that all of us have more or less equal potential.
5. I praise orally in public for outstanding performance and condemn privately for Poor performance.
6. I believe that person at the top is in the best position to make major decisions.
7. I can easily categories my subordinates as good and bad.

The responses received have been reproduced in the form of tables.

Statement No.	PAU Ludhiana	HAU HISAR	YSPU Solan	GBPU PANT NAGAR	Mean score
1	5	5	5	5	**5**
2	5	5	5	5	**5**
3	5	5	4	4	**4.5**
4	5	5	4	4	**4.5**
5	4	5	3	3	**3.75**
6	5	5	3	3	**4**
7	5	5	5	5	**5**
8	5	5	5	5	**5**
Mean score	**4.89**	**5**	**4.25**	**4.25**	**4.59**

Table 1

It is shown in the table 1 that the statements at sr. no. 1,2,7 and 8 are highly agreed upon by all the librarians and opt highest score at 5 whereas the statement at sr. no. 5 is agreed only to some extent by the Librarians of YSPU, Solan and GBPU, Pant Nagar and rated at score 3. Thus the librarians of all the libraries under reference consider the importance of role of leadership in providing quality services, work as facilitator and motivator, believe that person at the top is in the best position to make major decisions and they easily categories the subordinates as good and bad. The Librarians of YSPU, Solan and GBPU, Pant Nagar are agreed only to some extent with the statement that all of us have more or less equal potential. The overall mean score of this statement is lowest i.e. 3.75 among the eight statements. Further among the University, the HAU, Hisar gives highest importance to leadership factor by scoring point 5 followed by PAU, Ludhiana by scoring mean score 4.89 YSPU, Solan and GBPU, Pant Nagar have the mean score of 4.25.

Strategy And Policy

With regard to framing and implimenting policies and stategies in order to offer provide better library services, the following questions were asked from the Librarians/ Heads of the University Libraries:-

1. All the services, processes and practices are planned keeping in view of the needs and expectations of the users
2. Library policies, mission, values and strategies are made clear to the staff.
3. In-charges have been delegated authorities in accordance to responsibilities
4. Various section In charges are fully involved in making policies

5. The decisions are taken on the basis of the information supplied to me from various sections of the library.
6. Crucial information is kept upto myself.
7. I explain my expectations to the subordinates and learn their expectations.
8. It is planned to make optimum use of information communication technologies (ICT) in providing library services.
9. Staff meetings are organized to involve the staff in providing best services

Strategy And Policy

Statement No.	PAU Ludhiana	HAU HISAR	YSPU Solan	GBPU PANT NAGAR	Mean score
1	5	5	5	5	**5**
2	5	5	5	5	**5**
3	5	5	4	4	**4.5**
4	5	5	4	4	**4.5**
5	4	5	3	3	**3.75**
6	5	5	3	3	**4**
7	5	5	5	5	**5**
8	5	5	5	5	**5**
Mean score	**4.89**	**5**	**4.25**	**4.25**	**4.59**

Table 2

It is evident from Table 2 that highest score is given to statement no. 4 and 8 at mean score 4.75 and the lowest score is given to statement no. 3 & 6 at mean score 4.25. The Librarians of these University libraries involve the section incharges in making policies and make optimal use of ICTs in providing library services. Among the Universities, PAU Ludhiana gives highest mean score of 5 followed by HAU, Hisar and GBP Pant Nagar at a mean scores of 4.78 and 4.33 respectively whereas YSP Solan gives lowest mean score of 3.89 to policy decisions.

Staff Management

Skilled and dedicate staff of any institution is considered as the builiding blocks. By listening to their suggestion, motivating them for work, providing necessary trainings, involving them in enhancing the library service quality, a librarian can increase the work efficiency of the library staff. In this regard the following questions were asked from the Librarians/ Heads of the University Libraries:-

1. Suggestions are always welcomed from library staff.
2. Library Staff is considered as an asset to be developed rather than commodity to be used
3. I have faith in my subordinates ability, potential, knowledge and skills.
4. To make better communication with the sections heads, telephone/ intercom facility is provided in all sections.
5. Reasonable Authority is delegated to the Staff responsible for a particular Job.
6. The staff is motivated on regular basis for being quality consciousness.
7. I want to use workers heads and hearts in addition to their hands.
8. Staff is encourage for further education and training for improvement
9. I help my subordinates in career planning.

Staff Management

Statement No.	PAU Ludhiana	HAU HISAR	Y S P Solan	GBP PANT NAGAR	Mean Score
1	5	5	4	3	**4.25**
2	5	5	4	4	**4.5**
3	5	5	4	3	**4.25**
4	5	5	4	4	**4.5**
5	5	5	4	4	**4.5**
6	5	5	4	5	**4.75**
7	5	5	4	5	**4.75**
8	5	5	4	4	**4.5**
9	5	5	4	5	**4.75**
Mean Score	**5**	**5**	**4**	**4.11**	**4.53**

Table 3

It is evident from the Table 3 that highest mean score i.e. 4.75 is given to statements no. 6, 7 & 9 whereas the lowest mean score i.e. 4.25 is given to statement no. 1. Librarians are of the view that staff is motivated for quality library services, in additions to the hands- heads and hearts are used and they help their subordinated in career planning. The mean score is highest i.e. 5 in PAU Ludhiana and HAU Hisar and lowest i.e 4 in YSP Solan.

Process Management

By doing right things at the right time and in the right directions librarian may enhance the quality of library services. The following questions were asked from the Librarians/ Heads of the University Libraries related to process management.

1. Rules and regulations are followed and reports against those who violate
2. Staff is authorized to identify key processes and related small activities
3. I give chance to every employee to improve

the processes of his/her work
4. New books are processed for use with in a month of payment.
5. The newly added books are conveyed to the indenting departments.
6. Proper arrangement of books on the shelves is ensured
7. Library membership is given within a week after application
8. Books are issued within 5 minutes to members
9. OPAC/Catalogue is updated.

Process Management

Statement No.	PAU Ludhiana	HAU HISAR	Y S P Solan	GBP PANT NAGAR	Mean Score
1	5	5	4	3	4.25
2	5	5	4	4	4.5
3	5	5	4	3	4.25
4	4	5	4	5	4.5
5	5	5	4	4	4.5
6	5	5	4	4	4.5
7	5	5	4	5	4.75
8	5	5	4	5	4.75
9	5	5	4	5	4.75
Mean Score	4.89	5	4	4.22	4.53

Table 4

It is shown in the table 4 that the statements at sr. no. 7, 8 & 9 are highly agreed upon by highest mean score at 4.75 whereas the statement at sr. no. 1 & 3 are lowest agreed upon by scoring 4.25. Librarians are particular in providing library membership within a week time to its patrons, issuing books within 5 minutes after reaching at counter and updating the OPAC. They are agreed to the great extent that rules and regulations be followed and report against those who violets chance should be given to the employees to improve the processes of their work. Further among the University, the HAU, Hisar gives highest importance to process management by scoring mean score 5 followed by PAU, Ludhiana by scoring mean score 4.88. GBPU, Pant Nagar and YSPU, Solan have the mean score of 4.22 and 4 respectively.

Resource Management

The library has the resources- reading material, budget, equipments, hardware & software, communication technologies, multimedia labs building, staff etc. The proper management of these resources in libraries definitely enhances the quality of library services. The following questions were asked from the Librarians/ Heads of the University Libraries related to

Resource management

1. Optimum use of the library resources.
2. Proper allocation of library budget for optimum utilization
3. Budget for books and journals are allocated in the meeting of Library Committee.
4. Librarian is involved in the process of planning annual budget of the Library.
5. All reading material is purchased on the basis of quality rather than price
6. All equipments and instruments are kept functional
7. Full use of ICTs is made with paper based culture.
8. It is believed in job analysis, division and description.
9. The cleanliness of library building, books and furniture is ensured.

Resource Management

Statement No.	PAU Ludhiana	HAU HISAR	Y S P Solan	GBP PANT NAGAR	Mean Score
1	5	4	4	3	4
2	5	4	4	3	4
3	5	3	3	5	4
4	5	5	4	5	4.75
5	4	5	4	4	4.25
6	5	5	4	5	4.75
7	5	5	4	4	4.5
8	5	5	4	3	4.25
9	5	5	4	4	4.5
Mean Score	4.89	4.56	3.89	4	4.33

Table 5

It is observed, as depicted in table 5, that the statements no. 4 & 6 are highest agreed upon by obtaining mean score of 4.75 whereas the statements no. 1-3 are lowest agreed upon among the nine statements by obtaining mean score of 4. The University Librarians of the Agricultural University Libraries agreed to almost full extent that they are involved in planning annual budget and all the equipments and instruments are kept functional. They are agreed to great extent w.r.t. other statements regarding resource management- optimum use, proper allocation of budget in the meeting of library advisory committee, reading material is purchased on the basis of quality rather than price, cleanliness of library building, books,

furniture etc. Among the Universities PAU Ludhiana has the highest mean score (4.89) of resource management followed by HAU, Hisar (4.56) and GBP Pant Nagar (4) respectively. YSP Solan has the lowest mean score of 3.89 w.r.t. resource management.

Conclusion

It is observed that the Librarians in the agricultural university libraries are managing quality of their library to the great extent. The Librarians of PAU Ludhiana and HAU Hisar have given importance of all the five attributes to almost the full extent. The Librarians of GBP University of Agriculture and Technology, Pant Nagar and YSP University of Agriculture and Forest have given importance to these attributes to the great extent. A clear picture of their views on the five attributes has been shown in the below stated Table 6 and figures 1 & 2.

	PAU Ludhiana	HAU HISAR	Y S P Solan	GBP PANT NAGAR	Mean Score
Leadership	4.88	5	4.25	4.25	**4.59**
Strategy & Policy	5	4.78	3.89	4.33	**4.5**
Staff Management	5	5	4	4.11	**4.53**
Process Management	4.88	5	4	4.22	**4.53**
Resource Management	4.88	4.56	3.89	4	**4.33**
Mean Score	**4.93**	**4.88**	**4**	**4.18**	**4.5**

Table 6

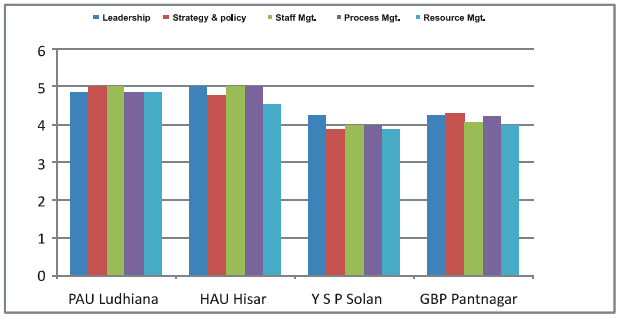


Figure 1

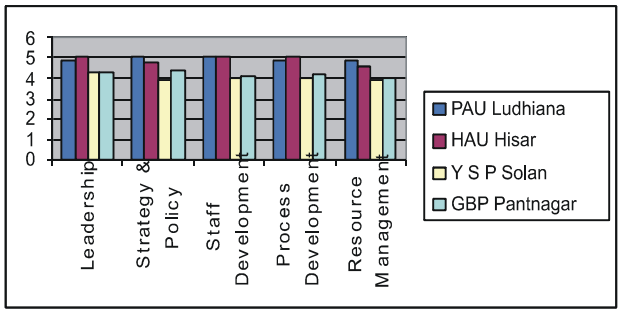


Figure 2

The highest mean score i.e. 4.93 is of PAU, Ludhiana followed by 4.88 of CCSHAU Hisar. The mean score of GBP University of Science & Technology, Pant Nagar and YSP University of Agriculture and Forest, Solan is 4.18 and 4.00 respectively against the overall mean score 4.5 in all the Universities. Among the attributes, Leadership has the maximum mean score of 4.59 followed by Staff Management and Process Management having mean score of 4.53 and Resource Management having mean score of 4.33.

References

1. Brophy, Peter and Coulling, Kate. "Quality management for information and library managers", Mumbai, Jaico, 1996.
2. Date, Dhanashree A. and Gokhale, Pratibha. "Implementation of ISO 9000 in Industrial Libraries", Library science with a slant of Documentation and Information Studies, 1999; 36(2): 65-72.
3. De Prospo, E. R. et..al, "Performance measures for public libraries", Chicago: Public Library Association, 1973, 71.
4. Du Mont, Rosemary and Du Mount, Paul E. "Measuring library effectiveness: A review and an assessment", Advances in Librarianship, 1979; 9: 103-141.
5. Hernon, Peter and Altman, Ellen, "Assessing service quality: satisfying the expectations of library customers" Chicago: American Library Association, 1998, 2.
6. Kaur, Kiran Mohamad, Pauziaah and George, Sossamma. "Quality management service at the University of Malaya Library" Library Management, 2006; 27(4): 249-256.
7. Moghaddam, Golnessa Galyani and Moballeghi, Mostafa, "Total quality management in library and information sectors" The Electronic Library, 2008; 26(6): 912-922.
8. Parasuraman, A. et.al. "SERVQUAL: a multiple item scale for measuring consumer perceptions of service quality". Journal of Retailing, 1994; 64(1): 12-40.
9. Orr, R. H. "Measuring the goodness of library services: a general frame work for considering quantitative measures. Journal of Documentations, 29(3): 315-332.
10. Sarkar, Debashis. "The managers handbook for total quality management"' New Delhi: Sage, 1995; 1-2.
11. Thapisa A.P.N. and Gamini, Venus "Perceptions of quality service at the University of Botswana Library: what Nova says" Library Management, 1999; 20(7): 373-383.
12. Verma, R. K. "Measuring quality management level with reference to ISO 9000 and TQM for special libraries in India", Annals of Library Science and Information Studies, 2002; 49(4): 141-163.

Research output in "Current Science": a bibliometric study

*R. Jeyshankar, **B. Ramesh Babu, ***S. Gopalakrishnan

*Lecturer, Dept. of Library and Information Science, Alagappa University, Karaikudi - 630 003, Tamil Nadu, **Professor, Dept. of Information Science,University of Madras, Chennai - 600 003, ***Assistant University Librarian, MIT Campus, Anna University, Chennai

Abstract

Bibliometric is a method of assessing the scientific activity based on the citation and articles. This paper analyses the research productivity and citation pattern in Current Science. This research paper covered the period from 200 to 2006. The study is based on 4318 articles, 69976 citations given in the 110 volumes, Authorship pattern, types of publication, yearwise distribution and contentwise distribution etc. Current Science ranked as the number one periodical in India in the field of science based on output of research publications. Besides Indian authors, foreign authors contributed much to this journal.

Keywords: Bibliometrics, Citations, Current Science.

Introduction

Bibliometrics is an academic discipline and much research is being carried out for a quantitative study of the various aspects of literature of a given subject. It is a branch of Information Science which analyses quantitatively the published information based on bibliographic data elements. Pritchard (1969)1 coined the term 'bibliometrics' and defined it as "The application of mathematical and statistical methods to books and other media of communication". Luukkonen (1990)2 Bibliometrics is the quantitative evaluation of literature. Leydesdorff and Gautheir (1996)3 defined Bibliometrics analysis is used in science and technology policy arena to determine the knowledge outputs of national systems of innovation.

Sengupta (1990)4 viewed bibliometrics as the "Organisation, classification and quantitative evaluation of publication patterns of all macro and micro communications along with their authorship by mathematical and statistical calculus. Quantitative studies of publication patterns are known as bibliometrics, scienctometrics and informetrics etc. Bibliometrics is a type of research method used in Library and Information Science by Anwar and Abu Backer (1997)5.

Bibliometric research include studies pertaining to scattering of articles, author productivity, word productivity/Law of least effort, success-breeds-success phenomenon growth of literature, obsolescence of documents, productivity and impact of research, distributions of scientific publications by country, by language; circulation studies, etc. It helps to monitor growth of literature and patterns of research. This paper studies the bibliometric analysis of the literature published in the Current Science journal.

Current Science: A Brief Note

Current Science started its publication since July 1932. The Journal's conceptions took place at a meeting of academicians during the Indian Science Congress at Bangalore, in January 1932. A little earlier in August 1931, Martin Forster, the Director of the Indian Institute of Science, Bangalore had circulated a questionnaire soliciting views on the starting of an Indian Science News Journal Patterned after Nature. Forster's initiative was based on the enthusiasm of a Small group of scientists at Central College and Indian Institute of Science. It was wonderful time to think of starting a high quality interdisciplinary science journal in India. This study was aimed at to examine quantitatively the growth of literature in the field of 'Current

Reprints Requests: R. Jeyshankar, Lecturer Dept. of Library and Information Science Alagappa University, Karaikudi - 630 003, T.N, Email: jeyshankar71@yahoo.com

(Received on 28.4.09, accepted on 16.5.09)

Science Journals' with the help of source databases namely MEDLINE, CINAHL and IPA. Since the study is mainly exploratory and analytical in nature using various statistical tools and techniques, in this paper, a description about the source databases and various statistical tools employed in the analysis of the data has been presented. The present study concerned with the contribution in Current Science Journal for the period 2002 to 2006.

Objectives

The study has been designed with the following objectives:

i. To examine the growth of contributions in "Current Science" journal published during 2002 - 2006.
ii. To identify and analyse the category of contributions in Current Sciencejournal.
iii. To analyse the authorship patterns.
iv. To examine the extent of research collaboration.
v. To study the implications of scientometric indicators in Current Science journal.

Hypotheses

The following are the hypotheses formulated for this study:

i. Research productivity in science is comparatively higher in developed countries.
ii. There exists a significant level of difference in contributions in Current Science by the Indian scientists and scientists of other countries.
iv. Collaborative research dominates in the contributions in Current Science Journal.

Methodology

Data Collection

This study has been confined to the articles covered in "Current Science" journal from 2002 - 2006. The investigator has identified the Current Science journal, for the purpose of data collection which has high impact factor on Indian publications and the same is brought out by Indian Institute of Sciences, Bangalore. Major subjects covered in the Current Science journal are Microbiology, Health Care, Pharmacology, Biological Science, Nutrition and Physical Sciences.

Source Databases

MEDLINE Database

MEDLINE CD-ROM, the world leading international bibliographic database being produced by the National Library of Medicine of United States, covers biomedical literature, containing references to articles from more than 4800 journals from 1966 onwards. MEDLINE is the computerized counterpart of Index MEDICUS, Index to Dental Literature, and the International Nursing Index. Silver Platter MEDLINE on CD includes such topics as microbiology, delivery of health care, nutrition, pharmacology, and environmental health. The subjects covered in the database include anatomy, organisms, chemicals and drugs, psychiatry and psychology, biological sciences, physical sciences, technology, agricultural, food industry, humanities, information science and communication, and health care. The database is international in coverage with input from 130 countries and in 50 languages. MEDLINE is available both on ONLINE and CDs as well.

The MEDLINE Database covers the allied Health; Biology; Biomedical Literature; Biophysics; Chemistry; Clinical Sciences; Dentistry; Environmental Science; Marine Biology; Nursing; Pharmacy; Plant and; animal science; Pre-clinical sciences; Veterinary Medicine.

Sample record from MEDLINE

TI: Mixed cryoglobulinemia secondary to interferon therapy for Hepatitis C: case report & review of the literature.

AU: Kimyai-Asadi,-A; Gohar,-K; Kang,-P; Usman,-A; Zenenberg,-R; Jih,-M-H

AD: Ronald O. Perelman Department of Dermatology, New York University School of Medicine, 401 East 34th Street, S-6N, New York, NY 10016, USA. akimyai@yahoo.com

SO: J-Drugs-Dermatol. 2002 Jul; 1(1): 72-5

PY: 2002, LA: English, CP: United-States

MESH:*Cryoglobulinemia-chemically-induced;*Hepatitis-C-drug-therapy; *Interferon-Alfa-2a-adverse-effects, MESH: Adult-;Aged-;Cryoglobulinemia-physiopathology; Middle-Aged, TG: Female; Human; Male, PT: Case-Reports; Journal-Article

Bibliometric Laws and Statistical Tools Employed

In this study, the following bibliometric indicators and statistical techniques/tools were employed while analysing the data on Current science journals research output collected from the CD.

Bradford Law of Scattering

Bradford (1934)2 first formulated his law, but it did not receive wide attention until the first publication of his book 'Documentation' in 1948. Bradford examined all of the journal titles contributing to a bibliography on applied Geophysics. He divided the list into three 'zones' each containing roughly equal number of references. He observed that the number of journals contributing references to each zone increased by a multiple of about five. The law says, "If scientific periodicals are arranged in the order of decreasing productivity of articles on a given subject, they may be divided into a nucleus of periodicals more particularly devoted to the subject and several groups or zones containing the same number of articles as the nucleus where the number of periodicals in the nucleus and the succeeding zones will be as 1:n:n2"

For describing the scattering phenomena, he gave the following formula.

$F(x) = a+b \log x$

Where F (x) is the cumulative number of references as contained in the first x most productive journal and 'a' and 'b' are constants.

Co-Authorship Index (CAI)

To study how the co-authorship pattern changed during the period 1999-2003 by using Co-authorship Index (CAI) suggested by Garg and Padhi (1999)7.

$CAI = \{(Nij / Nio) / (Noj/Noo)\} \times 100$

Nij : number of papers having j authors in block i;

Nio: Total output of block i;

Noj: number of papers having j authors for all blocks;

Noo: Total number of papers for all authors and all blocks;

J = 1, 2, 3……..n

CAI = 100

CAI = 100 implies that co-authorship in a particular block for a particular type of authorship corresponds to the world average, CAI> 100 reflects higher than average co-authorship effort and CAI<100 lower than average co-authorship effort in a particular block for a particular type of authorship.

For calculating CAI the entire data was divided into three blocks as single authored, two authored and more than two authored publications as shown in table 9.

Collaborative Co-efficient Authorship Pattern

The patterns of co-authorship among different countries have been examined by making use of Collaborative Coefficient (CC) suggested by Ajiferuki (1988)2.

The formula used for calculating CC is given below:

$$CC = 1- [? \sum_{j=1}^{k} (1 / j) Fj / N]$$

Fj = the number of authored papers

N = total number of research published; and

k = the greatest number of authors per paper.

Data Analysis and Interpretation of Data

For the purpose of analysis, Fox Pro database system has been used to classify and quantify the extracted data. In addition to the frequency distribution and percentage analysis, the following statistical tools and scientometric indicators have been employed in the process of analysis and interpretation of data. In this study, the data thus collected from the source database (MEDLINE) on Current Science Journals research output productivity for the period 2002-2006 has been analyzed and interpreted by using various bibliometric indicators and related statistical tools as outlined

Year wise distribution

Table1 shows the Year-wise distribution of Current Science Journals research output records. Only 842(19.5%) and 822(19%) articles

alone found in the year 2002 and 2006 respectively. The highest percentage (22%) 949 in the year 2005 and it is followed by (20.2%) 874 in the year 2003. In the case of 2004 year only 831(19.2%) have found.

Sl. No	Year	Productivity	Percentage
1	2002	842	19.5
2	2003	874	20.2
3	2004	831	19.2
4	2005	949	22.1
5	2006	822	19.0
Total		**4318**	**100.0**

Table 1: Year Wise Distribution of Current Science Contents

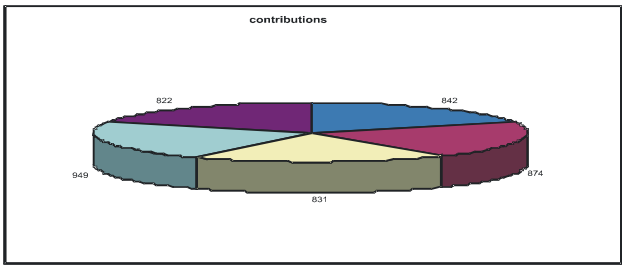


Figure 1. Year Wise Distribution

From Table 1 (Fig.1), it is clear that the highest number of articles 949(22%) published during the year 2005 and minimum articles 822(19%) in the year 2006.

Volume wise distribution

Table 2 indicates the Volume wise distribution of publications in Current Science Journal. The highest productivity to the extent of 486 articles (11.3%) have been found in the Volume No. 88.

S. No	Volume No.	Productivity	Percentage
1	82	393	9.1
2	83	449	10.4
3	84	430	10.0
4	85	444	10.3
5	86	408	9.4
6	87	423	9.8
7	88	486	11.3
8	89	463	10.7
9	90	429	9.9
10	91	393	9.1
Total		**4318**	**100.0**

Table 2: Volume Number Wise Distribution of Current Science

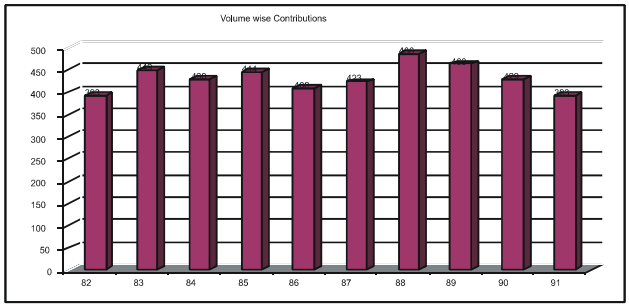


Figure 2. Volume Wise Distribution

Authorship Pattern

Table 3 represents the authorship pattern. It has been proved that SINGLE author pattern (1885, 43.7%) is high. It is followed by TWO authors (790, 18.3%). SIX to TEN authorship patterns has been noticed with lowest percentage.

Sl. No	Authors	Productivity	Percentage
1	Single Author	1885	43.7
2	Two Authors	790	18.3
3	Three Authors	598	13.8
4	Four Authors	462	10.7
5	Five Authors	238	5.5
6	Six Authors	88	2.0
7	Seven Authors	12	.3
8	Eight Authors	5	.1
9	Nine Authors	7	.2
10	Ten Authors and above	1	.0
11	Avon	232	5.4
Total		**4318**	**100.0**

Table 3. Author wise Distribution

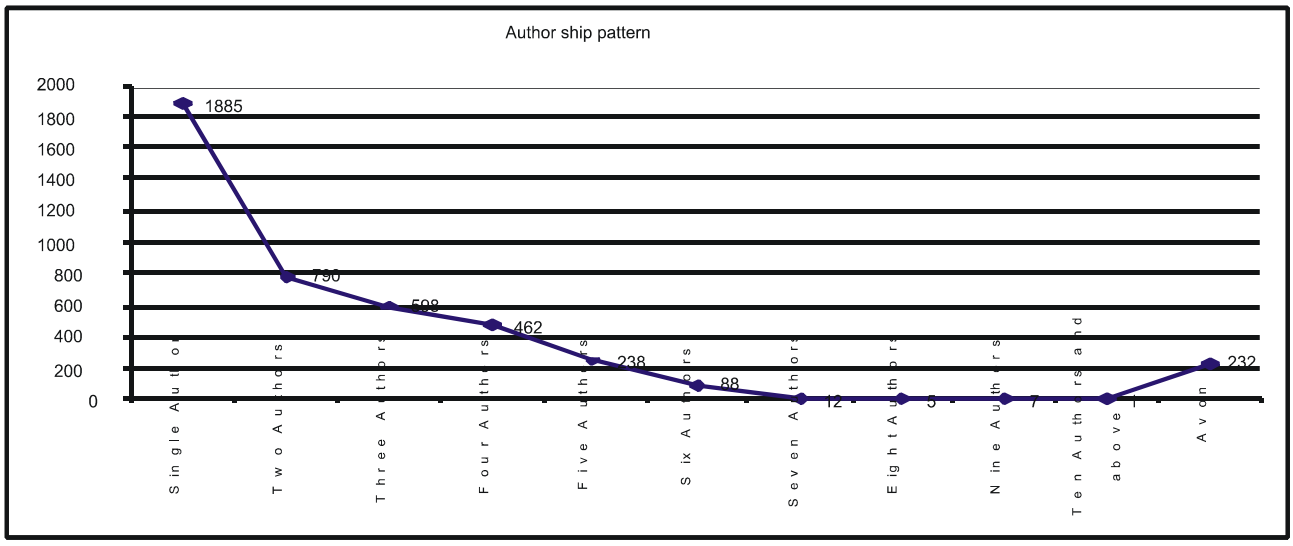


Figure 3. Authorship Pattern

Year vs. Author Wise Distribution

Year wise - Author wise distribution of articles are shown in Table 4 and Fig 4 shows the overall percentage is shown in parenthesis.

S. No	Authors	2002	2003	2004	2005	2006	Total
1	Single Author	395 (9.1%)	395 (9.1%)	324 (7.5%)	444 (10.3%)	327 (7.6%)	1885 (43.7%)
2	Two Authors	143 (3.3%)	160 (3.7%)	147 (3.4%)	184 (4.3%)	156 (3.6%)	790 (18.3%)
3	Three Authors	94 (2.2%)	94 (2.2%)	136 (3.1%)	128 (3.0%)	146 (3.4%)	598 (13.8%)
4	Four Authors	63 (1.5%)	72 (1.7%)	90 (2.1%)	129 (3.0%)	108 (2.5%)	462 (10.7%)
5	Five Authors	33 (.8%)	38 (.9%)	46 (1.1%)	51 (1.2%)	70 (1.6%)	238 (5.5%)
6	Six Authors	33 (.8%)	21 (.5%)	22 (.5%)	3 (.1%)	9 (.2%)	88 (2.0%)
7	Seven Authors		6 (.1%)	5 (.1%)	1 (.0%)		12 (.3%)
8	Eight Authors	1 (.0%)	3 (.1%)	1 (.0%)			5 (.1%)
9	Nine Authors	3 (.1%)	2 (.0%)	2 (.0%)			7 (.2%)
10	Ten Authors and above		1 (.0%)				1 (.0%)
11	Avon	77 (1.8%)	82 (1.9%)	58 (1.3%)	9 (.2%)	6 (.1%)	232 (5.4%)
Total		**842 (19.5%)**	**874 (20.2%)**	**831 (19.2%)**	**949 (22.0%)**	**822 (19.0%)**	**4318 (100.0%)**

Table 4. Authorship year wise

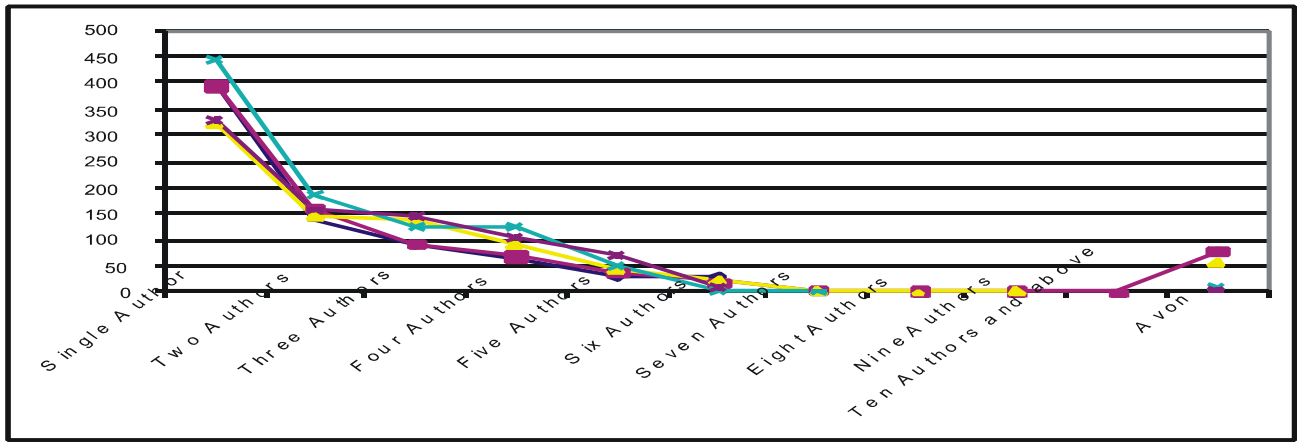


Figure 4. Year vs. yuthor wise distribution

In the analysis, the single author pattern with 444 articles (10.3%) is high in the year 2005. It is clear from the Table 4 and Fig.4 the solo research dominates throughout the period of study.

Category Wise Distribution of Records

The Table 5 shows the category wise distribution of Current science journals research output.

S. No	Category	Productivity	Percentage
1	Academy News	2	.0
2	Book Review	390	9.0
3	Commentary	125	2.9
4	Correspondence	775	17.9
5	Editorial	112	2.6
6	General Article	202	4.7
7	General News	4	.1
8	Historical Notes	19	.4
9	Hypothesis	1	.0
10	In Conversation	3	.1
11	Meeting Report	1	.0
12	News	339	7.9
13	Opinion	21	.5
14	Personal News	107	2.5
15	Recollection	1	.0
16	Research Account	19	.4
17	Research Article	251	5.8
18	Research Commn.	963	22.3
19	Research News	129	3.0
20	Review Article	162	3.8
21	Sci,Correspondence	425	9.8
22	Spl. Section	254	5.9
23	Technical Notes	13	.3
Total		**4318**	**100.0**

Table 5. Classification of Current Science Contents

Table 5 shows the category wise distribution of current science journals research output. It is observed that 963 Research Communication articles are the highest number of records (22.3%) in the study. Next major records are 755 Correspondence articles (17.9%).

Category vs. year wise distribution

Table 6 shows the Category Vs Year wise distribution of articles in current science journals research output.

sl. no	category of contributions	2002	2003	2004	2005	2006	total
1	academy news	1 (.0%)	1 (.0%)				2 (.0%)
2	book review	98 (2.3%)	104 (2.4%)	65 (1.5%)	60 (1.4%)	63 (1.5%)	390 (9.0%)
3	commentary	34 (.8%)	28 (.6%)	27 (.6%)	11 (.3%)	25 (.6%)	125 (2.9%)
4	correspondence	145 (3.4%)	164 (3.8%)	137 (3.2%)	185 (4.3%)	144 (3.3%)	775 (17.9%)
5	editorial	24 (.6%)	23 (.5%)	24 (.6%)	24 (.6%)	17 (.4%)	112 (2.6%)
6	general article	37 (.9%)	39 (.9%)	40 (.9%)	44 (1.0%)	42 (1.0%)	202 (4.7%)
7	general news	1 (.0%)				3 (.1%)	4 (.1%)
8	historical notes	3 (.1%)		5 (.1%)	5 (.1%)	6 (.1%)	19 (.4%)
9	hypothesis				1 (.0%)		1 (.0%)
10	in conversation	2 (.0%)		1 (.0%)			3 (.1%)
11	meeting report				1 (.0%)		1 (.0%)
12	news	82 (1.9%)	76 (1.8%)	50 (1.2%)	74 (1.7%)	57 (1.3%)	339 (7.9%)
13	opinion		4 (.1%)	3 (.1%)	5 (.1%)	9 (.2%)	21 (.5%)
14	personal news	19 (.4%)	25 (.6%)	21 (.5%)	24 (.6%)	18 (.4%)	107 (2.5%)
15	recollection				1 (.0%)		1 (.0%)
16	research account	5 (.1%)	4 (.1%)	3 (.1%)	1 (.0%)	6 (.1%)	19 (.4%)
17	research article	24 (.6%)	44 (1.0%)	57 (1.3%)	58 (1.3%)	68 (1.6%)	251 (5.8%)
18	research commn.	175 (4.1%)	175 (4.1%)	198 (4.6%)	194 (4.5%)	221 (5.1%)	963 (22.3%)
19	research news	36 (.8%)	26 (.6%)	23 (.5%)	25 (.6%)	19 (.4%)	129 (3.0%)
20	review article	33 (.8%)	42 (1.0%)	30 (.7%)	32 (.7%)	25 (.6%)	162 (3.8%)
21	sci,correspondence	72 (1.7%)	80 (1.9%)	97 (2.2%)	91 (2.1%)	85 (2.0%)	425 (9.8%)
22	spl. section	50 (1.2%)	37 (.9%)	49 (1.1%)	109 (2.5%)	9 (.2%)	254 (5.9%)
23	technical notes	1 (.0%)	2 (.0%)	1 (.0%)	4 (.1%)	5 (.1%)	13 (.3%)
total		**842 (19.5%)**	**874 (20.2%)**	**831 (19.2%)**	**949 (22.0%)**	**822 (19.0%)**	**4318 (100.0%)**

Table 6. Yearwise distribution of current science contributions vs category of contributions

From Table 6 it is noticed that Research Communications (963) are the highest number (22.3%) of records in the study. Among them 221 (5.1%) records in the year 2006, 198 (4.6%) records in the year 2004, 194 (4.5%) records in the year 2005 and 175 (4.1%) records each in the year 2002 and 2003 respectively.

This is followed by 775 "Correspondences" 17.9%), in which185 (4.3%) records in the year 2005, 164 (3.8%) in 2003, 145 (3.4%) in 2002, 144 (3.3%) records in 2006 and 137 (3.2%) in the year 2004.

Category vs. Author Wise Distribution

Category Vs Author wise distribution of records in current science journal are clearly stated in Table 7.

Sl. No.	Category of Articles	0	1	2	3	4	5	6	7	8	9	10	Total
1	Academy News	2 (.0%)											2 (.0%)
2	Book Review	19 (.4%)	350(8.1%)	20 (.5%)	1(.0%)								390(9.0%)
3	Commentary	36 (.8%)	63(1.5%)	16(.4%)	3 (.1%)	5 (.1%)	1 (.0%)	1 (.0%)					125 (2.9%)
4	Correspondence	14 (.3%)	592(13.7%)	92(2.1%)	52(1.2%)	16(.4%)	5(.1%)	3(.1%)				1 (.0%)	775(17.9%)
5	Editorial		110(2.5%)	2 (.0%)									112 (2.6%)
6	General Article	7 (.2%)	81(1.9%)	48(1.1%)	34(.8%)	17(.4%)	7(.2%)	6(.1%)		1 (.0%)	1(.0%)		202 (4.7%)
7	General News	4 (.1%)											4 (.1%)
8	Historical Notes	1 (.0%)	12 (.3%)	5 (.1%)	1(.0%)								19 (.4%)
9	Hypothesis		1 (.0%)										1 (.0%)
10	In Conversation		3 (.1%)										3 (.1%)
11	Meeting Report		1 (.0%)										1 (.0%)
12	News	66 (1.5%)	215(5.0%)	35 (.8%)	19 (.4%)	3 (.1%)		1 (.0%)					339 (7.9%)
13	Opinion	2 (.0%)	15 (.3%)		3 (.1%)		1 (.0%)						21 (.5%)
14	Personal News	5 (.1%)	88(2.0%)	10 (.2%)	4 (.1%)								107 (2.5%)
15	Recollection		1 (.0%)										1 (.0%)
16	Research Account		6 (.1%)	6 (.1%)	3 (.1%)	4 (.1%)							19 (.4%)
17	Research Article	6 (.1%)	18 (.4%)	61 (1.4%)	51(1.2%)	61(1.4%)	39 (.9%)	11(.3%)	2 (.0%)	1(.0%)	1(.0%)		251 (5.8%)
18	Research Commn.	14 (.3%)	63(1.5%)	245 (5.7%)	235(5.4%)	225 (5.2%)	122 (2.8%)	49 (1.1%)	6 (.1%)	2 (.0%)	2 (.0%)		963(22.3%)
19	Research News	32 (.7%)	73(1.7%)	11 (.3%)	10 (.2%)	3 (.1%)							129 (3.0%)
20	Review Article	6 (.1%)	31 (.7%)	61(1.4%)	32 (.7%)	27(.6%)	5 (.1%)						162 (3.8%
21	Sci,Correspondence	14(.3%)	52(1.2%)	115 (2.7%)	111 (2.6%)	76 (1.8%)	44(1.0%)	9(.2%)	3(.1%)		1 (.0%)		425(9.8%)
22	Spl. Section	4 (.1%)	107(2.5%)	62(1.4%)	38 (.9%)	22(.5%)	10 (.2%)	8 (.2%)	1 (.0%)		2(.0%)		254 (5.9%)
23	Technical Notes		3 (.1%)	1 (.0%)	1(.0%)	3 (.1%)	4 (.1%)			1 (.0%)			13 (.3%)
Total		**232 (5.4%)**	**1885 (43.7%)**	**790 (18.3%)**	**598 (13.8%)**	**462 (10.7%)**	**238 (5.5%)**	**88 (2.0%)**	**12(.3 %)**	**5 (.1%)**	**7.(2%)**	**1(.0%)**	**4318 (100.0%)**

Table 7. Classification of Current Science - Author Wise

From the Table 7, it is observed that Research Communications (963) are the highest number of (22.3%) records, in which 245 are by two authors (5.7%), 235 (5.4%) by three authors, and 225 by four authors (5.2%). Nearly 90% of the collaborative research is in the form of Research Communications.

Correspondence articles are 775 (17.9%), from which 592 are Single authored (13.7%), 92 by Two authored (2.1%) and 52 by three authored (1.2%). Nearly 80% of the contributions in this category belongs to solo research.

Co-Authorship Index (CAI)

Table 8 indicates the pattern of co-authorship index by year wise .

Year	Single Authored Papers	Two Authored Papers	More than Two Authored Papers	Total
2002	395 (107)	143(93)	304 (95)	842
2003	395 (104)	160 (100)	319 (96)	874
2004	324 (89)	147 (96)	360 (114)	831
2005	444 (107)	184 (106)	321 (89)	949
2006	327 (91)	156 (104)	339(108)	822
Total	**1885 (43%)**	**790 (19%)**	**1643 (38%)**	**4318 100%)**

Table 8. Pattern of Co-authorship by year wise

Table 8 reveals the results of CAI and it is observed that the value of CAI for multi authored papers during 2002-2006 was highest (57%) and the value of CAI for single authored papers was (43%), which indicated that the collaborative research is increasing in the field of 'Current Science" Journal.

Collaborative coefficient authorship pattern

Table 9 indicates the collaborative coefficient of authorship pattern in Current science journals research output during 2002-2006.

Sl. No.	Year	Single Authored Papers	Two Authored Papers	More than Two Authored Papers	Total	Collaborative Coefficient
1	2002	43	145	843	1031	0.62
2	2003	10	42	265	317	0.62
3	2004	7	11	79	97	0.60
4	2005	5	16	53	74	0.59
5	2006	6	1	39	46	0.58
	Total	**71**	**215**	**1279**	**1875**	

Table 9. Collaborative Coefficient Authorship Pattern

From table 9, it is observed that, the Collaborative Coefficient ranges from 0.58% to 0.62% during 2002 to 2006.

Nature of Contributions

The contributions in the current science are authored by 9412 authors. Their origin are analysed based on parameters such as Indian and Foreign and the same is shown in Table 10 and Figure 10.

Sl. No.	Authors	Total
1	**Indian Authors**	**8712**
2	**Foreign Authors**	**700**
	Total	**9412**

Table 10. Contributed authors origin

It can be seen that the 93 % of the contributions were by Indian authors. It is evident that the foreign authors are also interested in contributing their articles in Indian Journals to some extent.

Further the distribution of author's origin by year wise and volume number wise have also been analysed and the same is shown in Table 11.

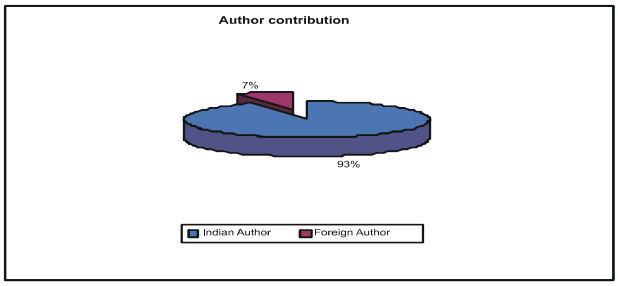


Fig. 10. Contributed Authors Origin

		2002		2003		2004		2005		2006		Total
Sl .No.	Authors	82	83	84	85	86	87	88	89	90	91	
1	Indian Author	766	782	787	864	1011	924	1023	820	795	940	8712
2	Foreign Author	66	87	46	60	45	52	75	111	74	84	700
	Total	832	869	833	924	1056	976	1098	931	869	1024	9412

Table 11. Authors origin year wise

From table 11 it can be seen that foreign author contributions are evenly distributed. It can further be observed that foreign authors' contribution is more during 2005 in volume 89 and it is followed by volume 83, 2003.

Citation Analysis

The citations provided by the authors in their articles are shown in Table 12.

Sl. No.	References	No. of Citations	Percentage
1	Books	10719	15.31
2	Journals	53921	77.05
3	Theses	508	0.72
4	Conferences	1243	1.77
5	Reports	2758	3.94
6	Websites	827	1.18
Total		**69976**	**100**

Table 12. Citations

It can be seen from the table 12 that there are 69976 citations provided over five years for the total contributions of 4318 in Current Science as shown from the table-1. Out of these citations 77% of citations i.e 53921 citations are from journals, followed by books (15.31%). Meager percentages (0.72%) have cited Theses. It is interesting to note that websites citation accounts to 1.18%.

In most of the journals, citations are provided only for research articles, whereas in Current Science, the references are provided for all types of contributions except "Editorial" (112), "Book Review" (390), "Academic News"(2) and "General News"(4). Out of the total contributions of 4318, these four categories accounted to 508. The remaining 3810 contributions contain citations.

On an average nearly 19 citations are provided per contribution. The citations are more on "Research articles", "Research Correspondence" and "Research Communications".

These citations are further grouped by year wise and volume wise and the same is shown in Table 13.

Sl. No.	References	2002		2003		2004		2005		2006		Total
		82	83	84	85	86	87	88	89	90	91	
1	Books	1183	765	1009	888	1457	1386	1035	1555	761	680	10719
2	Journals	4357	4675	5026	4803	5140	5243	8122	7433	4796	4326	53921
3	Theses	31	26	40	55	38	47	57	90	63	61	508
4	Conferences	81	89	52	80	105	92	159	260	111	214	1243
5	Reports	127	140	53	121	109	87	650	506	457	508	2758
6	Websites	32	42	41	28	98	105	80	190	102	109	827

Table 13. Citations Year Wise and Volume Wise

From Table 13, it can be seen that Journal citation trend is more during 2005 in volume 88 and 89.

Findings and Conclusion

Some interesting facts are found out from the analysis of Current Science Journal. A total of 4318 articles on Current Science Journals research output productivity during the period 2002-2006 have been identified from the table-1. The Research Communication articles have the highest number of records 963 (22.3%) in the study. and Correspondence articles are 775 (17.9%) records. It is observed from the table 5. In Volume Numberwise distribution, the volume 88 of current science journal has 486 (11.3%) records (Table 2). Among the Indian and the Foreign authors' contributions, the Indian authors' contributions (8712) are very high (Table 10). From the total 4318 contribution of authorwise distributions, the solo research contribution is 1885 (43.7%) from table 3. The research productivity of the subject study confirms the implications of Bradford Law of Scattering. The value of CAI for multi authored papers was the highest (57%) and the value of CAI for single authored papers was 43%, which indicated that the collaborative research is increasing in the field of "Current Science"

Journal .The Collaborative Co-efficient ranges from 0.58% to 0.62% during 2002 to 2006.

Normally Indian Journals are considered as low profile journals. But the study indicates that the journal "Current Science" has good contributions on science by Indian authors and also attracts foreign authors to publish their contributions. Hence it can be considered as core periodical in science which every library must possess in their collection.

Reference

1. Pritchard (Alan). Statistical Bibliography or Bibliometrics. Journal of Documentation, 1969; 25(4): 348-349.
2. Luukkonen (T). Bibliometrics and evaluation of research performance. Ann Med, 1990; 22: 145-150.
3. Leydesdorff (L) and Gauthier (E). The evaluation of national performance in selected priority areas using scientometric methods. Research Policy, 1996; 25: 421-450.
4. Sengupta (I.N). Bibliometrics and its applications. In Information Science and Libraries, Ed by Pushpa Dhyani. Atlantic, New Delhi, 1990; 256.
5. Anwar (M.A).and Abu Backer (A.B). Current Status of Science and Technology in the Muslim world. Scientometrics, 1997; 40(1): 23-44.
6. Bradford (S.C). Sources of Information on specific subjects. Engineering: An Illustrated Weekly Journal (London), 1934; 37: 85-86.
7. Garg (K. C) and Padhi (P). Scientometrics of laser research literature as viewed through the Journal of Current Laser Abstracts. Scientometrics, 1999; 45 (2): 251-268.
8. Ajiferuke (Isola), Burell (Q) and Tague (Jean). Collaborative coefficient: A single measure of the degree of collaboration in research. Scientometrics, 188; 14(5-6): 421-433.

Job Satisfaction among library professionals of Govind Ballabh Pant University of Agriculture & Technology Pantnagar (Uttrakhand) Library: a study

***Shilpi Verma, **K.L. Mahawar, ***Yogesh Chandra Narayan**

* Lecturer,** Reader, *** Ex-Student of M.L.I.Sc., Department of Library & Information Science, Babasaheb Bhimrao Ambedkar University (A Central University), Vidya Vihar, Rai-Bareli Road, Lucknow-226025 (U.P.)

Abstract

The paper deals with the job satisfaction of the library professionals of G.B. Pant university of Agriculture & Technology Library, Pantnagar. A survey on the topic was conducted and finding of the study are discussed in detail in the paper. The study throws light on the various factors involved in job satisfaction of Library professionals.

Key Word: Job Satisfaction

Introduction

The Management of Human Resource in the organization is the most vital aspect for success of any organization. A Well organized organization is always looking for well organized human resource. Healthy organizations always make sure that there should be strong sense of commitment, cooperation among all the employees. In order to make employees more satisfied, organization need to develop motivation at every level. Job satisfaction is a pleasurable or positive state resulting from the appraisal of one's job or area or work. Basically job satisfaction is the thing that how much your expectations from job have been achieved. As Libraries are service providing organization, the staff of the library plays important role in success of library effectiveness.

Scope of the Study: The Library Professionals of G.B. Pant University of Agriculture & Technology Library, Pantnagar (Uttarakhand) have been used to survey about the job satisfaction of library professionals.

Objectives of the study

The study was carried out keeping in view the several objectives: These objectives are as follows:

Reprints Requests: Dr. Shilpi Verma
Department of Library & Information Science
Babasaheb Bhimrao Ambedkar University
Vidya Vihar, Rai-Bareli Road
Lucknow-226025 (U.P.)

(Received on 24.4.09, accepted on 16.5.09)

* To study about the satisfaction level of library staff from their job.
* To know about the status of library staff and to check its impact on the users.
* To assess the inter-personal relationship among the personnel of library
* To study about the performance level of the personnel in library
* To study about the personnel role in decision making
* To find out the facilities provided to the library personnel Paul Spector's definition of job satisfaction "a cluster of evaluative feelings about the job" and identifies nine facets of job satisfaction that are measured by the JSS:$_{22}$.

1. Pay - amount and fairness or equity of salary
2. Promotion - opportunities and fairness of promotions
3. Supervision - fairness and competence at managerial tasks by one's supervisor
4. Benefits - insurance, vacation, and other fringe benefits
5. Contingent rewards - sense of respect, recognition, and appreciation
6. Operating procedures - policies, procedures, rules, perceived red tape
7. Coworkers - perceived competence and pleasantness of one's colleagues
8. Nature of work - enjoyment of the actual tasks themselves

9. Communication - sharing of information within the organization (verbally or in writing).

Willa M. Bruce and J. Walton, Blackburn explain, "Managers and workers alike pursue job satisfaction in the often naive belief that it leads directly and surely to that other workplace ideal - high performance. The fact is, however, that sometimes satisfied employees perform better and sometimes they do not."[2].

Methodology

A Questionnaire was designed for the study and it was distributed among library professionals of G.B. Pant University of Agriculture & Technology Library, Pantnagar Professionals. The analysis is done on the basis on filled questionnaire from library professionals of the Library.

Analysis of the Study

The analysis of the study is based on questionnaires distributed to the library professionals.

Table 1 Data Collection from the respondent

Respondent	Total Number of Questionnaire	
	Distributed	Received
Library Information Professionals	20	16
Total	20	16

Table-1 shows that out of 20 distributed questionnaires 16 library professionals have responded

Table 2 Library collection

S.N.	Types	Yes	No	Total vol.
1.	Books	Y	-	251700
2.	Periodicals	Y	-	490
3.	Newspapers	Y	-	15
4.	Reference books	Y	-	25500
5.	Government documents	Y	-	-
6.	Thesis	Y	-	16914
7.	Microforms	Y	-	6088
8.	Manuscripts	-	-	-
9.	Literature	Y	-	-
10.	Special collection	Y	-	13473
11.	Back volume	Y	-	62479
12.	Maps & other printed materials	Y	-	-
13.	Other CD/Maps	Y	-	5476

Table 2 shows the type of collection available in the library as on 31-03-2007. The major source of collection contains books, periodicals, reference books, thesis, microforms, special collection etc.

Table 3 Staff strength

S.N.	NAME OF POST	QUALIFICATION	PAY-SCALE	NUMBER
1.	Librarian	UGC	UGC(16400)	1
2.	Deputy Librarian	UGC	UGC(12000)	-
3.	Assistant Librarian	UGC	UGC(8000)	11
4.	Classifier/Asst. Lib.	B. Lib + Exp.	5500	1
5.	Cataloger/Asst.Lib.	B. Lib + Exp.	5500	1
6.	Binding staff	-	-	2
7.	Library Assistant	B. Lib + Exp.	4000-6000	13
8.	Book Attendant	Inter	3200-4900	10
9.	Janitor/Peon	Middle	2750-4450	10
10.	Other/Sweeper	-	2750-3540	13/2
11.	Total staff			65

Table 3 shows the staff strength of the library. As the staff strength seems good in the library but librarian is not satisfied with the strength of the staff. He thinks thatcomputer assistant and 4 library assistant are needed for improving the services.

Table 4 Fair amount of work/payment to them

S. No.	Respondent	Disagree Very Much	Disagree Moderately	Disagree Slightly	Agree Slightly	Agree Moderately	Agree Very Much
1	Library Information Professionals	4	1	0	1	6	4

Table 4 shows that 6 Library professionals are agreeing moderately for fair amount of work and payment made to them and 4 of them agree very much on this point, rather than 4 of them disagree very much on this point .

Table 5 Promotion in job

S. No.	Respondent	Disagree Very Much	Disagree Moderately	Disagree Slightly	Agree Slightly	Agree Moderately	Agree Very Much
1	Library Information Professionals	4	1	0	4	4	3

Table 5 shows that most of the library professionals are agree very much with there promotions in their job. Only few of them are not agree with their promotions.

Table 6 Satisfaction regarding benefit packages

S. No.	Respondent	Disagree Very Much	Disagree Moderately	Disagree Slightly	Agree Slightly	Agree Moderately	Agree Very Much
1	Library Information Professionals	3	2	2	5	2	2

Table-6 shows the mixed response of library professionals regarding benefit packages that they are getting from their jobs.

Table 7 Rules and procedure related job

S. No.	Respondent	Disagree Very Much	Disagree Moderately	Disagree Slightly	Agree Slightly	Agree Moderately	Agree Very Much
1	Library Information Professionals	2	2	1	6	5	0

Table 7 shows that Most of library professionals are agree with the rules and procedure related with their jobs. Only few of them don't agree with rules and procedure of the workplace where they are working.

Table 8 Benefits packages compare to other organization offers

S. No.	Respondent	Disagree Very Much	Disagree Moderately	Disagree Slightly	Agree Slightly	Agree Moderately	Agree Very Much
1	Library Information Professionals	0	1	1	3	6	4

Table 8 shows that Most of Library Professionals agree very much with the comparison of benefit packages with other organizations.

Table 9 Rewards for workers

S. No.	Respondent	Disagree Very Much	Disagree Moderately	Disagree Slightly	Agree Slightly	Agree Moderately	Agree Very Much
1	Library Information Professionals	2	1	0	5	5	1

Table 9 shows that Library professionals are agree very much with the rewards of the workers only some of them disagree very much with the rewards they are getting.

Table 10 Work load

S. No.	Respondent	Disagree Very Much	Disagree Moderately	Disagree Slightly	Agree Slightly	Agree Moderately	Agree Very Much
1	Library Information Professionals	0	1	1	2	4	7

The above table shows that Most of Library professionals are in a opinion that they are having too much work load, only few of them are not agree.

Table 11 Enjoyment with coworkers

S. No.	Respondent	Disagree Very Much	Disagree Moderately	Disagree Slightly	Agree Slightly	Agree Moderately	Agree Very Much
1	Library Information Professionals	0	1	0	4	5	6

The above table shows that Library professionals are enjoying work with their co-workers at excellent level. They enjoy the company of their co-workers.

Table 12 feeling a sense of pride at working

S. No.	Respondent	Disagree Very Much	Disagree Moderately	Disagree Slightly	Agree Slightly	Agree Moderately	Agree Very Much
1	Library Information Professionals	0	0	0	2	6	8

Table 12 shows that personnel are feeling pride working in their organization. Most of them agree very much for the same.

Table 13. satisfaction with the chances for salary increases

S. No.	Respondent	Disagree Very Much	Disagree Moderately	Disagree Slightly	Agree Slightly	Agree Moderately	Agree Very Much
1	Library Information Professionals	1	0	0	2	9	4

The above table shows that Most of the staff has high satisfaction level regarding their salary increase in the organization. Only some of the personnel are not satisfied with their salary increase.

Table 14. having too many paper work

S. No.	Respondent	Disagree Very Much	Disagree Moderately	Disagree Slightly	Agree Slightly	Agree Moderately	Agree Very Much
1	Library Information Professionals	1	0	2	7	1	4

The table shows that most of them agree slightly that they are having too many paper work. Only few of them agree very much on this aspect.

Table 15. Pickering and fighting at work place

S. No.	Respondent	Disagree Very Much	Disagree Moderately	Disagree Slightly	Agree Slightly	Agree Moderately	Agree Very Much
1	Library Information Professionals	3	1	3	1	2	0

The above table shows that most of the library professionals are very happy with their workplaces, as there is no fighting work.

Table 16. Satisfaction with job

S. No.	Respondent	Disagree Very Much	Disagree Moderately	Disagree Slightly	Agree Slightly	Agree Moderately	Agree Very Much
1	Library Information Professionals	0	0	1	6	6	3

In the university library GBPUA&T, 3 professionals are excellently satisfied with their job. 6 professionals are well satisfied and 6 are satisfied at the average level. Only 01 professional is satisfied below the average level with their job. Overall the satisfaction of the professionals of this library is very good.

Conclusion

The University Library of GBPUA&T, Pantnagar, (Uttrakhand) accept the importance of job satisfaction of the library professionals. The management of library is trying to satisfy their professionals by fulfilling their desire and expectations at very high level.The strength of university library staff is fair but the librarian is not satisfied with this strength for providing efficiency in the services of library.

University library provide all these facilities to the personnel or the staff, they frequently organize training program to improve more quality in services.

For improving the functioning of library and achieving the fully job satisfaction the library need to work more on Total Quality Management .whereas the job satisfaction level of most of the library professional is very high in the library.

Acknowledgement

The data was collected for M.L.I.Sc. dissertation work in the year June 2008 by Mr Yogesh.

References:

1. Paul E. Spector, Job Satisfaction: Application, Assessment, Cause and Consequence. Thousand Oaks, Calif.: Sage Publications, 1997; 57.
2 Willa M. Bruce and J. Walton Blackburn, Balancing Job Satisfaction & Performance: A Guide for Human Resource Professionals. Westport, Conn.: Quorum Books, 1992; 1.
3. www.gbpuat.ac.in/

INDIAN JOURNAL OF LIBRARY AND INFORMATION SCIENCE

Library Recommendation Form

If you would like to recommend this journal to your library, simply complete the form below and return it to us. Please type or print the information clearly. We will forward a sample copy to your library, along with this recommendation card.

Please send a sample copy to:
Name of Librarian _____

Library _____

Address of Library _____

Recommended by:

Your Name/ Title _____

Department _____

Address _____

Dear Librarian,
I would like to recommend that the library subscribe to the **Indian Journal of Library and Information Science**. I believe the major future uses of the journal for our library would be:

1. As useful information for members of my library & information science specialty.
2. As an excellent research aid.
3. As an invaluable student resource.
4. **I have a personal subscription and understand and appreciate the value an institutional subscription would mean to our staff.**
5. Other

Should the journal you're reading right now be a part of your University or institution's library? To have a free sample sent to your librarian, simply fill out and mail this today!

Stock Manager
Red Flower Publication Pvt. Ltd.
41/48 DSIDC, Pocket-II, Mayur Vihar Phase-I
P.O. Box No. 9108, Delhi-110 091 (India)
Tel: 91-11-65270068 & 48042168, Fax: 91-11-48042168
E-mail: redflowerppl@vsnl.net, Website: www.rfppl.com

Information services by SMS texting in an academic library: an experience at the Tarbiat Moallem University

Dariush Alimohammadi

MLIS, Lecturer, Department of Library and Information Studies, Faculty of Psychology and Education, Tarbiat Moallem University, No 49, Mofateh Ave, P.O.Box: 15614. Tehran, Iran

Abstract

Information and communication technologies have affected information services during the past years. This was led to major changes in tools and procedures used for such services. The current study focuses on the possibility of using Short Message Service (SMS) to serve users outside an academic library. To achieve this purpose, evolution of information services in introduced in brief, Short Message Service is defined and its application in libraries is considered. Then, a case of such an implementation in an academic library is presented. Findings show that SMS technology may not be currently a powerful communication channel in some of the Iranian universities. The service received unfavorable reaction on and off campus and the volume of text message questions remained very low. Results of this research can shed light on the current status of the problem and opens new discussions in this area of research.

Keywords: Information Services, Short Message Service (SMS), Academic Libraries, Tarbiat Moallem University, Iran

Introduction

Reference service is still one of the main missions of information profession. In terminology of Library and Information Science (LIS), the term "reference services" has been gradually replaced with "information services". A search in bibliographic databases reveals this replacement from about five decades ago. When we talk about an information service we are in fact referring to the new form of a traditional service, namely reference service. In recent years, changes in information and communication technologies (ICTs) have created new dimensions and opened new eras for information professionals. Apart from the effects of these technologies on LIS education, they have also had many impacts on the profession. Various sections of libraries and different parts of library processes including reference services have been affected by technological waves. To exemplify the current discussion, I have to remember you a usual problem in libraries before they have been involved in digital technologies and procedures.

You can remember the day when there was no mechanism for serving patrons remotely. The user had to refer to the library physically. Sometimes, s/he could search, find, retrieve and use the information resources. But in many cases, dissatisfaction was the outcome of the user request. Following were some of the possible causes:

1. The library was closed;
2. The library was open, but the requested item has had not been acquired;
3. The library was open and the item has had been acquired, but it was not accessible because of borrowing by another member;
4. The library was open and the requested item has had been acquired, but it was not available because it has had been sent for binding;
5. The library was open and the requested item has had been acquired, but it was missed; for example because of carrying away by theft; and
6. So on.

We all, have experienced such situations. What did you do when one of these situations were happened?

Reprints Requests: Dariush Alimohammadi
MLIS, Lecturer, Department of Library and Information Studies, Faculty of Psychology and Education, Tarbiat Moallem University, No 49, Mofateh Ave, P.O.Box: 15614. Tehran, Iran

(Received on 18.5.09, accepted on 22.8.09)

1. You referred again in work hours;
2. You asked the librarian to acquire your requested item. It was just acquired whereas the collection development policy allowed the librarian to acquire such an item;
3. You reserved the item to make an opportunity for yourself to get it when it was rejected to the library;
4. You waited till the requested item came back of the binding;
5. You asked the librarian to reacquire the item; and
6. Any other solution.

What did you do if no one of these solutions replied? You wished at least to have access to the catalog records consisting of bibliographic information and monitoring the availability and accessibility status remotely. Isn't it? You said:

Only if I could
How wonderful it would

The abovementioned scenario has happened for many times. Wasting time and energy was not an unusual problem in those days. Unfortunately, it is still an acceptable situation for a number of users around the world. To tackle this shortcoming and to decrease the failure ratio, information professionals tried to apply new information and communication technologies. Designing Online Public Access Catalogs (OPACs) and uploading them on the web sites of libraries and information centers were just a part of the efforts regarding the making holdings accessible for those who are far away from the library. What the user should do if there is no OPAC? Is there an alternative solution? Yes, there is. Another technology that is being used to solve the problem is Instant Messaging (IM). IM is a truly new technology applied for connecting peoples digitally disconnected from each other physically. There is an important and popular evidence for this technology, i.e. chat. These are wired channels that mainly do the job on the Web. Beside wired channels wireless technology can be manipulated for connecting peoples. Currently, the most used wireless technology is Short Message Service (SMS). In this research, we focus on using SMS to serve users outside an academic library.

What is the Short Message Service (SMS)?

Short Message Service (SMS) is a communication protocol allowing the interchange of short text messages between mobile telephone devices. SMS text messaging is the most widely used data application on the planet, with 2.4 billion active users, or 74 percent of all mobile phone subscribers sending and receiving text messages on their phones (Short Message Service, 2009). A researcher claims that in 2005, about 5 billion text messages were sent each month in the U.S. In January 2006, cell phone users in the U.K. also sent 5 billion text messages in a single month (Farkas, 2007). Another study shows that in the United States, 700 million text messages are sent each year (Hill and Hill and Sherman, 2007) and this is just the activity of 35 percent of U.S. mobile phone subscribers (Buczynski, 2008). According to the Mobile Data Association (MDA), the total number of chargeable person-to-person text messages sent across the four UK GSM networks reached 1.73 billion during September 2003, marking the high point of a steady and continuous rise since the MDA began collating data on behalf of the UK network operators in 1998 (Reid and Reid, 2004). In Australia, over five billion SMS messages were sent in the period 2003-2004, and that figure jumped to over 6.7 billion in 2004-2005 (Herman, 2007). For China Mobile (HK), the usage volume of the SMS has increased to 172.6 million messages in 2004 (Yan and Gong and Thong, 2006). 74 percent of the subscribers in Malaysia send at least one SMS a day and as many as 31.7 percent are reported sending out more than 5 SMS messages in a day on average (Karim and Darus and Hussin, 2006). In Iran, about 60 million text messages are sent and received every day (Iranians became pioneers in sending SMS, 2008).

The SMS technology has facilitated the development and growth of text messaging. The connection between the phenomenon of text messaging and the underlying technology is so great that in parts of the world the term "SMS" is used as a synonym for a text message or the act of sending a text message, even when a different protocol is used (Short Message Service, 2009). SMS text messages are usually sent from one mobile phone to another. Although the

method varies slightly depending on the model of the phone, generally an individual composes a text message using the keys on his/her phone, then selects a phone number the message is to be sent to, and sends the message. Messages can be up to 160 characters in length, including spaces. Most phone vendors allow concatenation of phone messages. This means that messages over 160 characters are joined together - often enabling messages up to 740 characters to be sent, received and read either as one long message, or as a separate series of 160 character segments (Giles and Grey-Smith, 2005).

Using SMS in libraries

For many years, libraries have replied queries in person, via telephone conversations, and over the last decade through the use of email and online Web-based forms. In an attempt to meet client needs, libraries are becoming more flexible in the way they deliver services. SMS as a new communication channel appears to be relatively inexpensive to set up and maintain in terms of costs and staffing resources. SMS is a simple, quick and un-demanding technology to adopt and is relatively easy to integrate. Currently, libraries are looking for ways to communicate with their users in such an effective manner.

Nowadays, by texting mobile phone number clients can receive information on demand, such as sports scores, stock prices, exchange rates, and weather reports. Library as a central organ in supplying information to the community is also expected to face the same service transformation as experienced by various other services. Many library services are potential targets for this different mode of delivery and libraries could make effective use of such technology. SMS services are ideal for simple questions that can be answered with short responses (Kroski, 2009). In general, adopting such a cutting edge service is an easy way to impress clients at minimum cost. Today, the convergence of mobile phones presents libraries with a real opportunity to deploy wireless phone technology to manage their operations for the following services:

1. checking records of books borrowed;
2. getting alerts on overdue books;
3. getting alerts on outstanding fines;
4. receiving reminders to return library items that will be due soon;
5. renewing library items;
6. reference enquiry services;
7. receiving text alerts to new resources on the library web site;
8. getting alerts on library event information;
9. getting information from the library OPAC/database; and
10. Contacting librarian for help.

In the past few years, text messaging reference services have been initiated in libraries in Australia, Japan, Malaysia, Norway, United Kingdom and the United States. In other countries, a number of libraries may currently be interested in this service. They may enquire that have ability to provide a meaningful response in so few characters. But, it must be kept in mind that there are 3 inherent problems with SMS:

1. There is no reference interview process;
2. Clients have a limited number of characters to express their query; and
3. Library staff has a limited number of characters in which to respond.

Because of this reason, an SMS query service may not be appropriate for every library. Three steps should be left out before involving in such a program including:

1. Evaluate the needs of your clients and reply an important question; do they take advantage of SMS services?

2. If so, which specifications should have the selected system? Look for a system that suits your needs. Different libraries have different requirements, and SMS services can be expanded to deal with these requirements. Just for this reason, keep an eye on new developments. As an explanation, remember that SMS technology can be manipulated in a library in two ways. One as reported in some researches is that the user sends request via a mobile phone number and the library replies through a web-based form (Giles and Grey-

Smith, 2005; Herman, 2007; Hill and Hill and Sherman, 2007). Another solution is that the user sends request via a mobile phone number and the library replies through the same channel. In this study, the second approach has been followed.

3. When you replied these two important questions you should take into account the staffing issue. Staffing such a service may be considerably easier than staffing the virtual reference desk, primarily because SMS messaging is asynchronous, and therefore less demanding on reference desk staff. Minimal staff training is required. Staffs appear to enjoy the novelty and challenge of responding to queries, and ensuring the answer is within the limited range of characters.

Literature review

Few studies have yet been done on SMS texting. In fact, it is still a new branch of LIS research. Nevertheless, having attention to this limited number of projects would be of benefit for every library intends providing mobile information services to its community of users. Here, six related studies are reviewed chronologically.

1. N.S.A. Karim, S.H. Darus, and R. Hussin (2006) with the aim of exploring the utilization of mobile phone services in the educational environment, exploring the nature of mobile phone use among university students, and investigating the perception of university students on mobile phone uses in library and information services surveyed 206 undergraduate students from two academic faculties in a Malaysian public university. The respondents' perceptions on the application of wireless hand services in the context of library and information services were found to be very positive. A high majority of the respondents indicated their willingness to become the users of such services if offered.

2. S. Herman (2007) investigated providing a short message service (SMS) for students to text the library for information and its possibility to be an alternative to e-mail and live chat services. Findings showed that implementing SMS reference allowed the library the opportunity to access students via a familiar accessible service. SMS a Librarian has become part of the Southbank Institute Library Ask a Librarian service, which includes e-mail, phone and live chat access for students and staff. By adding this new technology to the reference services, users are now able to send questions to and receive answers from the Southbank librarians by using the text messaging facility on their mobile phones.

3. J.B. Hill, C.M. Hill, and D. Sherman (2007) initiated Text a Librarian service at the Sims Memorial Library at Southeastern Louisiana University. The service enabled Southeastern students, faculty, and staff to use the text message feature of their cell phones to send questions to and receive answers from the library. Librarians at Sims used a dedicated text messaging telephone number and "e-mail/SMS" conversion software, provided by Altarama Systems and Services, to send and receive text messages.

4. S.K. Profit (2008) in order to gather data about the software and equipment used and their costs, staffing, hours of operation, transaction turnaround time, the length of time the service has been offered, and patrons' use of the service surveyed eight libraries in an American college through a questionnaire. Six of the eight libraries chosen for this study responded. Only five of the six respondents are actually using SMS. Findings showed that among the five respondents that are currently using text messaging to deliver reference assistance, there are a variety of ways and means employed for doing so. Convertor software and mobile phone are two communication tools.

5. D. Tao et al. (2009) reviewed the Mobile Reference Service at the School of Public Health at Saint Louis University. Such a service was started because of a great distance between the school's location and library users that diminishes the ease of access to direct reference services for public health users. To bridge the gap, the library developed the Mobile Reference Service to deliver onsite information assistance with regular office hours each week. Between September 2006 and April 2007, a total of 57 in-depth reference transactions took place over 25 weeks, averaging 2 transactions per week in a 2-hour period. Overall reference transactions from public health users went up 28%, while

liaison contacts with public health users doubled compared to the same period the year before. Findings showed that the Mobile Reference Service program has improved library support for research and scholarship, cultivated and strengthened liaison relationships, and enhanced marketing and delivery of library resources and services to the Saint Louis University School of Public Health.

6. Goh and Liew (2009) investigated potential users' cognitive beliefs of and intention to use a proposed SMS-based library catalogue system. The motivation for this research was the growing popularity of mobile information systems and the need to explore it. In this research, a review of literature on SMS-based services and applications within the library sector was followed by a prototyping of an SMS-based library catalogue system and the development of a number of hypotheses using the Technology Acceptance Model (TAM) as the base framework. The study investigated potential users' cognitive beliefs and intention to use the systems as well as the effect of self-efficacy on these. A survey questionnaire was distributed to a purposeful and convenient sample of university students who were also users of the university library online public access catalogue. The results of the data analysis showed that self efficacy (SE) has a positive impact on the perceived ease of use (PEOU) and a negative impact on perceived usefulness (PU). The findings also showed that SE does not have direct impact on intention to use (IU). The overall model explained 55.2% of behavior intention in using the proposed system.

Purpose of the research

At present, almost every student studying in a tertiary institution owns a mobile phone. With many institutions aiming to position themselves at the forefront of tertiary education in the twenty-first century, it is inevitable that mobile solutions will be the best access point in providing convenience to the modern campus. This can be done by extending the service delivery channels from PC to mobile devices via SMS. Although library related services via a mobile phone have not yet been implemented in the Iranian higher education system, such services are inevitable in the near future.

Despite the various information services provided through mobile phone services, assessments need to be made in order to understand the needs and requirements of the mobile phone users. This study seeks to understand the nature of mobile phone use among respondents at an Iranian higher education institute; i.e. the Faculty of Psychology and Education at the Tarbiat Moallem University.

The research questions

There are four research questions as follows

1. How many mobile phone subscribers are there among staff and students of the Faculty of Psychology and Education?

2. To which operators they have subscription?

3. How many subscribers send and receive SMS?

4. Is the SMS texting a suitable channel for providing reference services at the Faculty of Psychology and Education?

Research method

This study has adopted two research methods simultaneously. In order to extract some reports about SMS texting, literature of the subject was reviewed. Thus, in this research documentary method was used. Also, the case study method was used to determine the status of SMS texting at the Tarbiat Moallem University.

Research population

Staff and students of the Faculty of Psychology and Education at the Tarbiat Moallem University (totally 1018 persons) comprised our statistical society. Their combination is provided respectively as follows:

* 34 faculty members including 5 Full Professors, 3 Associate Professors, 23 Assistant Professors, and 3 Lecturers.

* 984 students including 28 Ph.D. students, 156 Master students, and 800 undergraduate students.

Findings and discussion

The library of the Faculty of Psychology and Education at this university was chosen not to use SMS messages to alert clients of items on hold, or send overdue notices, but decided instead to focus on SMS as a medium to receive

clients' queries. This library was opened in 2002 and currently serves using an MLIS and several volunteer LIS students.

The research was conducted from 2009-02-11 to 2009-05-11. To be informed of the quantitative and qualitative status of the mobile phone subscribers among users teaching and studying at the Faculty, a pilot study was conducted before the starting of SMS texting. The survey was accomplished through the face to face interview at the classrooms in 2009-02-08 (Sunday, the day in which the greatest number of classes held at the faculty) and its results were generalized to the whole society. We had three research questions as follows:

1. Do you subscribe an operator?, if so
2. Which one of the operators do you subscribe? and
3. Do you use SMS texting?

These three questions were asked to get information on the following areas:

1. The number of subscribers and their percentage to the total number of the statistical society;
2. The number of subscribers of each operator and their percentage to the total number of the subscribers; and
3. The number of subscribers sending and receiving SMS and their percentage to the total number of the subscribers.

Findings of this phase were then compared to the results obtained from the analysis of the SMSs sent and received via the library's mobile phone. The survey showed that the majority of the users (94 percent) subscribe an operator, i.e. have a mobile phone (Figure 1).

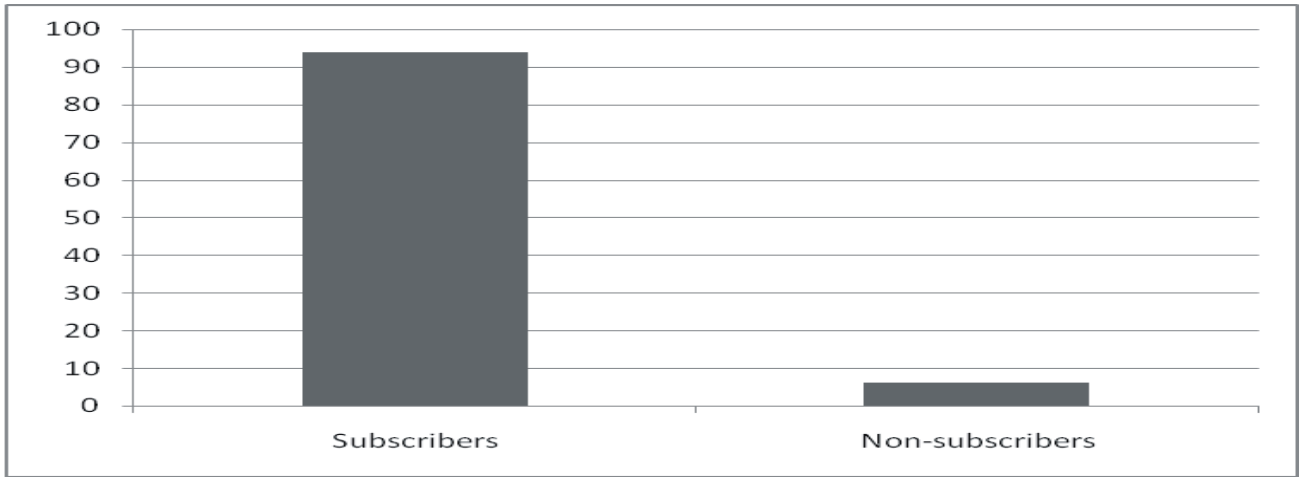


Figure 1. The percentage of mobile phone subscribers

In response to the second question (Figure 2), it was found that the Ministry of ICT has more subscribers (51 percent) than other operators and stands at the top of the list. Irancell and Hamrahe Avval have second (33 percent) and third (15 percent) ranks and the Talia is at the bottom of the list (about 1 percent).

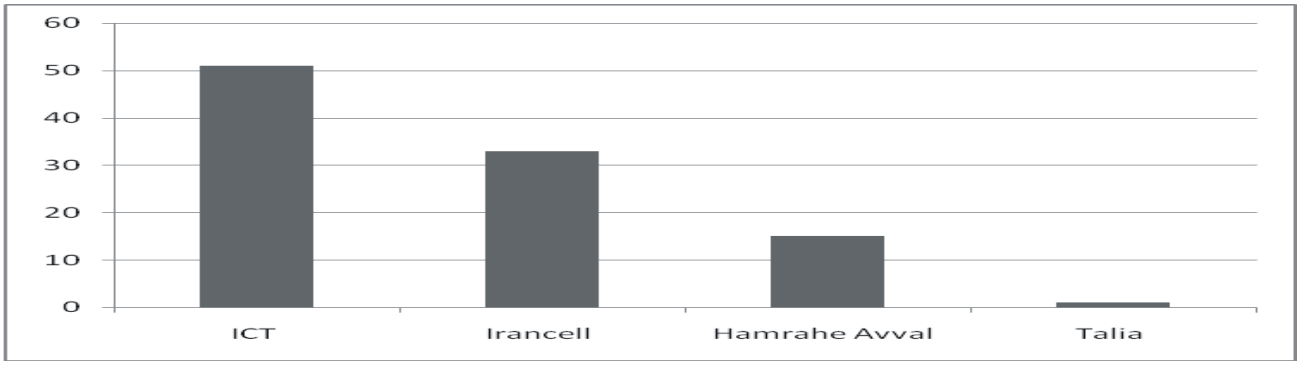


Figure 2. The percentage of subscribers of each operator

It is because students are the majority of users; those who have not yet been employed and hence do not have regular income. At the one hand, they are financially supported by their parents and because of this reason some of them subscribe a post-charge operator, i.e. Ministry of ICT. At the other hand, a large number of them prefer to subscribe a pre-charge system through which managing contacts to save money would be possible. Being first, second and the third among Ministry of ICT, Irancell, and Hamrahe Avval may be affected by their primary subscription cost and later charge prices, their advertisements and also technical supports that let them to be more popular than Talia among young persons.

For the third question, we gained the response we predicted. All of the subscribers (100 percent) used SMS texting to have asynchronous communication with other peoples. Of course, the aims were different. There was a wide range of various purposes including getting information about academic affairs, setting meetings with friends, sending jokes, and so on.

After gaining quantitative and qualitative data on the status of the mobile phone subscribers among users teaching and studying at the Faculty, SMS texting was provided for a period of three months. To inform users about the project, an announcement was distributed through the faculty. In the announcement, it was emphasized that users can ask the librarian for four purposes including:

1. To search an author, a subject, or a title;
2. To renew item/s;
3. To reserve item/s; and
4. To be referred to other libraries.

As figure 3 illustrates, only 26 subscribers (2.5 percent) used the service.

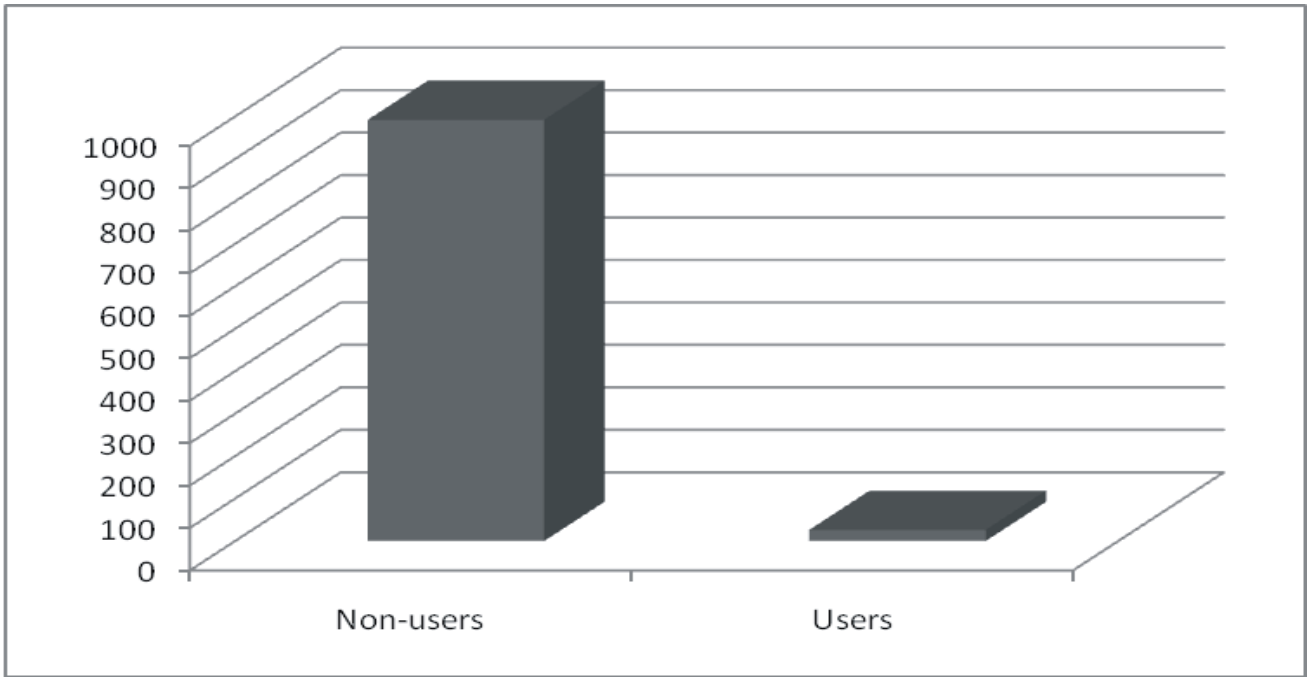


Figure 3. The number of subscribers used the system

Among this small group of users, 13 persons were Irancell subscribers, 12 persons were ICT subscribers and 1 person was *Hamrahe Avval* subscriber (Figure 4).

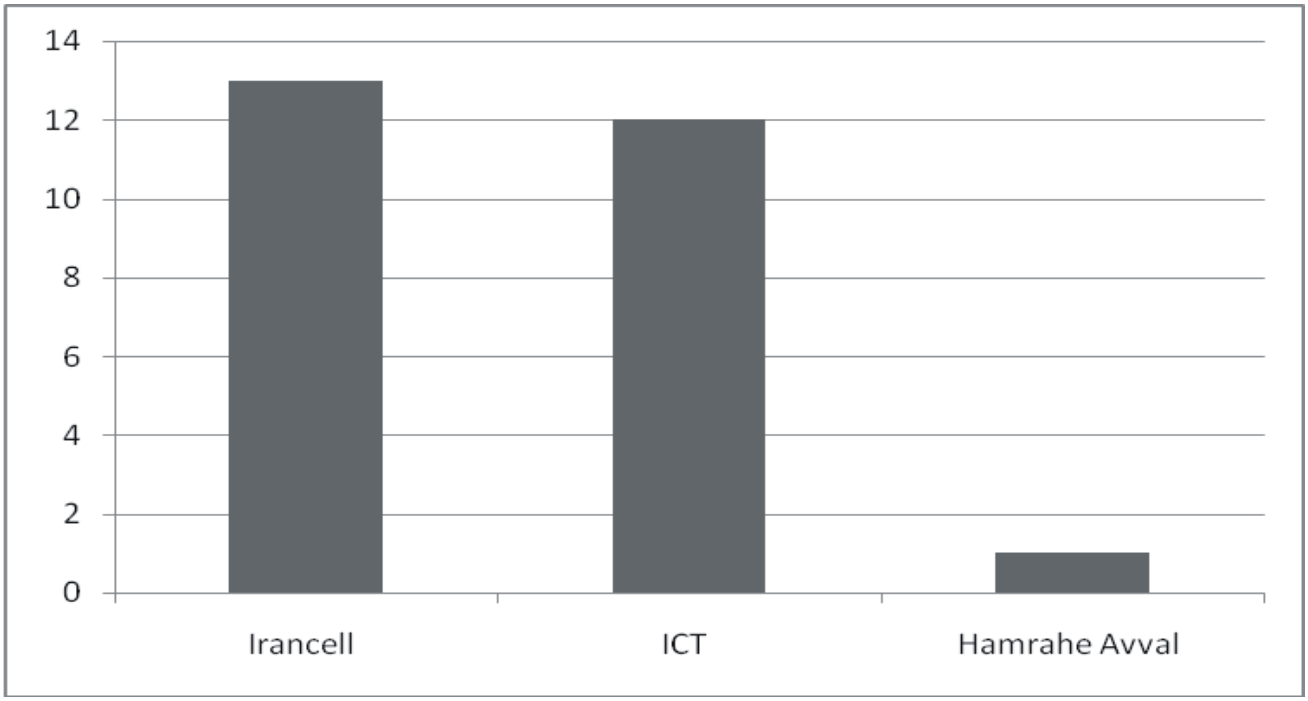


Figure 4. Ranking of users according to the operator they subscribe

Users of the service are not sorted according to their primary ranking (Figure 2). ICT has been replaced by Irancell; and no subscriber of the Talia SMSed the library. The change in ranking of the first two operators may be affected by the social and economic classes of the subscribers of each operator. We can, for example, express this assumption that the students from the low classes of the society are commonly more interested in academic achievements and changing their social classes. For this reason, there may be a difference between rich and poor students in mobile phone uses. Those who are more interested in changing the social class are more interested in academic use of their mobile phones. In other words, the more motivation for class changes, the more academic use of properties. In this interpretation, ICT subscribers are representatives of rich students and Irancell subscribers are representatives of poor students. However, such an interpretation should be tested in another research.

Conclusion

This experience has shown that SMS technology may not be a powerful communication channel in a number of Iranian universities. There were interested students at the Tarbiat Moallem University. Karim, Darus, and Hussin (2006) found such willingness among students of a Malaysian public university. But, findings of this research do not support findings of Herman (2007), Hill, Hill, and Sherman (2007), Profit (2008) and Tao et al. (2009). The service has received unfavorable reaction on and off campus. For this reason, the volume of text message questions remained very low. Perhaps use for text messaging reference on a college campus will always be low due to the nature of the technology itself. This means that text messages are limited to 160 characters per message, restricting utility to short reference communications. Another possible reason for low use may be the fact that the service is new. The third reason may be low advertisement on this new service through the campus. The fourth reason is the record of the library. The library of the faculty is too young. Apart from this characteristic, there is not a good collection at the library and the existed collection has not yet been completely organized. Even the organized section of the collection has not yet been borrowed and consulted, because of the limitations in space and manpower. Library software is another major issue. There is a MS-DOS based version of the library software that is unable to manage transactions well.

Nevertheless, the use of mobile phones among

users of the system might have lead to the positive opinion and perception on its application in the library related services. This application is also seen as beneficial by the users perhaps due to the fact that they are visiting the library less frequently, and only when needed. On the other hand, this decreased in visits should not be seen as a threat by the librarians, but instead as an opportunity for them to be more visible to the users. Such services, will allow the libraries to reach a wider range of user groups, giving them more opportunities for better promotion. Librarians need to figure out how to best serve the users using this new mode of communication. The results of this study may provide the necessary information on what the users really want. Thus, this study has perhaps given a clear signal for libraries to begin participating in this kind of services. Libraries should not wait too long to work with the respective authorities in making the mobile phone services a reality.

Currently, services such as searching, renewing, reserving, and referring based on the SMS technology should be made a priority in the context of the Iranian academic library services. Such services should also be provided by other types of libraries such as the public libraries, the corporate information centers and the national library for better access. More investigations need to be done on the extension of various library services that can be provided through wireless communication technologies.

Acknowledgement

I am indebted to Mrs. Mahshid Sajjadi who studied the article and pointed out some valuable remarks. Miss. Marjan Bidakhavidi and Miss. Zari Mirzaee Ramandi (LIS students) should be acknowledged for participation in the project as academic librarians. Special thanks for my dear colleague Dr. Hamid Reza Jamali Mahmuei, Assistant Professor in the Department of Library and Information Studies at the Tarbiat Moallem University who let our students participate in the project and also Mr. Sarparast, the Director of the Library at the Faculty of Psychology and Education of the Tarbiat Moallem University who let us implement and test the system at the library.

Appendix 1

Currently, there are four mobile phone operators in Iran including Hamrahe Avval, Irancell, Ministry of ICT, and Talia. Table 1 shows the specifications of these operators.

No	Name of the Operator	Code	Charging System	Ownership Status
1	Hamrahe Avval	0919	Pre-charge	Governmental
2	Irancell	0935-7	Pre-charge	Private
3	Ministry of ICT	0912-8	Post-charge	Governmental
4	Talia	0932	Pre-charge	Private

Table 1. Specifications of the Iranian mobile phone operators

References

1. Iranians became pioneers in sending SMS. Available at: http://www.jamejamonline.ir/newstext.aspx?newsnum=100952972299. accessed 21, July 2009.
2. Short Message Service (SMS). Available at: http://en.wikipedia.org/wiki/Short_Message_Service. accessed 21, July 2009.
3. Buczynski, J.A. Libraries Begin to Engage Their Menacing Mobile Phone Hordes Without Shhhhh!. Internet Reference Services Quarterly, 2008; 13 (2/3): 261-269.
4. Farkas, M.G. Social Software in Libraries: Building Collaboration, Communication, and Community Online. Medford: Information Today: 2007.
5. Giles, N. and Grey-Smith, S. "TXTING LIBRARIANS@CURTIN. Presented in Information Online conference, Sydney. Available at: http://conferences.alia.org.au/online2005/papers/a12.pdf. accessed 21, July 2009.
6. Goh, T. T. and Liew, C. L. SMS-based Library Catalogue System: A Preliminary Investigation of User Acceptance. The Electronic Library, 2009; 27 (3): 394-408.
7. Herman, S. SMS reference: keeping up with your clients. The Electronic Library, 2007; 25 (4): 401-408.
8. Hill, J.B. and Hill, C.M. and Sherman, D. Text Messaging in an Academic Library: Integrating SMS into Digital Reference. Reference Librarian,

2007; 47 (1): 17-29.
9. Karim, N.S.A. and Darus, S.H. and Hussin, R. Mobile Phone Applications in Academic Library Services: A Students' Feedback Survey. Campus-Wide Information Systems, 2006; 23 (1): 35-51.
10. Kroski, E. On the Move with the Mobile Web: Libraries and Mobile Technologies. Available at: http://eprints.rclis.org/15024/1/mobile_web_ltr.pdf. accessed 21. July 2009.
11. Profit, S.K. Text Messaging at Reference: A Preliminary Survey. The Reference Librarian, 2008; 49 (2): 129-134.
12. Reid, F.J.M. and Reid, D.J. Text appeal: the psychology of SMS texting and its implications for the design of mobile phone interfaces. Campus-Wide Information Systems, 2004; 21 (5): 196-200.
13. Tao, D. et al. The Mobile Reference Service a case study of an onsite reference service program at the school of public health. Journal of Medical Library Association, 2009; 97 (1): 34-40.
14. Yan, X. and Gong, M. and Thong, J.Y.L. Two tales of one service: user acceptance of short message service (SMS) in Hong Kong and China. Info, 2006; 8 (1): 16-28.

Library consortia: a boon for libraries

***S.S.Joshi, *Vinod Kumar**

*Assistant Librarian, Guru Jambheshwar University of Science and Technology, Hisar -125001

Abstract

The increase in prices of the electronic resources and scarcity of resources has forced the libraries to explore the alternative means of subscription. The revolution in information technology in past few years has surpassed the ability of individuals and institutions to cope with it. Expectations of the users from the libraries have also increased rapidly. The phenomenon of consortia has become very important in the last few years .The paper discusses the meaning, need, advantages, disadvantages, consortia models and various initiative in India.

Key words: Consortia, Indest, Csir ,Infonet, Forsa, Helinet, Icmr,

Historic overview

"The concept of e-consortium was founded in February 1999 by Rick Craft and a group of 15 prominent service providers who thought the value of collaboration for the benefit of their clients. It started as a "virtual network" allowing end users to utilize the e-consortium website to learn more about these companies and how they can fulfill their needs.

The group linked their clients with each other from their own network .The clients become aware of each others' business and saved their time and finance by sharing information . By February 2001, e-consortium had the necessary infrastructure to provide marketing services to its provider network. This enabled a new line of consultative services to be offered directly from the e-consortium offices to individual growing and emerging companies. These services were designed to understand both the nature and finance of client companies, by understanding the issues on both sides - the services needed and the provider's service offering, e-consortium serves as a resource for both parties a win-win relationship".

(Available at http://www.e-consortium.net/aboutus_bottom.html)

Introduction

It is well known fact that every library cannot procure all the information which is desired by its users. They cannot satisfy the all informational thrust of their users. This happens due to the lack of resources available with the libraries. To sort out this problem concept of library cooperation came into existence. In present scenario the term of cooperation has changed into library consortia. Consortia can be defined as the cooperation and coordination among the group of libraries to achieve certain combined objectives. Consortia are commonly formed to increase the purchasing power of the collaborating institutions to expand the resource availability and to offer automated services. India is a developing economy which always faces lack of resources i.e. infrastructure, skilled man power and finance. But it does not mean that libraries cannot satisfy the informational needs of their users. Answer to the problem is resource sharing. In current scenario the term which is widely in use for resource sharing is library consortium. The term has international recognition. Due to the revolution in the field of information technology, the expectations of users from the library have increased and this compelled the libraries to share their resources to cater to the informational thrust of the users. Here comes the concept of library consortium. Consortium is a mutual agreement between various agencies/libraries which agree together to cooperate with each other to achieve certain common objectives.

Definitions

"The term consortium is derived from the field of economics and refers to the grouping together of different independent companies in order to

Reprints Requests: Dr. S.S.Joshi
Assistant Librarians, Guru Jambheshwar University of Science and Technology
Hisar -125001

(Received on 14.04.09, Accepted on 27.8.09)

bring together financial or material resources under a single managing body for the joint performance of specific operations. A consortium may comprise an informal group with reciprocal agreement between partners or it may constitute a separate legal entity in itself. A purchasing group may be considered as an example on an informal consortium." (Ghosh,M, Biswas,S.C. and Jeevan V.K.J 2006).

"A consortium is an association of two or more individuals, companies, organizations or governments (or any combination of these entities) with the objective of participating in a common activity or pooling their resources for achieving a common goal. Consortium is a Latin word, meaning 'partnership, association or society' and derives from consors 'partner', itself from con- 'together' and sors 'fate', meaning owner of means or comrade."(Available at en.wikipedia.org/wiki/Consortia)

According to online free dictionary "An association or a combination, as of businesses, financial institutions, or investors, for the purpose of engaging in a joint venture.'' (available at http:// www.thefreedictionary.com/consortia)

According to Webster's new International Dictionary "Library consortia is an agreement, combination, or group formed to undertake and enterprise beyond the resources of any one member"

Need and goals of consortia

Day by day increasing cost of the journals, information explosion and advancement in technology has encouraged the society in sharing of their scarce resources in the area of online search of e- resources such as e-journals. Due to the development in Informational technology publisher are providing their journals online. Consortia have opened the doors for healthy growth for publishers and libraries. This is only due to the consortia that the libraries are able to subscribe electronic information on reduced rates.

Following are the goals of consortium

To organize the shared programs for the development of research and educational promotion...

To serve as a clearing house for the exchange of information

To sort out the problems related to education and research.

To work for the overall development of education and research

Conduct cooperative programs to make the people aware of the benefits of consortia (Katsirikou, Anthi, 2003).

Advantages of consortia

Following are the advantages of consortia:

Saving of financial resources

Attraction to foreign investors

Possibility to achieve Objectives

It is helpful to provide better services

Reduction in cost

Widens access of e-resources

Sharing of resources

Relations /Interaction between the libraries

Smaller libraries are benefited

Possibility of worldwide effect (Moghaddam & Talwar 2009)

Disadvantages of consortia

Duplication of efforts

Wastage of resources

Confusion for libraries /publishers

Reduction in purchase power (Moghaddam & Talwar 2009)

Indian scenario

Formation of library consortia is the need of the hour for the purpose of sharing of information. In India many consortia has been formed in different areas to share information. Following are the some of the renowned consortia working in India.

Indian National Digital Library of Engineering, Science and Technology (INDEST)

INDEST is a consortium setup under the ministry of MHRD which subscribes electronic resources/databases for 38 leading engineering and technological institutions in India including Aims ,NITs,IISc etc.. The MHRD is providing

funds for the access of electronic resources subscribed by the consortium of these core members. The consortium has its headquarter at IIT, Delhi. Presently all the resources can be accessed directly from the website of the publisher. It is only due to this consortium that best offers are provided to the libraries by the publishers at lowest cost. Full text e- resources subscribed by the INDEST includes the publications of following publishers.

ACM Digital Library	http://portal.acm.org/portal.cfm
ASCE Journals	http://scitation.aip.org/publications/myBrowsePub.jsp
ASME Journals (+AMR)	http://scitation.aip.org/publications/myBrowsePub.jsp
ASTM Standards & Digital Library	Standards: http://enterprise.astm.org Journals: http://journalsip.astm.org/
Capitaline	http://www.capitaline.com/intranet/INDEST_consortium.htm
CRIS INFAC Ind. Information	http://www.crisil.com/
Digital Engineering Library (DEL)	http://www.digitalengineringlibrary.com/
EBSCO Databases	http://search.epnet.com/
Elsevier's Science Direct	http://www.sciencedirect.com/
Emerald Full-text	http://www.emeraldinsight.com/
Emerald Management Xtra	http://www.emeraldinsight.com/
Engineering Science Data Unit (ESDU)	http://www.esdu.com/
Euromonitor (GMID)	http://www.portal.euromonitor.com/portal/server.pt
IEEE / IEE Electronic Library Online (IEL)	http://ieeexplore.ieee.org/
Indian Standards	Intranet Version
INSIGHT	http://www.insight.asiancerc.com/
Nature	http://www.nature.com/
ProQuest Science (formerly ASTP)	http://www.il.proquest.com/pqdauto
Springer Link	http://www.springerlink.com/
IET Digital Library	http://www.ietdl.org/
Emerald E-books (Business Mgmt & Economics Collection)	http://www.emeraldinsight.com/
COMPENDEX on EI Village	http://www.engineeringvillage2.org
INSPEC on EI Village	http://www.engineeringvillage2.org
J-Gate Custom Content for Consortia (JCCC)	http://jccc-indest.informindia.co.in/
Math SciNet	http://www.ams.org/mathscinet
SciFinder Scholar	http://www.cas.org/SCIFINDER/SCHOLAR/index.html (access through a Z39.50 Client to be installed on e PC)
Web of Science	http://isiknowledge.com
About Open Access	oaeresources.html
Open Access E-Journals	oaeresources.html#ejournals
Open Access Directories	oaeresources.html#directories
IRs@member Institutions	oaeresources.html#IRs

(Available at http://paniit.iitd.ac.in/indest/)

Council of Scientific and Industrial Research. (CSIR)

National Institute of Science Communication and Information Resources formerly INSDOC and other laboratories of CSIR formed a consortia named as consortium for CSIR for accessing e-journals. This consortium is providing access to online journals of ACS, AIP, ASCE, Blackwell, CUP, Elsevier, IEEE, John Wiley, OUP, RSC, Springer, Emerald and Taylor and Francis of Elsevier science which are very beneficial for the scientists of CSIR. (Available athttp://124.124.221.7/ejournal/ejournalhome1.htm)

UGC-Infonet

University Grant Commission launched a consortium for its member universities to promote the use of e-journals /databases among the academicians, researchers and students through its network INFONET. The project of INFONET is operated by the INFLIBNET centre located at Ahmedabad. Under this consortium access is provided to the journals of American Chemical Society, American Institute of Physics, Blackwell publications, Cambridge university press, Oxford university press, Springer and Royal Society of Chemistry etc. The access to the journals is provided through the IP. The University Grant Commission is bearing the all expenses of electronic journals. (Available at http://www.ugc.ac.in/new_initiatives/infonet.html)

The publishers of the journals under Infonet Consortium are listed below.

UGC-INFONET RESOURCES	
1	American Chemical Society
2	American Institute of Physics
3	American Physical Society
4	American Mathematical Society
5	Annual Reviews
6	BIOSIS
7	Blackwell Synergy
8	Cambridge University Press
9	Chemical Abstracts Service
10	Elsevier Science
11	Emerald Journals
12	Encyclopedia Britannica Online
13	Ingenta Gateway Portal
14	Institute of Physics
15	J-Gate Gateway Portal
16	J-STOR
17	Nature
18	Portland Press
19	Project Euclid
20	Project Muse
21	Royal Society of Chemistry
22	Science Online
23	Springer & Kluwer Link
24	Taylor and Francis
25	Oxford University Press
26	SIAM Site-1 SIAM Site-2

Forum for resource sharing in astronomy and astrophysics (FORSA)

FORSA was launched in 1981.This consortium is network of eight astronomy libraries called FORSA. The institutions specialized in astrophysics and astronomy is participating in this consortium. Under this consortium publisher and the library both are benefited, because libraries get the journals at the reduced rates where as publisher increases the sale of their publications. (Birdie, Christina and Alladi, Vagiswari 2002)

Health sciences library and information network (HELINET)

The abbreviation HELINET stands for Health Science Library and Information Network. It came into existence due to the hard work of Rajiv Gandhi University of Health Science, Karnataka. This is the first medical library consortium. Under this scheme members can access the journals of reputed publishers in the field of biomedical sciences at the lower price.

It came into existence with the idea to improve the quality of education and research through the use of high quality of information. Before its inception, access for foreign journals was restricted to 100 journals for each college. The credit goes to the HELINET. It is due to the HELINET that access to more than 600 journals has become possible for each college. Under this consortium access to E journals of Williams & Wilkins, Elsevier Science, American Medical Association, W B Saunders Company, G.T. Verlag, MD Consult, Royal Society of Medicine, American College of Physicians ,Springer, Lippincott, BMJ Publishing Group and Oxford University Press, etc. are available.

(Available at http://125.17.162.197/HELINETHOSTCONSORTIUM/homehelinethost.htm)

ICMR consortia

To promote the resource sharing ICMR has taken initiative to provide access to more than 550 journals subscribed presently by 24 ICMARs network of library and information centers by subscribing JCCC@ICMAR .The access is also provided to more than 200 journals of biomedical and near about 12000 journals covered under J-Gate has also been subscribed by the

council.(Available at http://icmr.nic.in/library_bull/jan_2005.pdf)

Consortia models

There are following popular consortia models stated as under:

National consortia

It provides the access of e- resources at national level. INDEST and INFONET are the examples of such consortia.

Budget sharing model

Only participant libraries form such type of consortium and take the decision according to their budget provisions e.g. FORSA and IIM .

Centrally funded model

In such model, all the efforts are made by the parent body. The parent body is responsible for all the funding. INFONET of UGC is the example of centrally funded model.

Open consortia

In such consortia members are free join and leave the consortia any time. INDEST consortia is example of such type of consortia

Closed consortia

In such consortia only specified members can become the part of consortia

Efforts made by the publishers

In such type of consortium members get the maximum discount from the publishers. Members and publishers remain in win win position. Emerald is the example for this.

(Available at http://dlist.sir.arizona.edu/2289/01/shalu_bedi_and_kiran_sharma_library_consotia.pdf

Conclusion

From the whole study it is concluded that Libraries cannot satisfy the informational requirements of their users by their own resources due to the lack of resources. This is the need of the hour to cooperate with each other for the optimum use of their resources. Due to the revolution in the field of information technology the expectations of users from the library has increased and this compelled the libraries to share their resources to cater to the informational needs of the users. Here comes the concept of library consortium. This is a common agreement between various libraries which agree together to cooperate with each other to achieve certain common objectives. They have to form the consortia to save their manpower and finance. Workshops may be organized between the universities to enlighten the libraries w.r.t the importance of consortia. UGC is spending such a huge money for the subscription of online journal, the practice shall become futile if the research is not promoted even after this wonderful boon of consortia .

References

1. http://prints.iiap.res.in/bitstream/2248/3919/1/Lisa%20IV_chris.pdf
2. http://www.e-consortium.net/aboutus_bottom.html
3. http://www.en.wikipedia.org/wiki/Consortia
4. http://124.124.221.7/ejournal/ejournalhome1.htm
5. http://dlist.sir.arizona.edu/2289/01/Shalu_Bedi_and_Kiran_sharma_library_consortia.pdf.
6. http://icmr.nic.in/library_bull/jan_2005.pdf
7. http://paniit.iitd.ac.in/indest/
8. http://www.thefreedictionary.com/consortia
9. http://www.ugc.ac.in/new_initiatives/infonet.html
10. Katsirikou, Anthi. "Consortia and knowledge management: the functional context and an organizational model" Library Management, 2003; 24 (6-7): 337-347.
11. Moghaddam, G.G. and Talwar V.G.2009. "Library consortia in developing Countries: an overview" Program Electronic Library and Information Systems, 2009; 43(1): 94-104.

SAMARPAN TRUST

Join hands and be a part of our mission

The Head Quarter of SAMARPAN TRUST is situated at Delhi, which is a national capital of India. The Trust was established on 14.10.2004 and was registered under Indian Trust Act 1882 with registration number 15737/4. The trust is also registered under Income Tax Act 12 AA vide certificate No. DIT (E) 2004-05/5-4276/04/3 dated 8.4.05 & 80G vide certificate No. DIT (E) 2006-2007/S-4276/2539 dated 21.11.06.

THE SAMARPAN TRUST is a Social Service Organization which keeps a broad humanitarian out look on reaching out to the people irrespective of Caste, Creed and Gender. The Trust has carried out several developmental activities, sensitization programmes, awareness sessions and trainings to fulfill the objectives of sustainable developmental in a professional and scientific manner along with team work. Recently the organization aiming at self reliant and empowered Communities in east Delhi and Shahjahanpur and Budaun Districts of Uttar Pradesh.

The Samarpan Trust running two charitable dispensaries one at Delhi, where we running a DOT's centre as per RNTCP guidelines and another is at Shahjahanpur, U.P, which was started on 1st of August, 2008. The trust has started a school (i.e. Pushpanjali Handicapped School) especially for physically handicapped children in Budaun district of U.P. on 1st July, 2008.

More than four years of dedicated service and successful implementation of a large number of developmental as well as welfare activities especially for the marginalized poor and backward sections of the urban and rural population, increased support and participation from people's part have made THE SAMARPAN TRUST a name synonym with urban and rural development.

Our staff works with the communities at the grass roots, living with them, learning from them and working with them to find solutions to the issues of poverty and neediness. Accountability and credibility are integral to our relationship with donors. Internal and external audits ensure that everything we receive from our donors is fully accounted for.

Support a child through SAMARPAN TRUST's Child Sponsorship Progeamme and change the world in which he/she lives. A gift of Rs.600 every month address issues that promote the overall development of a child, including his/her health, education, clean drinking water and income generation programmes for his/her family.

Some of the children you can sponsor.
There are thousand of children waiting for someone like you. You could be their only hope. There are just a few of our children who desperately need a sponsor. You can also view more children at. **www.samarpantrust.org**

☐ **Yes! I want to sponsor a needy child today. Here is my sponsorship gift!**
Please send my sponsored child's photograph and stoty right away.
☐ Rs.600/- every month ☐ Rs.1,800/- every 3 months ☐ Rs.3,600/- every 6 months
☐ Rs.7,200/- every year.
☐ **I will not be able to sponsor a child right now**.
But there is my gift to support a child's education.
☐ Rs. 1000/- ☐ Rs. 2000/- ☐ Rs.5000/- ☐ Rs._____ /-
☐ I wish to make my gift by Draft Dd.
In the name of Samarpan Trust-payable at delhi.

When you decide to sponsor a child you will receive:
*A picture and the story of your sponsored child. *your sponsored child's Annual Progress Report to show you his/her progress. *The information about you will be published in all of our 12 journals circulating around the world. * Tex benefits under Section 80 G. *A unique opportunity to build a relationship through cards and letter. *An opportunity to personally visit and interact with your child.

Personal Details

Name _____
Address _____
_____
_____ Pincode _____
Phone _____
Email _____ Nationality _____

All contributions to Samarpan Trust tax deductible under Sec-80 of It Act

Samarpan Trust is a registered Trust the India Govt.Act-1882

SAMARPAN TRUST
1/50, Sector-II, Rajendra Nagar
Sahibabad - 201 005, Ghaziabad, U.P. (India)
Phone: 91-120-4153490, 9212471261, Fax: 91-11-48042168
E-mail: samarpantrust@vsnl.net, Website: www.samarpantrust.org

Librarians/information professionals in the new information environment: challenging roles

Amritpal Kaur
Head, Dept. of Library and Information Science, Guru Nanak Dev University, Amritsar
E-mail: amrit_lisc@yahoo.co.in

Abstract

With the application of IT to libraries, the librarians today have more refined tools and techniques at their disposal to provide quicker and more sophisticated services to the users. The article discusses the evolving role of librarians/ information professionals from provider of physical entities to that of information access provider, negotiator, intermediary, organizer and preserver of digital information, educator, content and intranet developer. It also discusses the skills and competencies required to perform their role effectively. Concludes that LIS education should be geared to the changing needs of the society/workplaces. It should offer such courses as provide graduates with necessary skills and competencies to perform all the roles offered to them in the new information environment.

Keywords: Librarians; Information professionals; Information environment; Challenging roles

Introduction

Easy availability of information on the Internet and its wide spread use, access to full text databases and digitization of resources are paving the way for the development of digital libraries. Digital libraries offer immense opportunities to provide any time, any place access to users. Users can search, use and create new information sources from their workplaces and homes. The questions1 often arise: Will the digital libraries provide necessary or sufficient services to satisfy information needs of the users? Will the users be able to find the required information themselves? Will they do without the librarian in the digital libraries? Alternatively what roles will the librarians play in the digital libraries?

Transition From Traditional To Digital Libraries

As a consequence of the incorporation of new technologies in libraries, traditional techniques and tools have been replaced by the new ones. Most of the libraries have started providing an Online Public Access Catalogue (OPAC), access to CD-ROM, Internet and digital documents. Many of them have created their homepages on the Web from where users can have access to a variety of services from their workplaces or homes. The transition of the traditional library to digital library is well reflected in a number of digitization projects going on at the national and global levels. The libraries have started digitizing their resources and making these available over the World Wide Web and providing online services to the users.

But in spite of numerous digitization projects, electronic media by no means have completely replaced the print material. There is still a lot of paper in our libraries and we expect this to be the case for a long time to come. The paper-based library will co-exist with the digital library for the foreseeable future2. The situation necessitates the librarian to "acquire, give access to, and safeguard carriers of knowledge and information in all forms and to provide instruction and assistance in the use of the collection to which their users have access"3.

Role of LIS Professionals In The New Information Environment

In the new information environment, the librarians have to perform the role in the following capacities.

As Information Access Provider and Negotiator

Reprints Requests: Dr. Amritpal Kaur
Head, Dept. of Library and Information Science, Guru Nanak Dev University, Amritsar
E-mail: amrit_lisc@yahoo.co.in

(Received on 24.5.09, Accepted on 26.5.09)

In the new information environment, the librarians assume the responsibility of providing access to information in whatsoever form it is packaged i.e. print, audio, video, microform, numeric, computer programmes or multimedia. They will no longer be restricted to "a single entity where everything is stored", but rather will be able to offer a "range of services and collections linked together or made accessible through electronic networks"4. In such an environment "access to information does not always imply ownership, merely that the library has negotiated the means by which the patrons gain access to resources and information"5. There is a clear shift from ownership towards providing access to electronic documents just for a given time"6. This in turn has created a new role for librarians - that of negotiating access rights through contracts and licenses7. License payment for an information product is a payment to use the product for a period of time that is usually specified in a contract. This payment is not for the ownership of all the rights of that product e.g. in the case of e-journals it is the publisher who decides how much access will be provided, which issues will be available and how much access will cost. Cost of e-resources has become difficult to calculate. Publishers today have come up with a large variety of new pricing strategies e.g. 'pay per view' and 'flat fees plus additional charges according to usage'8. This means that different libraries may have to pay different prices for journal subscription. Here the librarians have to see how best they can negotiate access rights through contracts and licenses.

They must be aware of what exactly are the rights and responsibilities of the parties of the contract. Are there limitations on simultaneous access, downloading or printing of material? What are the technical requirements? Is the library entitled to access the user statistics in order to evaluate usage, or does the publisher keep these data secret9.

Closely associated with license agreements are the copyright issues. When negotiating access with a publisher, the librarian must agree to certain restrictions and photocopying or distribution of electronic materials. Despite copyright notices and efforts to educate employees about intellectual rights, electronic publications can easily be forwarded to people outside the licensed user group10. In such circumstances it becomes imperative for the librarian to develop awareness among the employees about copyright issues.

As an intermediary

Since the beginning of the profession, librarians have been in direct contact with users seeking information. They have learnt to understand what they actually need and not what they say they need. Their services are personalized and targeted for their clientele11. Upto now no "interface agents" and "personal filters" as described by Nicholas Negroponte12 have substituted person to person mediation.

When the users retrieve tens of thousands of matches from digital libraries, many realize that searching and filtering information can be a complex task which should be delegated to a professional. Selecting the matches most relevant, most current and of high quality requires considerable expertise, despite continuing improvements in search refinement capabilities of digital libraries13. Librarians who possess particular knowledge and expertise in knowledge transfer seem to be the most suitable candidates for this. Wood and Walther note that rather than rendering the librarian obsolete, the digital revolution has made librarians all the more essential14.

As organizer of information

The information available on the Web is rapidly growing, highly distributed, of varying quality and dynamic. Librarians, who have acquired a good deal of efficiency and skills in the collection, organization and retrieval of information can play an effective role in adapting these to the new environment and even to go beyond these skills and develop new ways to organize and structure information. Garrod and Sidgreaves15 observe that professional boundaries between computing professionals and librarians are overlapping and becoming more blurred. For librarians to effectively organize and structure information available on the Internet, they require more than basic IT skills.

With the advanced IT skills, the librarians will

be in a position to develop systems and user interfaces to make databases as accessible as possible to the users16.

As a teacher

The modern day librarians must not only be proficient in the wide range of information technologies available today but they must also be able to work with teachers to instill information literacy in their students. Information literacy is the key to life long learning17. The librarians must teach the students how to 'analyse information critically and use it wisely'. They must 'work closely with students to design, implement and revise research skills'18. McMillan19 notes that within the university environment undergraduate students can be seduced by the convenience of information available through the Internet and the intervention of the librarian can teach the difference between intellectual access and electronic access. She observes that the librarians should teach information discrimination through personlised research assistance, guidance and instruction.

As content developer

Content creation and development is recognized as an important activity in the digital environment. Though technically a new concept, it has been practised by the librarians since long. The library cataloguing, abstracting and other related guides to information sources are the best examples in this context. However, the growing emphasis of this aspect in the digital environment requires some new approaches in its design and development. The librarians are expected to possess some refined skills in data organization and structuring and the presentation of the content in a helpful format so as to provide easy retrieval of required information for the users20. Bater21 thinks that library professionals must become involved with the process of improving access to significant Internet content. The ideas embodied in traditional cataloguing and classification are capable of being adapted very effectively to the cataloguing of electronic documents.

As intranet developer

In the new information environment, the librarian can play an effective role in building the Intranet site - a single access point to both internal and external data as per the requirements of the end users. He must filter the information, selecting the most relevant resources from the universe of network resources and download these to local access points to help the users to get the required information without delay.

As preserver of digital information

Preserving information in its different forms has been an important endeavour on the part of the librarians since time immemorial but preserving information in the digital form is posing the biggest challenge today. While print materials can survive for centuries or even millennia without recuperation and rehabilitation, digital materials because of their fragile nature tend to grow obsolete within a matter of years. It is not merely the physical care of the record that is a matter of concern for us, the authenticity and retrievability must also be guaranteed. This involves transforming digital documents to run on current media, software, hardware and operating systems by applying one or more digital preservation strategies such as technology preservation, emulation, data migration, and encapsulation. It is high time for the librarians to develop and implement proper policies and strategies to ensure long-term sustainability of and accessibility to the digital records.

Skills Needed To Perform The Challenging Roles

The digital library environment requires a new set of competencies for librarians. According to Meredith Ferkas[22] the competencies which the librarians must possess to perform their role effectively are of two kinds.

Basic Technical Competencies

* Ability to embrace change

* Comfort in the online medium

* Ability to troubleshoot new technologies

* Ability to easily learn new technologies

* Ability to keep up with new ideas in technologies and libraries

Project Management skills

* Ability to question and evaluate library

services

* Ability to evaluate the needs of all stakeholders

* Vision to translate traditional library services into the online medium

* Ability to sell ideas/library services

In Ferkar's view, change is inevitable but if librarians can adapt to and embrace change, they can easily learn technologies, can keep up with changes in the profession, can plan for new services and evaluate old services, can develop services that meet the needs of all stakeholders, can evaluate technologies, and can sell their ideas and market services. They will be better able to meet the challenges of changing user population and changing technologies23.

Feather[24] is of the view that besides the technical and management competencies, the future librarian should possess learning and teaching competencies. Learning how to learn is one of the core skills of the information professional, and applying that skill through a constant process of learning, both formal and informal, will be a hallmark of a professional career. Teaching - or rather helping others to learn - is also an integral component of the information professional's skill set. Helping end users to make best use of the tools which are available, developing their search skills, and above all giving them insights into how they can evaluate the quality of information are among the most important activities of the 21st century information professional. To be able to do this the information professional of the future will need to have some understanding of pedagogical theory and practice and of effective methods of teaching and learning.

For the information professional, the question must be how to unlearn and relearn - how to maintain a valid role in the provision of information at a time when developments in technology have brought the power of information searching to the non-specialist. The answer must be that the information professional develop additional value-added skills25.

Implications for LIS education

The changes in information environment must be reflective in the LIS courses so that these become responsive to the changing needs of the society/workplaces. These must aim at providing the graduates with a remarkable mix of required skills and competencies to enable them to play their role effectively in the diverse environments - print and digital. The focus of LIS education should not be only the library but on developing a set of competencies and skills. It is however in the "development of learning and teaching competencies that we can really help to re-engineer the information professions"26. The pace of change is such that even those who graduate today will have to continue to learn to keep up with the developments. Hence the purpose of LIS education should be "to teach people how to learn, not merely to convey facts and ideas"27. This will help the information professionals to enhance their skills through a constant process of learning both formal and informal.

The application of IT to LIS environment has, no doubt, brought about tremendous changes in it but there is no denying the fact that still in developing countries these changes have not been so drastic and most of the libraries are "still functioning with traditional collection or as hybrid libraries with a combination of print and electronic". In such circumstances the LIS departments have to bear "the responsibility of developing the right personnel with high caliber to manage the libraries and information centres of varied scope and nature ranging from small rural library to a well established digital library"[28].

To prepare students for a career at different levels of information society, there is a need to offer the course at three levels[29].

* Graduates with basic knowledge to head a small library.

* Postgraduate degree to have supervisors or middle managers of a large library.

* Post graduates with specializations such as digital libraries, network management, content management to take up lead positions.

However, the librarians/information professionals should themselves feel duty bound to enhance their skills and competencies throughout their career by attending refresher courses, continuing education programmes, conferences and reading current literature and

developments in the field.

Conclusion

To conclude we can say that the role of the librarians is evolving to that of information access provider, negotiator, intermediary, organiser and preserver of digital information, educator, content and Intranet developer. To perform all these roles, the librarians have not only to adapt their traditional skills of collecting, organizing and retrieving information to the digital environment but also have to possess some enhanced skills and competencies to perform their role effectively. LIS courses should be geared to the changing needs of the society and offer such courses as provide graduates with necessary skills and competencies with which they can "gain employment upon graduation as well as the vision and understanding which might help them to cope better with the rapidly changing world in which we live"[30].

References

1. Borgman C.L. Where is the librarian in the digital library? Communications of the ACM, 2001; 44 (5): 66.
2. Grothkopf U. Bits and bytes and still a lot of paper: Astronomy libraries and librarians in the age of electronic publishing. http://www.eso.org/gen-fac/libraries/bits-and -bytes/node10.html. Accessed on Aug 10, 2008.
3. Crawford W. and Gorman M.. Future libraries: dreams madness and reality 1995. American Library Association; Chicago, 1995; 3.
4. books,google.co.in/bookscampus:isbn=0838706478, accessed on Sept.1, 2008.
5. Lim E.. The virtual library meets the virtual campus: strategies for the 21st century. In Electronic Dream? virtual nightmare: the reality for libraries: Conference Proceedings VALA Biennial Conference and Exhibition, VALA, Melbourne. Quoted in Burke L, 1996; 21-37.
6. Burke L. The future role of librarians in the virtual library environment. The Australian Library Journal, 2001; 51: 1. http:www.alia.organ/publishing/alj/51.1/full.text/future.role.html.
7. Grothkopf, op. cit.
8. Burke, op. cit.
9. Brown I.W. and Duda A.L.. Electronic publishing programs in science and technology. Issues in Science and Technology Librarianship, Fall; 1996. http://www.library.web.edu/ist1/96-fall/brown-duda.html.
10. Grothlppf, op. cit.
11. Kaliammal A.and Selvi G.T.. The virtual library: changing roles and ethical challenges for librarians. In Road map to new generation of libraries using emerging technologies. Second International CALIBER. 2004. INFLIBNET Centre, Ahmedabad, 187.
12. Grothkopf, op cit.
13. Negroponte N. Being digital, 1996. Vintage books, New York, Quoted in GROTHKOPF (U).
14. Borgman, op. cit. 66.
15. Wood P.A. and Walther J.H. The future of academic libraries: changing formats and changing delivery. The Bottom Line: Managing Library Finances, 2000; 13 (4): 173-181.
16. Garrod P. and Sidgreaves I.. Skills for the new information professionals. The Skip Project LTTC, London, 1998.

    http://www.ukoln.ac.uk/services/elib/papers/other/skip. Accessed on Aug12, 2008.
17. Burke, op. cit.
18. Boule S. Information power: Building partnerships for learning. Book Report. Quoted in Scheirer B, 1999; 18 (3): 42.
19. Scheirer (B). The Changing role of the teacher-librarian in the twenty-first century. http://usask.ca/education/coursework/802papers/scheirer/scheirer.html. Accessed on Aug 30, 2008.
20. McMillan (G). The digital library; without a soul can it be a library? www.vala.org.au/vala. 2000/2000.pdf/mcmillan.pdf. Accessed on Sept 14, 2007.
21. Amritpal Kaur. Are prospects bright for librarians in the digital environment? SRELS Journal of Information Management, 2008; 45 (2): 2008.
22. Bater (B). Cataloguing electronic resources: wise up or dumb down? Managing Information, 2000; 7 (4): 36-38.
23. Farkas (M). Skills for the 21st century librarian.

    http://meredith.wolfwater.com/wordpress/2006/07/17/skills-for-the-21st century-librarian. Accessed on Sept 1, 2008.
24. Ibid.
25. Feather J. The next generation: Trends in LIS education for the 21st century. In AMEEN (K), Akhatar Ali and Ahsan Tahami M, Ed.

Proceedings of the PLA Golden Jubilee International Conference. Emerging paradigm in librarianship. Pakistan Library Association, Punjab, 2007; 26-27.

26. Marfleet J. and Kelley C. Leading the field: The role of the information professional in the next century. Electronic Library. 17, 6; 1999. p. 360. http://www.emeraldinsight.com. Accessed on Sept. 1, 2008.
27. Feather, op cit. 26.
28. Ibid, 27.
29. Varalakshmi (RSR). Educating digital librarians: Expectations, realities and future perspectives. Malaysian Journal of Library & Information Science, 2003; 8 (2): 51.
30. Ibid, 50.
31. Myburgh S. Education directions for new information professionals. Australian Library Journal, 2004; 52 (3): 2004.

    http://alia.org.au/publishing/alj/52.3/full.text/myburgh.html. Accessed on Oct. 10, 2007.

The growth and development of research on ecology in India: A bibliometric study

S. Thanuskodi
Lecturer, Library & Information Science Wing
DDE - Annamalai University, Annamalai Nagar - 608 002, T.N.

Abstract

This study aims at analysing the research output performance of scientists on Ecology. In academic and scientific work, publication is the chief means of communicating research, a primary means of recognition and reward, and hence a central social process in any academic as well as Research Institutions. Therefore, it is through publication the scientists receive professional recognition and esteem as promotion, advancement, and funding for future research. This study attempts to analyse the performance of scientists working in various institutions in terms of growth rate, areas of research concentration, author productivity and authorship pattern.

Keywords: Librametry, Institute of Scientific Information (ISI), Scientometrics, Web of Science (*WOS*), FID

Introduction

Bibliometrics is a type of research method used in Library and information science. It is a quantitative study of various aspects of literature on a topic and is used to identify the pattern of publication, authorship and secondary journal coverage with the objective of getting an insight into the dynamics of growth of knowledge in the areas under consideration. This consequently leads to the better organization of Information resources which is essential for its most effective and efficient use. Bibliometrics today has attained sophistication and complexity having national, international and interdisciplinary character. The present study focuses attention on the bibliometric analysis of the pattern of publication, authorship and journal coverage by the scientist on Ecology.

The term "Bibliometrics" was first coined by Pritchard in 1969, and its usage and practice can be traced back to the second decade of this country. A pioneer example of a bibliometric study was a 'statistical analysis of the literature' of comparative anatomy from 1543 to 1860 by counting the number of titles, both books and journal articles, and grouping them by countries of origin within periods.

In 1923 the second study was conducted by Hulme, entitled "statistical Analysis of the history of Science". His analysis was based on the original entries in the seventeen sections of the "English International Catalogue of Scientific Literature".

The third study was the pioneering work of Gross and Gross reported in 1927. They used the method of counting and analyzing the citations appended to articles in the Journal of the American Chemical Society, and produced a list of journals of 'importance in chemical education'. The fourth and prominent work was of Broadford in 1934 on the distribution and in Lubrication research. This research found the backbone of the theoretical foundation of the 'Bibliometrics' study, known as the "Broadford's Law of Scattering."

Bibliometric is just one of many sciences whose name ends with "metrics". Many scientists used the term under different names, but the concepts were more or less supplementary and complementary to each other with some broader and narrower extension of human ideas. One name that was used quite early but very scarcely was statistical

Reprints Requests: S. Thanuskodi
Lecturer, Library & Information Science Wing
DDE - Annamalai University, Annamalai Nagar - 608 002, E-mail:, thanuskodi_s@yahoo.com

(Received on 28.4.09, Accepted on 16.5.09)

analysis of the literature by Cole and Eales in 1917, while Hulme used the term 'statistal Bibliography' in 1923.

In 1948, the great Library Scientist, S.R. Ranganathan, coined the term "Librametry", which historically appeared first and perhaps seemed proper to streamline the services of librarianship. The term 'Bibliometrics' is just analogous to Ranganathan's Librametrics', the Russian concept of Scientometrics', FID's 'Informetrics' and to some other well established sub-disciplines like 'Econometrics', 'Psychometrics', 'Sociometrics', 'Biometrics', 'Technometrics', 'Chemometrics', 'Climetrics', where mathematical and statistical calculus have been systematically applied to study and solve problems in their respective fields. Now-a- days, the term 'Scientometrics' is used for the application of quantitative methods to the history of science and obviously overlaps with bibliometrics to a considerable extent.

Bibliometric Laws

Bibliometric Laws are statistical expression which seek to describe the working of Science by mathematical means. The three basic laws in bibliometrics are:

Lotka's Law is considered as the earliest and most widely applied study in measuring the scientific productivity of an author. He claims that a large proportion of the literature is produced by a small number of authors and it is distributed so as the number of people producing 'n' papers is approximately proportional to $1/n^2$.

Zipf's Law is a statistical distribution of word frequency on a hyperbolic curve, which states: "If the words are arranged in their decreasing order of frequency, then the rank of any given word of the text will be inversely proportional to the frequency of occurance of the word.

Bradford's Law is perhaps the best known of all the bibliometric concepts. His law describes how the literature on a subject is distributed in journals. He divides the articles found on a subject into three roughly equal zones, which increase by a multiple of above five. The relation between number of periodicals coming in the first zone of the 'nucleus' and the successive zones could be represented as 1:n:n2 …Apart from the verbal formula, Bradford also gives a graphical representation of scattering of articles in periodicals.

Application of bibliometrics

Bibliometrics as a technique has extensive application in identifying the research trends in a subject, trends in a authorship and collaboration in research, core periodicals, obsolescence and dispersion of scientific literature useful in estimating the comprehensiveness of secondary periodicals, studying the author productivity and impact of research, distribution of scientific publications by Universities, citation studies and so on. Most of these studies pertain to Universities, Scientists, disciplines and documents, Further, bibliometrics could be used in the identification of emerging research areas.

The popularly in the adoption of bibliometric techniques in various disciplines stimulated stupendous growth of literature on bibliometrics and its related areas. The techniques are now being vigorously pursued, and with the result, it has been found that on fourth of all the articles published in a Library and Information Science periodicals also carry a large number of articles on bibliometrics. These techniques are being used for a variety of purposes like determination of various scientific indicators, evaluation of scientific output, selection of journals for libraries and even forecasting potential Nobel Laureates.

In the recent years, there has been an explosive growth in human knowledge. In fact, the nature and tempo of growth has been such as too far outstrip the achievements of the past centuries. As science itself grown in extension and intention and the number of scientists increases. So obviously does the volume of literature generated by the scientific community. The growth of literature itself has caused a fairly widespread alarm and the term that describes explosion also known as information explosion.

It could be noted that at the global level about 5 million articles are being published annually in about one lakh journals. The 5th edition of the world list of scientific periodicals shows a two hundred percent increase in the number of scientific periodicals since 1970. De Solla Price claimed, that the science literature has grown

exponentially in the last three centuries with a doubling rate approximately 15 years.

The major focus of the study is to apply the bibliometric analysis with a view to analyse the performance of research output of Scientists in the Universities of Tamil Nadu. The study has resulted in a special attention on the performance of research output in science. It aims at examining the emergence of research areas, research groups and research department in Universities with a view to map the cognitive or intellectual structure of research.

Literature review

It devotes to examine the review of works relating to various aspects of Bibliometric studies. It could be observed that there are various research studies highlighting the importance of bibliometric analysis and their application to library management and administration. This type of analysis enables the researcher to identify the research gap in the previous studies. By considering this efficiency of various dimensions of bibliometric studies, the researcher has presented the literature.

Louttit (1957) analysed the language performance of writing research papers by psychologists, chemists and physicists. It was observed that reference made by writers in English language journals were 92.5 percent in English, in German journals 91 percent German French journals 64.6 percent French. Further it was said that numerous studies in Social Sciences show reference in American sources having around 90 percent in English.

Simonton (1960) identified that in two language source journals in the field of Fine arts, more than half of the references were the materials in foreign language references.

Ozinonu (1970) made an early survey relating to growth of Basic Science in Turkey. The author identified the growth of manpower and frequency of Publications in Mathematics, Physics, Astronomy, Chemistry and Bio-Science for the period 1933-1966.

Rangarajan and Poonam Bhatnagar(1981) analysed the Bibliometric data compiled from Physics Abstracts on research papers published in the field of Mossbauer effect studies over a period of two decades from its discovery in respect of media choice.

Klaic (1990) examined the research activity of chemists from Rugjer Boskovic, Yugoslavia during 1976-1985 covering 2018 research papers of scientific work. The papers were classified according to subfields used in the Journal Citation Reports. In this study he found that over 67 percent of papers corresponded to journal articles.

Kannappanavar and Vijayakumar (2001) made a study on the authorship trend in International Monitory Fund Literature for a period from 1991-1998 and concluded that collaborative research is in an increasing trend varying from 0.45-0.62. The average degree of collaboration was found to be 0.56-0.81 by studying five selective journals in geology covering a period from 1987-1996.

Robert Dalpe (2002) conducted a study to assess quality for bibliometric studies in relation to collaboration of authors using biotechnology research and revealed the interaction between Science and Technology.

Garg (2003) has given an overview of the studies published in the International Journal Scientometrics during 1978-2000 on cross-national, national and institutional scientometric assessment.

Abbas Horri (2004) made a bibliometric overview of Library and Information Science research productivity in Iran over the years 1996-1998. In his findings indicate that most contributions to the scientific production of the field are research papers, theses and research reports respectively.

Methodology

The present study attempts to find out the pattern of information published by scientific researchers in the field of Ecology. The study is based on the references to analyse quantitatively the growth and development of publication output as reflected in Web of Science database during the period of 1990-2006. There are 501 records were retrieved from Web of Science, it is the largest abstract and citation database of research literature and quality web sources. It's designed to find the information scientists need. Quick, easy and comprehensive, Web of Science

provides superior support of the literature research process.

The Web of Science is an online edition that combines the three databases SCI expanded (an SCI edition with broader coverage), the SSCI and the ACHI in a unique on-line database published from Institute of Scientific Information (ISI), Philadelphia. The SCIE covers about 5900 journals whereas the SCI covers about 3500, the SSCI covers 1700 journals and 3300 journals selectively, the ACHI finally covers more than 1100 journas fully and about 7000 journals selectively. The Web of Science, in turn, is part of the more comprehensive Web of Knowledge. The Web of Knowledge comprises the above mentioned ISI databases as well as the Derwent Innovations Index, BIOSIS previews, ISI proceedings, CAB ABSTRACTS and INSPEC bibliographic and patent databases.

The Publications of Scientists are mostly in the form of primary Journals, Notes, Letters, review, Editorial-materials, Meeting-abstracts, Bibliographic-items and Discussions. The research papers published by Scientists in the field of Ecology covered in the annual version of Science Citation Index database were taken as the prime source for the present study. The papers published from 1990 to 2006 by the scientists are accounted totally 501. They were retrieved from SCI database which is considered to be a prime source of data for the present study.

The Bibliographical details of publications were entered in the catalogue cards. Finally the cards were arranged in different ways with a view to identify the research performance of faculty Members.

Findings

The present study has been undertaken to assess the research performance of science Scientists on Ecology. The results of research have been published by the scientists in different sources. The findings of the present study leads to the following observations;

* The findings of the year-wise research output of scientists on Ecology brings out the fact that the highest number of publications was 54 published in the year 2005.

* The findings of the Authorship pattern of Ecology Scientists brings out the fact that the double authored research output is high with 198 (39.52%).

* The findings of the Ranking of Authors based on their publications brings out the fact that J.S. Singh captured the first place with 15 publications during the study period.

* The findings of the collaborative country wise research output brings out the fact that the Faculties are having good relation with various countries for research paper contribution like USA, England, Germany etc.

* The findings of the source wise distribution of research output brings out the fact that the Journal articles occupied the predominant place among the other sources of publication.

* The findings of the collaborative Institution wise research output brings out the fact that they have good relation with other Institutions for research contribution like National Institute of Oceanography, Indian Institute of technology and so on.

* The findings of the ranking of Journals brings out the fact that the highest number of publications was 81 (16.17%) published in Current Science Journal.

* The findings of the Single Vs Multiple authored Publications brings out the fact that the Multiple Authored papers dominate with high of 80.64 %.

* The findings of the subject wise research output brings out that among the various science subjects Multi disciplinary and Environmental Ecology subjects occupied the first two place in order.

Suggestions

The findings of the present study lead to the following suggestive measures:

* There are needs to provide more infrastructural facilities to the Ecology research institutions and Academic Institutions also.

* There is a need to give special training programmes to develop the efficiency to caliber among the scientists of various institutions to pursue their research activities on par with the world output.

* There is a need to provide incentives and awards to the eminent and outstanding scientists

depending on their level of contribution to the growth of research and development of the discipline.

* There is a need to encourage and motivate a collaborative research activities. IN this context scientists of Ecology may be encouraged to undergo collaborative research with the other countries.

* The Scientists should be given more number of project in the subject fields which are lagged behind.

* The funding agencies should allocate equal number of projects to all institutions irrespective of demand and request.

* The state and Central governments should come forward to allocate more funds especially for research activities for all the Institutions.

Conclusion

The research trend in the field of Ecology is collaborative in nature like any other discipline. The studies on bibliometric are mostly concentrated on data drawn from databases, individual journals, individual institutions, research output in a particular field of knowledge, individual subjects research output, individual author's publication and so on. The present study also appears to be a milestone on the above said fact.

References

1. Ranganathan, S.R. "Library and its Scope" DRTC Annual Seminar, 1969; 702: 285-301.
2. De Solla Price D.J. Little Science, Big Science Newyork: Columbia University, 1934.
3. British Standard Institution- British Standards of Documentation Terms. London: BSI, 1976.
4. Hawkins, D.T. "unconventional uses of On-line Information Retrieval Systems: On-line Bibliometric studies". Journal of American Society of Information Sciences, 1977; 28 (1): 13-18.
5. Morales.M "Information and its Importance" International forum for Information and Documentatiion, 1985; 10: 15-21.
6. Jain.A, K.C. Garg, "Laser Research in India: Scientometric study and model projection"' Scientometrics, 1992; 23: 395-415.
7. Kundra.R "Investigation of Collborative research trends in Indian Medical Sciences 1900-1945," Scientometrics, 1996; 36: 69-80.
8. Amit Kumar Bandopadhyay. "Authorship Pattern in Different Disciplines", Annals of Library and Information Studies, 2001; 48: 139-147.

Paper Submission Instructions

About the journal

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) presents peer-reviewed survey and original research articles. Detailed Reviews of newly published books relevant to future studies in the field are also included. Accessible to a broad range of scholars, each survey paper contains all necessary definitions and explanations; a complete overview of the problem discussed and a description of its importance and relationship to basic research on the subject. This publication also features authoritative contributions describing ongoing investigations and innovative solutions to unsolved problems. The journal serves as a valuable tool for helping Librarian, Students; faculties etc. deal effectively with the challenges of the field. It emphasizes articles and reports that are directly relevant to practice.

Indexing and Abstracting Services: Indexed in Index Copernicus, Poland

General Information

Manuscript should be prepared in accordance with the uniform requirements for manuscripts submitted to the biomedical journals compiled by the International Committee of Medical Journal Editors (ann. Intern. Med. 1992; 96: 766-767).

As per policy of the journal editorial committee it disapproves the submission of the same articles simultaneously to different journals for consideration as well as duplicate publication of the same article.

Submission of Manuscript

Manuscript should be forwarded via email to the Editor (redflowerppl@vsnl.net). The length of a paper is typically in the order of 15-30 journal pages. Manuscripts should use 12 point Times or Times New Roman fonts, double line spacing and in MS Word format. The manuscript should arrange as follow: Covering letter, Checklist, title page, abstract, keywords, introduction, methods, results, discussion, references, tables, legends to figures and figures. All pages should be numbered consecutively beginning with the title page. Signed declaration that the theme is of his own, and paper has not been published anywhere or not under consideration for publication.

Title page

It should contain the title, short title (if any), names of all authors (without degrees or diplomas), names and full address of institutions where the work was performed, acknowledgement, abbreviations (if any used), name and address of corresponding author along with email, and contact phone number.

Abstract

Structured abstract not more than 150 to 200 words. It must convey the essential features of the paper.

Key Words

Author should include 3-5 Key Words.

Introduction

It should contain the state why study was carried out and what were its specific aims and objectives.

Materials and Methods

These should describe the nature of materials and specific methods/procedures used to conduct the study. It also contains the statistical methods used for presentation and analysis of data and results.

Results

These should be concise and include only the tables and figures necessary to enhance the understanding the text.

Discussion

It should consist of a review of the literature and relate the major findings of the study to other publications on the subjects along with supporting references.

References

Authors are required to use the Vancouver style to cite/quote the references. The references should be numbered in the order in which they appear in the texts and these numbers should be inserted above the lines on each occasion the author is cited.

Examples of common forms of references are

Journal article

Ansari Mehtab Alam, Kamal Mohd. Research on "Meningitis': a Bibliographic Study. Ind J Lib & Info Sci, 2008; 2(1): 5-12 (name of journal, year of publication, volume (issue) and pages).

Magazine

Gakhar Isha. Eco-friendly Bags in Fashion. Women on the Earth, 2008; 2: 28-28.

Newspaper

Parmar Vijaysinh. All this family got was their son's head, Times of India. 2008; July 29.

Book

Benjamin Lewin. Genes VI. New York; Oxford University Press, 1997

Book chapter

Fisher M. Nosocomial. Infection and Infection Control. In Jenson H, Baltimore R. Pediatric Infectious Diseases. 2nd Ed, W.B. Sounders Company; 2002: 1221.

World Wide Web

Jutta M. Joesch et al. Does Your Child Have Asthma? Filled Prescriptions and Household Report of Child Asthma. Elsevier. http://www.jpedhc.org/article/S0891-5245(06)00129-5/abstract (August 21, 2008).

Guidelines for presentation of Tables and Figures

Tables

Tables should be typed in double spaced on separate sheets with table number (in Roman Arabic numerals) and title above the table and explanatory notes below the table.

Figures

The size and resolution guidelines below must be followed in order for electronic images to be of sufficient quality to be published in the Journal. The photographs and figures should be sent as saved with their links.

Photographs (halftones) and radiographs (either color or black and white) will be accepted in electronic form if the image is a minimum of 4 inches wide (any height) and a minimum resolution of 300 ppi/dpi. We can accept electronic files for photographic images in the following file formats: Adobe PhotoShop TIFF, EPS, JPEG. If JPEG settings are used on a digital camera, please ensure that the image resolution is set high enough to meet the 300 ppi requirement (the default setting on most cameras is 72 ppi). The photographs and figures should be sent as saved with their links.

Illustrations (black and white line art), charts, and graphs are often recreated in the Journal office. Digital images must be a minimum of 4 inches wide (any height), and the resolution must be 1200 ppi/dpi. We can accept electronic files for illustrations in the following file formats: TIFF, EPS, JPEG, and PDF. The output software must be either Adobe PhotoShop or Adobe Illustrator, or Adobe Acrobat (for PDF images). For hard-copy submissions, we can accept laser and inkjet prints (600 ppi or higher print resolution is preferred).

Forms (figures that reproduce questionnaires, flow charts, or other primarily-text material) should be submitted as data-processing (text) documents if that is practical.

If you have any questions about the technical guidelines, please contact us on e-mail: redflowerppl@vsnl.net.

The Editorial Board reserves all the rights to accept, alter or reject the article without any prior notice. The Editorial Board accepts no responsibility of the statements and opinion expressed by the contributors. No payments are made to the contributors. **The manuscript receipt without declaration form will not be processed for publication.**

DECLARATION FORM for Authors

(Should be sent with original signatures by all authors alongwith one hard copy of the article)

I hereby submit that the paper entitled "…….....” along with two photographs of mine. This paper is my original work and has neither been published anywhere else, electronically or in print, nor has been submitted elsewhere simultaneously for publication. I have agreed for this paper to be published in your renowned journal "**Indian Journal of Library & Information Science**".

I vouchsafe that the authorship of this article will not be contested by anyone whose names are not listed by me here.

The article contains no libelous or other unlawful statements and does not contain any materials that violate any personal or proprietary rights of any other person or entity.

We also agree to the authorship of the paper in the following sequence:

Author's Names in Sequence	Signatures of Authors

Thanking You,

Yours Sincerely,

Mail To

Red Flower Publication Pvt. Ltd.

41/48 DSIDC, Pocket-II, Mayur Vihar Phase-I
P.O. Box No. 9108, Delhi-110 091 (India)
Tel: 91-11-65270068 & 48042168, Fax: 91-11-48042168
E-mail: redflowerppl@vsnl.net, Website: www.rfppl.com

Subject Index (Volume 3, No.1-3; 2009)

Author Index (Volume 3, No.1-3; 2009)