ISSN: 2231-6108
Vol. 1 No. 1
January - June 2011

Asian Journal of Information Science and Technology

An International Peer-Reviewed Journal on Information Science

Journals Division
Sriraam Publication
(A Global Research Publishing House)
Coimbatore – 641 031, Tamil Nadu, India

www.sriraam.org

Asian Journal of Information Science and Technology

(ISSN:2231-6108)

AJIST is an international peer-reviewed research journal published half-yearly by Sriraam Publication. Responsibility for the contents rests upon the authors and not upon the AJIST. For copying or reprint permission, write to Copyright Department, AJIST, Sriraam Publication, Coimbatore - 641 031, Tamil Nadu, India.

Asian Journal of Information Science and Technology

Volume 1 Number 1 **January – June 2011**

CONTENTS

Human Aspect of Technology with Special Reference to Library Professionals of Anna University of Technology, Coimbatore, Tamil Nadu: A Study

K. **Mahalakshmi**[1] **and S. Ally Sornam**[2]
[1]Library, Faculty of Engineering, Avinashilingam Deemed University for Women,
Coimbatore - 641 108, Tamil Nadu, India
[2]Department of Library and Information Science, Bishop Heber College, Trichy - 620 017, Tamil Nadu, India
E-mail: nilamaha@gmail.com, ally_jelen@yahoo.co.in
(Received on 03 May 2011 and accepted on 30 May 2011)

Abstract

The technological revolution of this decade has certainly brought many changes in the functioning of libraries today. Although it has allowed work to be carried out faster and more efficiently and still many library professionals are not comfortable with the implementation of technology as it involves change and uncertainty. As a result, they develop additional stress known as techno stress which may have negative impact in the activities of library professionals.

This study intends to find out the relationship between the departments where greatest technological advancement has been made and the cause of techno stress at work place among the library professionals of Anna University of Technology, Coimbatore. A questionnaire which comprises of demographic factors, departments where greatest technological advancement has been made, and the causes of techno stress at work place was distributed to the respondents and the relevant information were gathered and analysed. The results of the study are elucidated with relevant interpretation.

Keywords: *Library Professionals, Technological Advancement, Techno Stress*

1. INTRODUCTION

Today's persistent information and communication technology enable us to get connected almost everywhere at anytime. ICT, such as internet, advanced wireless technologies and mobile communication networks are becoming increasingly indispensable in many aspects of work and everyday life. But to keep pace with advancing new technology, library professionals have to constantly renew their technical skills as well as endure pressures and higher expectations from management and users. Amidst this technological revolution, library's traditional services remain the same. As new technologies evolve, what are departments of the library with greatest technological advancement? and what are the causes of techno stress at workplace?. Research on these aspects helps the library professionals in developing a stress free work environment.

2. LITERATURE REVIEW

A glance into the literature related to techno stress exposed the following:

Win Stead [1] examined staff and faculty reactions to automation in three libraries on an university campus during two time periods to see whether opinions changed after an integrated library system was fully implemented. She found insignificant differences between a survey instrument administered in 1987 and one administered in 1993. Library employees in this sample appreciated automation and expected it to enhance job satisfaction. Further educational level had no bearing on the acceptance of automation. The majority of library personnel expressed concern about ergonomic factors associated with computer usage and suffered negative impact in some aspects. Automation apparently neither influenced library's administrative hierarchy, nor did it impede interpersonal communication.

In a study of support staff in Wisconsin academic libraries, Palmini [2] surveyed the impact of computerization and its relationship to job satisfaction. She hypothesized those employees who had been in their positions for an appreciable length of time would find it difficult to adjust to computers and would be less enthusiastic about new technology. However, such assumptions were unsubstantiated. Although the majority of this sample expressed greater job satisfaction since the introduction of automation into their libraries, they did not believe that computers

offered any major time saving benefits to their workloads. More than one-third of respondents felt that their training was inadequate underscoring a need for better preparatory programs. Health problems and high stress levels stemming from computer usage were also prominent. Without specific reference to technology, an open-ended question asked "What part of your job causes you the most frustration? 62% of replies mentioned computer-related frustrations. (e.g., computer being down, slow response time, not enough terminals, too many different systems to learn).

Shelly Heaton and Jeanne M. Brown [3] look at technology as a series of incentives and hurdles in their article "Staff perceptions of incentives and hurdle to the use of technology". The technology committee of the University of Las Vegas (UNLV) administered a survey to the staff in spring of 1994. Their results concluded that the "hurdles" were often due to supervisory problems, lack of communication and time/staff levels. Some staff felt that they were "bogged down" by the information they were receiving in the automation implementation.

However, the "incentive" were training and a newsletter published by the technology committee called "technotes". Most of the staff recognised that technology was essential, but a third felt that their background and experience was actually a "hurdle" to overcome in learning the new technology.

3. OBJECTIVES

The main objective of the study is to analyse the impact of demographic factors of the library professionals on various departments in which technological advancements were made and the causes of techno stress at the workplace.

4. ENGINEERING COLLEGES IN TAMIL NADU

Anna University was established on 4th September 1978 as a unitary type of University. It offers higher education in Engineering, Technology and Allied Sciences relevant to the current and projected needs of the society. Besides promoting research and disseminating knowledge, it fosters cooperation between the academic and industrial communities. The University was formed by bringing together and integrating two well-known technical institutions in the city of Madras. In the year 2002, Anna University was converted into an affiliated type of University wherein all the Government, Government Aided and Self-Financing Engineering Colleges in the state of Tamil Nadu numbering around 102 are affiliated to it. Since the number of institutions in the state was continuously rising every year and 240 during 2006 [4], for administrative convenience, Anna University was divided into four separate Universities namely,

- Anna University of Technology, Chennai
- Anna University of Technology, Coimbatore
- Anna University of Technology, Trichirapalli and
- Anna University of Technology, Tirunelveli.

5. METHODOLOGY

A questionnaire method was adopted to collect responses from the library professionals of Anna University of Technology, Coimbatore which consists of three parts namely: Demographic factors such as age, gender, educational qualification, total library experience, area of specialization, their type of the institution, nativity, marital status, salary per month and the second part contains departments where greatest technological advancement has been made and the causes of techno stress at workplace. This was a slightly modified version of the questionnaire used by Charles Al.Qallaf [5]. The constructed questionnaire was given to subject experts for checking the content and construct validity. Based on their suggestion, changes were carried out in the questionnaire and then distributed to the respondents. Population consisted of Librarians and Assistant librarians of engineering colleges of Anna University, Coimbatore. Questionnaires were distributed to the library professionals during working hours from the month of November 2009 to June 2010 with an explanatory covering letter. The respondents were assured that their identity will remain confidential and the results will not have any negative effect on their institution. Participants were instructed to use 4-point scale like Likert scale for rating (1-Not-at-all, 2-Low, 3-Moderate, and 4-High). Out of 103 questionnaires collected, only 98 were found to be suitable in all aspects. So, the size of the sample for the study is 98 and the collected data were processed and analysed using SPSS software.

6. RESULTS AND DISCUSSION

Table 1 provides information about the demographic details of the respondents. There were 98 respondents who have answered to this questionnaire. 75 were male (76.53%) and female were 23 (23.47%). Majority of the respondents were in the age group of 25-34 (47.96%), followed by 35-44 age group (39.80%), and 45-54 age group (8.16%). Freshers, below 25 years of age were 3.06% and above 55 were 1.02%. Thus the chunk of the largest group was between 25-34, people in the middle of their lives. Most of the respondents (78.57%) were married and 20.41% were unmarried and very few (1.02%) respondents were widow. 36.73% of respondents have 6-10 years of total library experience, 30.61% have 1-5 years of experience, 19.39% of respondents have 11-15 years of experience, 6.12% of respondents have 16-20 years and 21-25 years each and 1.02% of the respondent have above 26 years of experience. Majority of the respondents worked in self-financing (87.8%), 3.1% in government and 2.0% in government aided and 7.1% in autonomous institutions. About 43.88% of participants were drawing monthly salary below Rs.10,000, 37.76% were drawing between Rs.10,001-Rs 20,000, 11.22 % were earning between Rs.20,001-Rs.30,000, 5.10% were drawing Rs.30,001-Rs.40,000 and 1.02% of the respondent were earning Rs.40,001-Rs.50,000. 58.2.% of respondents were from rural area and 41.8% were from urban.

Table 1 Demographical Details

Demographic Variable	Classification	Frequency	Percentage
Gender	Male	75	76.53
	Female	23	23.47
Age (in years)	<25	3	3.06
	25-34	47	47.96
	35-44	39	39.80
	45-54	8	8.16
	>=55	1	1.02
Marital Status	Bachelor/Spinster	20	20.41
	Married	77	78.57
	Widow	1	1.02
Educational Qualification	Bachelors in LIS	12	7.9
	Other Bachelor Degree	20	13.2
	Masters in LIS	38	25.2
	Other Master Degree	17	11.3
	M.Phil	56	37.1
	Ph.D.	8	5.3
Total library Experience	1-5	30	30.61
	6-10	36	36.73
	11-15	19	19.39
	16-20	6	6.12
	21-25	6	6.12
	26+	1	1.02
Institution Tpe	Government	3	3.1
	Govt. Aided	2	2.0
	Self-Financing	86	87.8
	Autonomous	7	7.1
Area of Work	Technical Services	5	5.10
	Acquisition	6	6.12
	Library Administration	65	66.33
	Circulation (book & Non-book material)	7	7.14
	Reference	1	1.02
	Online services	1	1.02
	Digital library	12	12.24
	Customer relation building	1	1.02
Salary	Below Rs.10,000	43	43.88
	Rs.10,001-20,000	37	37.76
	Rs.20,001-30,000	11	11.22
	Rs.30,001-40,000	5	5.10
	Rs.40,001-50,000	1	1.02
	Rs.50,001+	1	1.02
Nativity	Urban	41	41.8
	Rural	57	58.2

Table 2 Departments with Greatest Technological Advancement

Departments	Not-at-all	Low	Moderate	High	Total
Cataloguing	4 (4.08)	13 (13.27)	24 (24.49)	57 (58.16)	98 (100)
Acquisitions	3 (3.06)	14 (14.29)	36 (36.73)	45 (45.92)	98 (100)
Serials Management	2 (2.04)	13 (13.27)	39 (39.8)	44 (44.9)	98 (100)
Reference/Research	3 (3.06)	16 (16.33)	34 (34.69)	45 (45.92)	98 (100)
Circulation	3 (3.06)	6 (6.12)	32 (32.65)	57 (58.16)	98 (100)
Information Services	3 (3.06)	7 (7.14)	35 (35.71)	53 (54.08)	98 (100)
Inter Library Loan	9 (9.18)	17 (17.35)	26 (26.53)	46 (46.94)	98 (100)
Barcode/RFID	6 (6.12)	14 (14.29)	19 (19.39)	59 (60.2)	98 (100)

Note: The values in bracket are in percentage

Table 2 shows that a maximum of 58.16%, 45.92%, 44.9%, 45.92%, 58.16%, 54.08%, 46.94%, and 60.2% respondents felt that cataloguing, acquisitions, serials management, reference, circulation, information services, ILL, barcode have the highest technological advancement respectively and a minimum of 4.08%, 3.06%, 2.04%, 3.06%, 3.06%, 3.06%, 9.18%, 6.12% of respondents felt that cataloguing, acquisitions, serials management, reference,circulation, information services, ILL, Other barcode did not have technological advancement respectively.

Table 3 Causes of Techno Stress in the Workplace

Response	Not-at-all	Low	Moderate	High	NA	Average Sum
Too little formal training	15 (15.31)	34(34.69)	33(33.67)	15(15.31)	1(1.02)	2.5
Lack of technical support	13(13.27)	30(30.61)	34 34.69)	20(20.41)	(1.02)	2.6
Lack of trained manpower	8(8.16)	31(31.63)	38 38.78)	20(20.41)	1(1.02)	2.7
Inadequate number of computers and printers	18 (18.37)	38(38.78)	23 23.47)	18 (18.37)	1(1.02)	2.4
Not involved in decision making process	18(18.37)	35 (35.71)	24(24.49)	20 (20.41)	1(1.02)	2.5
A slow network	14 (14.29)	41 (41.84)	24(24.49)	18 (18.37)	1(1.02)	2.5
Technological breakdowns	14 (14.29)	36 (36.73)	27(27.55)	21 (21.43)	-	2.6
Growing user demands	17 (17.35)	30 (30.61)	27(27.55)	24 (24.49)	-	2.6
Information overload	18 (18.37)	25 (25.51)	32(32.65)	23 (23.47)	-	2.6
Increased management expectations in adoption of IT	12 (12.24)	21 (21.43)	38(38.78)	27 (27.55)	-	2.82
Health related problems caused by technology	21 (21.43)	33 (33.67)	32(32.65)	12 (12.24)	-	2.36
Lack of latest software/hardware	18 (18.37)	28 (28.57)	35(35.71)	17 (17.35)	-	2.52
Lack of access to the new electronic resources	19 (19.39)	29 (29.59)	40 40.82)	10 (10.2)	-	2.42
work environment is too complicated	21 (21.43)	28 (28.57)	33 (33.67)	16 (16.33)	-	2.45
Technology brought changes in the library	11 (11.22)	31 (31.63)	35 (35.71)	21 (21.43)	-	2.67
Lack of co-ordination among departments	19 (19.39)	26 (26.53)	35 (35.71)	17 (17.35)	1(1.02)	2.52
Migrate to a new library system	10 (10.2)	33 (33.67)	41(41.84)	14 (14.29)	-	2.6
Managing electronic subscription access	13 (13.27)	27 (27.55)	32 (32.65)	26 (26.53)	-	2.72
Security Issues Viruses and Authentication	17 (17.35)	29(29.59)	34 (34.69)	18 (18.37)	-	2.54
Problems with commercial databases	16(16.33)	30 30.61)	34(34.69)	17(17.35)	1(1.02)	2.45
Uncertainty over nature of job	17(17.35)	33(33.67)	35(35.71)	13(13.27)	-	2.37
Lack of Knowledge on latest websites	16(16.33)	41(41.84)	30(30.61)	11(11.22)	-	2.5
Privacy issues (is your work being monitored)	16(16.33)	36(36.73)	27(27.55)	19(19.39)	-	2.58
Frequent updating of technology	17(17.35)	26(26.53)	36(36.73)	19(19.39)	-	2.61
Lack of documented training resources	15(15.31)	30(30.61)	31(31.63)	22(22.45)	-	2.61
Financial constraints for training and development in IT	14(14.29)	32(32.65)	30(30.61)	22(22.45)	-	2.37
Unannounced and uncontrolled changes	26(26.53)	27(27.55)	27(27.55)	18(18.37)	-	2.38
Too many electronic file formats	14(14.29)	26(26.53)	41(41.84)	17(17.35)	-	2.62

Note: The values in bracket are in percentage

Table 3 solicited data about causes of techno stress. Participants were provided with 28 causes and asked to rate the level of stress for each item based on a four point scale where: not-at-all, low, moderate, and high. As illustrated, the respondents have maximum average score of 2.82 on a four point scaling towards Increased management expectations in adoption of IT, followed by Managing electronic subscription access (2.72), Lack of trained manpower (2.7), Technology brought changes in the library (2.67), Frequent updating of technology, Lack of documented training resources (2.61) and also the respondents have a very low average score towards Health related problems related to technology (2.36). Hence, it is evident that the respondents are subject to moderate to high level of stress irrespective of the causes of techno stress at the workplace.

7. CONCLUSION

Considering the ramifications of technology in an information environment, library professionals need to focus on strategies and plans that will produce a dynamic culture for both librarians and users. They must take practical measures to provide a stable, mutually respectful work environment and to ensure a technological infrastructure that facilitates the provision of fundamental library information systems to the academic and research communities.

REFERENCES

[1] E.B. Win Stead, "Staff Reactions on Automation", Computers 'n' Libraries, Vol. 14, No.4, 1994, pp.18-21.

[2] C.C. Palmini, "The Impact of Computerization on Library Support Staff: A Study of Support Staff in Academic Libraries in Wisconsin", College & Research Libraries, 1994, pp.119-127.

[3] Shelly Heaton, "Staff Prceptions of Incentives and Hurdle to the Use of Technology", 1995, http://digitalcommons.library.unlv.edu/lib_articles/88.

[4] www.annauniversity.ac.in.

[5] Charlene.L. Al-Qallaf, "Librarian and Technology in Academic and Research Libraries in Kuwait: Perceptions and Effects", Libri, Vol. 56, 2006, pp. 168-179.

Mapping of IEEE Transaction on Power Electronics: A Scientometric Analysis

A. Senthamilselvi[1], S. Srinivasaragavan[2], M. Surulinathi[3] and G. Amudha[4]
[1]Bharathiyar University, Coimbatore - 641 046, Tamil Nadu, India
[2&3]Department of Library and Information Science, Bharathidasan University,
Tiruchirappalli - 620 024, Tamil Nadu, India
[4]VHNSN College, VirudhuNagar - 626 001, Tamil Nadu, India
E-mail: assenthamil@gmail.com.
(Received on 05 May 2011 and accepted on 29 May 2011)

Abstract

Scientometrics is the science of measuring and analyzing science. In practice, scientometrics is often done using bibliometrics which is a measurement of the impact of scientific publications. This paper identifies the number of articles published in the Journal, "IEEE Transaction on Power Electronics" from the year 1999-2010. This paper analyses the Growth of literature, Document types, and Authorship pattern and Country-wise contribution of articles.

***Keywords**: Power Electronics, Scientometrics*

1. INTRODUCTION

Scientometrics is a type of research method used in Library and Information Sciences (LIS) [1]. It is an emerging area of research in the LIS field. The quantitative analysis and statistics to describe patterns of publication within a given field or body of literature are utilized [2]. Researchers use scientometric methods of evaluation to determine the influence of a single author or to describe the relationship between two or more authors or works. Scientometric studies can be used to study regional patterns of research, the extent of cooperation between research groups and national research profiles [3]. The main derivatives of scientometrics are: Publication counts, Citation counts, Co-citation analysis, Co-word analysis, Scientific `mapping' and Citations in patents. Scientometrics is the advanced study of Bibliometrics [4]. Result of such studies are very useful in decision making in research administration and planning. In collection development and use in libraries. Bibliometric studies afford investigators to study the quality and quantity of work done by researchers and scientists in various fields.

2. OBJECTIVES OF THE STUDY

The objectives of the present study were:

a. To distribute the number of papers published (year-wise) and growth of literature;
b. Ranked list of authors;
c. Authorship patterns;
d. Country-wise distribution of authors;
e. Institution-wise distribution of authors.

3. SOURCE JOURNAL

IEEE Transaction on Power Electronics is a monthly journal and Frede Blaabjerg is the Chief Editor of this journal. This journal was published by The Institute of Electrical and Electronics Engineers Inc. New York. It covers fundamental technologies used in the control and conversion of electric power. Topics include dc-to-dc converter design, direct off-line and on-line switching power supplies, single- and three-phase inverters both at low and high power, controlled rectifiers, analog and digital control techniques, modeling, analysis, and simulation techniques, multilevel power conversion, the application of power circuit components (power semiconductors, magnetic, capacitors), and thermal performance of electronic power systems. All kind of applications focusing on power electronics are of interest like adjustable speed drives, all kind of transportation, power supplies, renewable energy, energy harvesting, lighting, displays, photovoltaic, wind turbines, fuel cell, and energy saving systems.

4. DATA COLLECTION

The issues of the "IEEE Transaction on Power Electronics" journal have been taken into consideration for this study. So the journal articles are downloaded from IEEE database from the year 1999 - 2010, that is

144 issues comprising 2369 articles. The sample collection for the study is 2369. A good number of research studies are being carried out in the field of bibliometrics.

5. DATA ANALYSIS AND INTERPRETATION

Table 1 Growth of Literature

Sl.No.	Year	Records	%	TLCS	TGCS
1	1999	127	5.4	313	2637
2	2000	140	5.9	358	3228
3	2001	99	4.2	348	2633
4	2002	124	5.2	342	3024
5	2003	158	6.7	493	3986
6	2004	188	7.9	595	4472
7	2005	168	7.1	481	2779
8	2006	211	8.9	697	2932
9	2007	276	11.7	907	3227
10	2008	326	13.8	836	2703
11	2009	303	12.8	253	969
12	2010	249	10.5	4	107
Total		2369	100.00	5627	32697

Table 1 indicates year-wise distribution of articles and growth of literature from the year 1999- 2010. There is a gradual increase in the publication of articles and citations in each year. Regarding published items, it shows a decline in the years 2001 and 2010. Regarding citations, there is a slight decline in the years 2005 and 2009.

Table 2 Ranking of Authors Based on Publication

S.No.	Author	Records	TLCS	TGCS
1	Lee FC	82	419	1897
2	Chung HSH	52	151	636
3	Blaabjerg F	48	208	1192
4	Akagi H	37	102	620
5	Jovanovic MM	37	115	526
6	Boroyevich D	29	93	680
7	Hui SY	28	74	303
8	Jain PK	28	60	343
9	Xu M	27	113	363
10	Barbi I	26	72	433
11	Maksimovic D	26	189	702
12	Hui SYR	23	52	308
13	Kolar JW	23	44	168
14	Loh PC	23	71	412
15	Tse CK	23	45	258
16	van Wyk JD	23	38	205
17	Batarseh I	21	81	275
18	Liu YF	21	99	295
19	Moon GW	21	30	134
20	Sun J	21	71	296
21	Perreault DJ	20	53	219
22	Holmes DG	18	90	704
23	Peng FZ	18	105	574
24	Wang S	18	56	226
25	Youn MJ	18	42	244
26	Qian ZM	17	61	225
27	Krein PT	16	67	332
28	Mattavelli P	16	65	196
29	Ruan XB	16	30	135
30	Alonso JM	15	24	112
31	Cobos JA	15	60	215
32	Joos G	15	30	227
33	Lai JS	15	36	184
34	Lehman B	15	31	135

35	Smedley KM	15	57	409
36	Wang F	15	22	55
37	De Doncker RW	14	25	187
38	Garcia O	14	62	259
39	Mazumder SK	14	40	290
40	Meynard TA	14	51	276
41	Sul SK	14	42	255
42	Zane R	14	52	144
43	Chen KH	13	18	39
44	Fujita H	13	24	316
45	Habetler TG	13	18	273
46	He XN	13	32	137
47	Huber L	13	42	159
48	Williams BW	13	18	109
49	Wu B	13	25	96
50	Chapman PL	12	45	211

Table 2 shows the ranking list of authors according to their publication count. The author Lee F.C contributed 82 articles and got the first place among the taken sample of 2369 articles. The second place got by Chung and he contributed 52 articles and the third place got by Ballbjerg contributed 48 articles in the ranked list of first 50 authors.

Table 3 Document-wise Distribution of Publications

S.No.	Document Type	Records	TLCS	TGCS
1	Article	2049	4701	27810
2	Proceedings Paper	274	888	4661
3	Correction	19	1	4
4	Editorial Material	14	3	24
5	Review	6	17	136
6	Letter	5	9	43
7	Biographical-Item	1	0	0
8	Reprint	1	8	19

Table 3 displays the type of document published in the journal IEEE Transaction on Power Electronics from the year 1999 to 2010. The articles formed the first place with 2049 and conference proceeding papers formed second place with 274 among the sample of 2369 contributions. The biographical item and reprints formed the eighth place with only one.

Table 4 Institution-wise Distribution of Publications

S.No.	Institution	Records	TLCS	TGCS
1	Virginia Polytech Inst & State University	119	565	2890
2	City University Hong Kong	49	158	679
3	Nanyang Technol University	33	85	645
4	University Aalborg	31	188	1185
5	University Illinois	31	117	711
6	Zhejiang University	29	98	427
7	Univ Wisconsin	28	122	996
8	DELTA Prod Corp	27	106	450
9	Queens University	23	79	313
10	Texas A&M Univ	23	42	537
11	Univ Fed Santa Catarina	23	76	462
12	Natl Univ Singapore	22	49	332
13	MIT	21	51	269
14	Univ Oviedo	21	29	144
15	Hong Kong Polytech University	20	46	302
16	Korea Adv Inst Sci & Technol y	19	50	299
17	Seoul Natl University	19	63	385
18	Tokyo Inst Technol ogy	19	73	465
19	Univ Padua	18	67	287
20	Georgia Inst Technol ogy	17	30	372

Table 4 indicates the ranked list of institutions which contributed more articles in the journal IEEE Transactions on Power Electronics. Virginia Polytech Inst & State University contributed nearly 119 articles and City University Hong Kong contributed 49 articles. Georgia Inst Technology formed 20th rank and contributed 17 articles among the sample of 2369 articles.

Table 5 Country-wise Distribution of Publications

S.No.	Country	Records	TLCS	TGCS
1	USA	762	2318	13213
2	Peoples R China	245	501	2470
3	Taiwan	178	282	1545
4	Canada	166	443	2088
5	Spain	136	366	1810
6	South Korea	124	258	1785
7	Japan	114	260	1622
8	Italy	107	243	1698
9	UK	105	167	1062
10	France	101	178	1386
11	Brazil	96	201	1322
12	Singapore	81	174	1064
13	Australia	69	240	1574
14	India	69	147	796
15	Germany	60	86	597
16	Denmark	57	230	1324
17	Switzerland	54	101	493
18	Iran	29	34	231
19	Netherlands	29	70	323
20	Israel	20	47	220
21	Chile	18	50	253
22	Finland	16	41	197
23	South Africa	16	29	145
24	Belgium	15	34	206
25	Ireland	15	25	167
26	Sweden	13	24	229
27	Unknown	13	6	49
28	Greece	12	28	294
29	Portugal	12	27	205
30	Turkey	12	20	164
31	Mexico	11	14	110
32	New Zealand	9	10	48
33	Romania	9	43	267
34	Thailand	9	7	28
35	Austria	8	17	102
36	Hong Kong	8	31	102
37	Poland	8	10	39
38	Tunisia	8	7	52
39	Malaysia	7	26	89
40	Venezuela	7	21	161
41	Argentina	5	8	50
42	Yugoslavia	5	10	90
43	Kuwait	4	4	28
44	Slovenia	4	7	60
45	U Arab Emirates	4	4	35
46	Egypt	3	12	33
47	Norway	3	3	46
48	Serbia	3	13	33
49	Tanzania	3	1	15
50	Uruguay	3	10	17
51	Algeria	2	4	14
52	Syria	2	2	14
53	Ukraine	2	1	18
54	Bangladesh	1	0	5
55	Bulgaria	1	2	4
56	Croatia	1	2	29
57	Hungary	1	1	16
58	Iraq	1	2	5
59	Lebanon	1	2	3
60	Macedonia	1	0	4
61	Moldova	1	6	31
62	Qatar	1	1	2
63	Russia	1	0	1
64	Saudi Arabia	1	0	0
65	Slovakia	1	4	17

Table 5 indicates the Country-wise distribution of publications and listed 65 countries. Usually Unites States of America ranked first with 762 contributions among the sample of 2369 contributions whereas the developing country China ranked second with 245 contributions. Japan formed the seventh place with 114 contributions and India formed 14th place with 49 contributions. Nearly 12 countries contributed each one article in the list of 65 countries.

Table 6 Top 10 Highly Cited papers

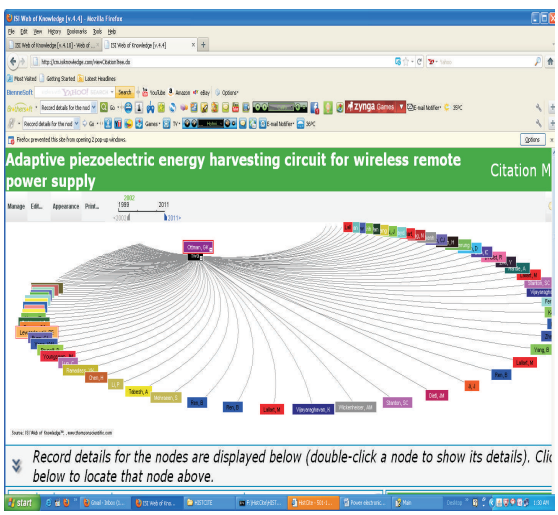
S.No.	LCR	CR	Date / Author / Journal	LCS	GCS
1	1	12	442 Ottman GK, Hofmann HF, Bhatt AC, Lesieutre GA Adaptive piezoelectric energy harvesting circuit for wireless remote power supply IEEE TRANSACTIONS ON POWER ELECTRONICS. 2002 SEP; 17 (5): 669-676	6	224
2	3	49	781 Blaabjerg F, Chen Z, Kjaer SB Power electronics as efficient interface in dispersed power generation systems IEEE TRANSACTIONS ON POWER ELECTRONICS. 2004 SEP; 19 (5): 1184-1194	29	203
3	0	13	273 Koutroulis E, Kalaitzakis K, Voulgaris NC Development of a microcontroller-based, photovoltaic maximum power point tracking control system IEEE TRANSACTIONS ON POWER ELECTRONICS. 2001 JAN; 16 (1): 46-54	11	188
4	0	18	155 Celanovic N, Boroyevich D A comprehensive study of neutral-point voltage balancing problem in three-level neutral-point-clamped voltage source PWM inverters IEEE TRANSACTIONS ON POWER ELECTRONICS. 2000 MAR; 15 (2): 242-249	19	187
5	0	10	579 Zmood DN, Holmes DG Stationary frame current regulation of PWM inverters with zero steady-state error IEEE TRANSACTIONS ON POWER ELECTRONICS. 2003 MAY; 18 (3): 814-822	16	179
6	1	14	524 Peterchev AV , Sanders SR Quantization resolution and limit cycling in digitally controlled PWM converters IEEE TRANSACTIONS ON POWER ELECTRONICS. 2003 JAN; 18 (1): 301-308	29	176
7	1	22	539 Patella BJ, Prodic A, Zirger A, Maksimovic D High-frequency digital PWM controller IC for DC-DC converters IEEE TRANSACTIONS ON POWER ELECTRONICS. 2003 JAN; 18 (1): 438-446	27	162
8	2	15	945 Femia N, Petrone G, Spagnuolo G, Vitelli M Optimization of perturb and observe maximum power point tracking method IEEE TRANSACTIONS ON POWER ELECTRONICS. 2005 JUL; 20 (4): 963-973	7	160
9	2	10	566 Ottman GK, Hofmann HF, Lesieutre GA Optimized piezoelectric energy harvesting circuit using step-down converter in discontinuous conduction mode IEEE TRANSACTIONS ON POWER ELECTRONICS. 2003 MAR; 18 (2): 696-703	3	148
10	0	28	6 Hava AM, Kerkman RJ, Lipo TA Simple analytical and graphical methods for carrier-based PWM-VSI drives IEEE TRANSACTIONS ON POWER ELECTRONICS. 1999 JAN; 14 (1): 49-61	22	132

Source: www.isiknowledge.com

Table 6 shows the top 10 cited articles among the sample of 2369 articles. Ottman, Hoffman and Bhatt's**,** **"**Adaptive piezoelectric energy harvesting circuit for wireless remote power supply" article formed the first rank in the top ten list with 224 citations whereas Blaabjerg, Chen and Kjaer's article formed the second rank with 203 citations.

Citation Map of Ottman GK et al. (Highly Cited Paper)

Title: Adaptive piezoelectric energy harvesting circuit for wireless remote power supply .
Author(s): Ottman GK, Hofmann HF, Bhatt AC, *et al.*
Source: IEEE TRANSACTIONS ON POWER ELECTRONICS
Volume: 17 Issue: 5 Pages: 669-676
Published: SEP 2002
Times Cited: 224



H-index of IEEE Transaction on Power Electronics

The H-index is based on a list of publications ranked in descending order by the times cited. The value of h is equal to the number of papers (N) in the list that have N or more citations. This metric is useful because it discounts the disproportionate weight between highly cited papers and papers that have not yet been cited. The IEEE Transaction on Power Electronics Journal H Index is 65 and it means that there are 65 papers which received more than 65 and above citations.

Results found	: 2,369
Sum of the times cited	: 32,697
Average citations per item	: 13.80
h-index	: 65

Table 7 Funding Agencies (Top 20)

Funding Agency	Record Count	% of 2369
National Natural Science Foundation of China	16	0.68
National Science Council Taiwan	13	0.55
National Science Foundation	12	0.51
National Science Council of Taiwan	6	0.25
Research Grants Council of the Hong Kong Special Administrative Region China	6	0.25
National Science Foundation NSF	5	0.21
Spanish Ministry of Education and Science	5	0.21
Delta Environmental and Educational Foundation	4	0.17
Office of Naval Research	4	0.17
Safran Group	4	0.17
Ministry of Knowledge and Economy	3	0.13
National High Technology Research and Development of China	3	0.13
National Science Council	3	0.13
National Science Council of Taiwan R O C	3	0.13
National Science Foundation Engineering Research Center	3	0.13
Spanish Ministry of Science and Technology	3	0.13
Australian Research Council	2	0.08
Boeing Company	2	0.08
Centre for Power Electronics City University of Hong Kong	2	0.08

Table 7 shows the top list of funding agencies which sponsored for the contribution. Among the above list of 19 funding agencies, National Natural Science Foundation of China sponsored for nearly 16 contributions and National Science Council, Taiwan ranked second in the sponsor with 13 contributions. The National Science Foundation took three places with the sponsor of 12 contributions.

6. CONCLUSION

The maximum numbers of articles are published in the year 2009 during the last ten years. The numbers of articles are increased from the year 2001 to 2009. It shows the gradual increase in the growth of articles in the field of Power Electronics. The author with 82 contributions formed the first place in the top 50 authors. The proceeding papers forms place next to articles in the document type. Virginia Polytechnic Inst & State University contributed more articles in the Power Electronics journal. It is interesting to note that China took second place in the contribution of articles. National Natural Science Foundation of China sponsored for the more articles. IEEE Transaction on Power Electronics is the very popular journal in the IEEE Database. The popularity of the journal IEEE Transaction on Power Electronics shows an upward trend as more and more authors round the globe are contributing to this journal.

REFERENCES

[1] V.L. Kalyane, "A Bibliometric Study of the Journal of Oil Seeds Research", Ann Lib Sci Doc, Vol. 42, No.4, 1995, pp.137-140.

[2] Tilak Hazarika, "Bibliometric Analysis of Indian Forester: 1991- 2000", 2003.

[3] C.Baskar, *et al, "*A Scientometric Study of Publication on Oncology during 1991-2007", IJISS, Vol. 2, No.1, 2008, pp.20-22.

[4] S. Srinivarsa Ragavan, *et al*, "Mapping of Harvard Business Review publications", Journal of Business Management studies, Vol.6, No.2, 2010, pp. 59-66.

Mapping of Computer Communication Research Output among Indian Scientists (1976-2009): A Scientometric Study

M. Amudha[1] and C. Muthusamy[2]

[1]AJ College of Pharmacy, Solinganalur, Chennai – 600 119, Tamil Nadu, India

[2]Mohammad Sathak College of Arts and Science, Solinganallur, Chennai - 600 119, Tamil Nadu, India

E-mail: sailokheshh2005@yahoo.com, muthulib1958@yahoo.co.in

(Received on 03 May 2011 and accepted on 30 May 2011)

Abstract

This study has analyzed the findings of a scientometric analysis of Computer Communication research publications in India during the period 1976–2009. The sample data was downloaded from the database of SCI, SSCI and AHCI from Web of Science. The search key term used for getting data is computer communication; the total number of records is 176. The methodology chosen for this paper is the scientometric method by way of growth rate, areas of research concentration, author productivity and authorship pattern. The study shows the growth rate has been varied during the selected periods. It is showed from this analyses that majority of papers are multi-authored. The ranking of authors based on their publications shows that 'Aggarwal KK' in first place with 12 records with 157 Global Citation Scores. The journals articles occupied the predominant place among the other sources of publication.

Keywords: *Authorship Pattern, Computer Communication, Prolific Author, Research Productivity, Scientometric Study*

1. INTRODUCTION

The term Scientometrics originated as a Russian term for the application of quantitative methods to the history of science [1], but its scope and objectives have widened considerably. Scientometrics studies characterize the disciplines using the growth pattern and other attributes [2]. These studies have potential particularly in assessing the emerging disciplines. In the present study, we studied the Scientometrics study of the research performance on computer communication, a significantly growing area in the knowledge-driven world [3].

2. OBJECTIVES OF THE STUDY

The main objectives framed for the present study are:

a) To identify the year-wise growth rate of Computer Communication literature;
b) To find the prolific authors and analyses the authorship pattern and examine the research Collaboration;
c) To assess the Institution-wise research concentration in Computer Communication;
d) Test the applicability of scientometric indicator tools of Lotka's law and Bradford's law.

3. METHODOLOGY

The study entitled "Mapping of Computer Communication Literatures research output among Indian Scientists: A Scientometric Study" is a case study encompassing records output on Science from Science Citation Index (SCI), Social Science Citation Index (SSCI) and Arts and Humanities Citation Index available on online (Web of Science) [4]. The present study aims to analyse the research output of researchers in the field of Computer Communication. The growth rates of output in terms of both at absolute level and relative level are analysed from 1976 to 2009. The authorship pattern and author productivity are examined to identify the pattern of research contribution in the field of computer communication [5]. The area-wise research performance is analysed to identify the emerging area of research. Further, an attempt is made to measure the performance of researchers and their research concentration in the field of computer communication and it is also analytical in nature in

strengthening the empirical validity due to application of suitable statistical tools [6].

4. DATA ANALYSIS AND INTERPRETATION

4.1 Growth of Publications

To analyse the year-wise publication of research on computer communication, the data has been presented in Table 1. The table depicts the research output in the Indian level. From the below table, we could clearly see that during the period 1976-2009 a total of 176 publications were published. The highest publication is 14 in 1996 and 2009 with 11 and 4 Global Citation Scores followed by 13 papers in 1994 with 15 Global Citation Scores (GCS) and 11 papers in 1993, 2007 and 2008 with 49, 23 and 5 Global Citation Scores. The lowest publication is each one in 1976, 1977, 1986, 1987 and 1988.

Table 1 Year - Wise Distribution of Computer Communication Literatures 1976 - 2009)

S.No	Year	R.o/p	%	TLCS	TGCS	S.No	Year	R.o/p	%	TLCS	TGCS
1	1976	1	0.6	0	0	16	1995	7	4.0	2	31
2	1977	1	0.6	0	0	17	1996	14	8.0	0	11
3	1981	3	1.7	2	64	18	1997	6	3.4	0	26
4	1982	3	1.7	2	61	19	1998	7	4.0	0	4
5	1983	3	1.7	0	0	20	1999	8	4.5	1	23
6	1984	1	0.6	0	15	21	2000	5	2.8	0	38
7	1985	2	1.1	0	6	22	2001	5	2.8	0	10
8	1986	1	0.6	0	1	23	2002	8	4.5	0	47
9	1987	1	0.6	0	1	24	2003	6	3.4	0	34
10	1988	1	0.6	0	34	25	2004	7	4.0	0	28
11	1990	5	2.8	0	8	26	2005	8	4.5	0	30
12	1991	5	2.8	0	23	27	2006	5	2.8	2	8
13	1992	3	1.7	1	54	28	2007	11	6.3	0	23
14	1993	11	6.3	0	49	29	2008	11	6.3	0	5
15	1994	13	7.4	2	15	30	2009	14	8.0	0	4

4.2 Authorship Pattern

The Authorship Pattern of Computer Communication Research in Indian level is analysed and the results in the Table 2 depicts that majority of papers are multi-authored. Articles having single authors constitute only 17.05 % of the total paper, followed by 82.95% multiple authors. It clearly brings out that collaborative research in the field dominates. Authors are ranked by number of publications. By clicking on the all-author hotlink, the most-published author in computer communication displayed and is presented in the Table 2. Hotlinks also permit display of the authors by Global or Local Citation Score. Thus the most-cited authors are distinguished from the most-published ones. The individual citation frequencies for these papers are totaled. The table shows that among the author, Aggarwal KK in first place with 12 records followed by others.

4.3 Document-Wise Distribution

The highest number of publications were 148(84.1%) in journals articles with six Total Local Citation Scores and 557 Total Global Citation Scores and other publications were 15(8.5%) in conference proceedings, eight (4.5%) in Reviews, four (2.3%) in Notes, one (0.6%) in Letter. In the context of Indian level 84% papers were published in journal articles and other publication followed by other forms.

Table 2 Ranking of Prolific Authors by Number of Publication (Top 50 Authors)

S.No•	Author/s	R.o/p	TLCS	TGCS
1	AGGARWAL KK	12	4	157
2	SOI IM	7	1	19
3	GUPTA UC	5	0	22
4	SINHA BP	5	1	30
5	MUKHERJEE A	4	4	12
6	PATNAIK LM	4	1	51
7	RANA VS	4	0	1
8	SAHA D	4	4	15
9	CHAKRAVARTI AK	3	0	1
10	CHOPRA YC	3	2	76
11	DAS S	3	0	1
12	MAHESHWARI RP	3	2	8
13	PANDA G	3	0	5
14	SHARMA AK	3	0	3
15	ANVEKAR DK	2	0	0
16	BAJWA JS	2	2	61
17	BANDYOPADHYAY AK	2	0	3
18	BHALJA B	2	2	4
19	BHATTACHARYA M	2	0	6
20	BHUNIA CT	2	0	7
21	DAS D	2	1	16
22	DASGUPTA S	2	0	2
23	GUPTA M	2	0	0
24	GUPTA R	2	0	1
25	KAMAL TS	2	0	2

Sl.No.	Author/s	R.o/p	TLCS	TGCS
26	Kekre HB	2	0	1
27	KORIEM SM	2	0	0
28	KUMAR A	2	0	34
29	KUMAR JM	2	1	51
30	KUMAR S	2	0	0
31	KUMAR V	2	0	10
32	MAJUMDER A	2	0	1
33	MURTHY CSR	2	0	32
34	PAL S	2	0	6
35	PATHAK SS	2	0	11
36	RAI S	2	1	86
37	RAO TSSS	2	0	6
38	SARNOT SL	2	0	4
39	SHARMA V	2	0	1
40	SINGH IV	2	0	6
41	SINGH P	2	0	5
42	TIWARI GN	2	0	13
43	TOYAMA K	2	0	2
44	VENKATARAM P	2	0	19
45	ABRAHAM A	1	0	1
46	ADYA M	1	0	0
47	AGARWALA RA	1	0	1
48	AGNIHOTRI RK	1	0	0
49	AGRAWAL DP	1	0	34
50	ANAND S	1	0	2

Table 3 Document-Wise Distribution of the Computer Communication Output

S.No.	Document Type	R.o/p	%	TLCS	TGCS
1	Article	148	84.1	6	557
2	Proceedings Paper	15	8.5	1	34
3	Review	8	4.5	2	31
4	Note	4	2.3	3	27
5	Letter	1	0.6	0	4
	Total	176	100	12	653

4.4 Scattering of Journals

The articles of computer communication, which appears in various journals, have been ranked and the top 10 journals are displayed in Table 4. The results are self-explanatory by stating that the journal of "Microelectronics and Reliability" is stands in rank one followed by the journal of "Computer Communications" is rank two followed by the other journals having lesser publication contributions.

4.5 Distribution of Institution-Wise Research Productivity

Table 5 indicates Institution-wise research productivity. It is noted that Indian Institute of Technology ranks first in order by contributing 39(22.2%) with 138 Global Citation Scores of total research output. The second place in order is recorded by Regional Engineering College, which shares 15(8.5%) with 104 Global Citation Scores, Indian Institute of Science 13(7.4%) with 71 Global Citation Scores and other Institutions have contributed less than 10 Publications.

Table 4 Scattering of Articles in Different Journals (Top 10)

S.No .	Journal Name	R.o/p	%	TLCS	TGCS
1	Microelectronics and Reliability	14	1.290	2	93
2	Computer Communications	11	0.884	4	33
3	IETE Technical Review	10	0.025	0	10
4	Electronics Information & Planning	9	0.024	0	5
5	IETE Journal of Research	6	0.059	0	2
6	Current Science	5	0.973	0	17
7	Defence Science Journal	4	0.118	0	0
8	Journal of the Institution of Electronics and Telecommunication Engineers	4	0.031	0	5
9	Computers & Electrical Engineering	3	0.443	0	0
10	Electric Power Components and Systems	3	0.376	2	4

Table 5 Institution-Wse Distribution of Computer Communication Literatures (Top 10)

S.No .	Journal Name	R.o/p	%	TLCS	TGCS
1	Indian Institute of Technology	39	22.2	2	138
2	Regional Engineering College	15	8.5	2	104
3	Indian Inst Science	13	7.4	1	71
4	Jadavpur University	8	4.5	4	20
5	Indian Stat Inst	5	2.8	1	36
6	Anna University	4	2.3	0	10
7	Indian Space Research Org	3	1.7	0	0
8	National Inst Technology	3	1.7	0	1
9	University of Calcutta	3	1.7	0	1
10	Birla Inst Technology & Science	2	1.1	0	6

4.6 Subject-Wise Distribution of Publications

It is evident from the Table 6 that most of the articles (45.45%) covered in the field of Engineering, Electrical and Engineering and followed by Telecommunications (19.89%), Computer Science, Information System (11.36%), Hardware and Architecture (10.80%) and others in various disciplines.

4.7 Collaborative Geographical Research Output

Table 7 identifies the countries with which India collaborates in the field of Computer Communication research. USA and UK appear nine and four times in the addresses of the authors in the database and are in the top of the list. Canada, Germany, Netherlands, Norway, Singapore and Southkorea follow with three and one appearances respectively.

Table 6 Subject-Wise Distribution of Publications

S.No.	Subject	R.o/p	% of 176
1	Engineering, Electrical & Electronic	80	45.45
2	Telecommunications	35	19.89
3	Computer Science, Information Systems	20	11.36
4	Computer Science, Hardware & Architecture	19	10.80
5	Computer Science, Interdisciplinary Applications	16	9.09
6	Computer Science, Theory & Methods	15	8.52
7	Physics, Applied	15	8.52
8	Nanoscience & Nanotechnology	14	7.95
9	Computer Science, Software Engineering	11	6.25
10	Multidisciplinary Sciences	10	5.68
11	Engineering, Multidisciplinary	8	4.55
12	Information Science & Library Science	8	4.55
13	Operations Research & Management Science	8	4.55
14	Engineering, Industrial	7	3.98
15	Mathematics, Applied	7	3.98
16	Computer Science, Artificial Intelligence	5	2.84
17	Management	5	2.84
18	Mechanics	5	2.84
19	Optics	4	2.27
20	Computer Science, Cybernetics	3	1.70
21	Energy & Fuels	3	1.70
22	Thermodynamics	3	1.70
23	Automation & Control Systems	2	1.14
24	Engineering, Aerospace	2	1.14
25	Engineering, Civil	2	1.14
26	Mathematics, Interdisciplinary Applications	2	1.14
27	Physics, Multidisciplinary	2	1.14
28	Physics, Nuclear	2	1.14
29	Agriculture, Multidisciplinary	1	0.57
30	Astronomy & Astrophysics	1	0.57

Calculation of h-index

The h-index is based on a list of publications ranked in descending order by the Times Cited. The value of h is equal to the number of papers (N) in the list that have N or more citations. This metric is useful because it discounts the disproportionate weight of highly cited papers or papers that have not yet been cited.

Table 7 Geographical Distribution of Papers

S.No.	Author/s	R.o/p	%	TLCS	TGCS
1	India	175	99.4	12	651
2	USA	9	5.1	0	40
3	UK	4	2.3	0	8
4	Canada	3	1.7	0	4
5	Germany	3	1.7	0	10
6	Netherlands	1	0.6	0	1
7	Norway	1	0.6	0	1
8	Singapore	1	0.6	0	0
9	South Korea	1	0.6	0	0

Calculating the h-index Value

The h-index factor is based on the depth of the Web of Science subscription and the selected time span. Items that do not appear on the Results page will not be factored into the calculation. If the subscription depth is 10 years, then the h-index value is based on this depth even though a particular author may have published articles more than 10 years ago. Moreover, the calculation only includes items in Web of Science - books and articles in non-covered journals are not included.

Results found : 176
Sum of the Times Cited : 653
Average Citations per Item : 3.71
h-index : 13

5. FINDINGS AND CONCLUSION

The trend towards collaborative research is gaining currency day-by-day. Every work of researchers depends purely on the library because it contains more sourceable information. The research in the field of Computer Communication has become an important entity wherein more and more researchers help to make it innovative.

The above analysis explicit the following findings and results from the observations:

i. The year - wise distribution of research output on Computer Communication brings out the fact that the highest publication is 14 in 1996 and 2009.

ii. The authorship pattern of Computer Communication research identified that majority of papers are multi-authored.

iii. The ranking of authors based on their publications shows that Aggarwal KK in first place with 12 records with 157 Global Citation Scores.

iv. The source-wise distribution of research output brings out the fact that the journals articles occupied the predominant place among the other sources of publication.

v. The ranking of source brings out the fact that the highest numbers of publications were 148(84.1%) published in Journal articles with 557 Global Citation Scores.

REFERENCES

[1] B.S.Kademani, *et al.,* "Scientometric Dimensions of Nuclear Science and Technology Research in India: A Study Based on INIS (1970-2002) Database", Malaysian Journal of Library & Information Science, Vol. 11, No. 1, 2006, pp. 23-48.

[2] Walke Rajpal and S.M. Dhawan, "Materials Science Research in India: A Scientometric Analysis", Desidoc Bulletin of Information Technology, Vol. 27, No. 1, 2007, pp. 69-76.

[3] A. Srimurugan and S. Nattar, "D-Lib Magaine: A Bibliometric Study", Indian Journal of Information Science and Services, Vol. 3 No. 1, 2009, pp. 1-4.

[4] G. Stanhill, "The Growth of Climate Change Science: A Scientometric Study", Climatic Change, Vol. 48, No. 2-3, 2001, pp. 515-524.

[5] M. Suriya and A. Manimekalai, "Evaluation of the Research Productivity of the Marine Scientists in Annamalai University: A Bibliometric Analysis" ISSI-95: Proceedings of the 5th Biennial International Conference on Scientometrics and Informatics, Chicago USA. XV, 1995, pp. 545- 554.

[6] M. Surulinathi, *et al.,* "Scientometric Dimensions Of Knowledge Management Research In India: A Study Based on Scopus Database", Sri Lankan Journal of Librarianship and Information Management, Vol. 2 No. 2, 2008, pp. 13-24.

Consortia of Electronic Journals among Veterinary College Libraries in India: A Model

U.S. Jadhav
Karnataka Veterinary, Animal & Fisheries Sciences University, Bidar - 585 401, Karnataka, India
E-mail: usjadhav71@rediffmail.com
(Received on 05 May 2011 and accepted on 29 May 2011)

Abstract

The present approach towards partnership, networking, consortia and resource sharing adopted by Indian libraries need radical changes to evolve responsive partnerships in order to achieve best performance in service. The current practices of journal acquisition in most of the veterinary college libraries in India are print based; in which each library is an island with regard to access of information. Moreover, there is wide disparity in the availability and use of information among different universities and colleges. But, consortia based acquisition and electronic desktop delivery of information can eliminate this gulf and increase the access and use considerably. This paper depicts the benefits of library consortia, analyses the present trend in the formation of consortia in India and suggests a new model of library consortia in which all veterinary college libraries could participate. The formation of such an unique consortia under the direction and full support by the ICAR, New Delhi is stressed. This paper proposes to form consortia of veterinary college libraries in India. Also discusses major consortia initiatives of India, elements of resource consortia and proposed model of consortia. To develop these libraries and to put in to more use at maximum extent there is a need of resources consortia of e-journals for the academic benefit.

Keywords: *Consortia Models, E-Journals, Indian Initiatives and Networking, Pricing*

1. INTRODUCTION

Veterinary education in Indian subcontinent is as old as human civilization and was much advanced at that time [1]. *Salihotra* from the vedic period was considered as the "*Father of Veterinary Science*", an expertise in treating diseases of horse, elephant and cow. Veterinary Science was well developed in India as early as Vedic period [2]. Atharava Veda (1500-500 B.C.) has reference to horse management and treatment, elephant management and health care etc. Emperor Ashoka the grandson of Chandra Gupta Maurya who turned to Buddhism, had given Veterinary Science in India a new turn [3]. It is described that world's first veterinary hospital on record, existed in Ashoka's regime.

In order to train personnel in modern veterinary and animal husbandry practices, the first course on veterinary science was organized in 1821 [4]. The first civil veterinary school, the Punjab veterinary school was started in 1882 at Lahore, which subsequently was elevated to college in 1902 with amalgamation of veterinary school of Lahore and Ajmer. In due course of time other veterinary colleges i.e., at Bombay (1886), Culcutta (1893), Patna (1930), Hyderabad (1946), and Mathura (1947) came up. At present, there are seven veterinary universities, 43 veterinary colleges. Out of these, 18 colleges are constituent of seven state veterinary universities and others are part of State Agricultural Universities (SAU's). One is affiliated to general university (Pondicherry). The establishment of the Indian Council of Agricultural Education under the ICAR was one of the major steps undertaken by the Government of India that helped the development of Agricultural education including Aimal science education in post-independence period [5]. The role of veterinary colleges in India is to enhance the livestock production, health improvements, milk production and strengthening the nation's wealth. Accordingly, Veterinary colleges have been contributing their share in upgrading the quality of veterinary education in the country through quality improvement of academic studies, and faculty improvement programmes. All the existing veterinary and animal science educational institutions come under the purview of Indian Council of Agricultural Research (ICAR), New Delhi.

In the veterinary information world, there are a lot of opportunities to seize new possibilities presented by ICTs to provide relevant information for veterinary practitioners in the most convenient way. In order to really understand the realms of the existing current status and prospects of Veterinary College Libraries in India, the study has been undertaken.

2. NEED FOR THE STUDY

Libraries of Veterinary Colleges have been providing academic support to its members by ensuring quality based library and information service and

assisting in the academic, research and extension activities of the institutions. However, numerous problems are faced by these libraries in the Indian context, viz., financial crunch, lack of adequate infrastructure, technological gadgets, manpower, technical competencies, escalating cost of the literature, ever changing needs of the users, devaluation of Indian currency in the international market etc. Moreover, electronic resources relevant to the profession are developing at an unprecedented pace.

The existing literature shows that studies on Veterinary College libraries in Indian context are not carried out exclusively in depth but only very few articles have been published especially on the user behaviour towards use of information sources in Veterinary College Libraries. Further, hardly any effort has been surveyed on the current status of Veterinary College Libraries in India. Continuing veterinary education is gaining momentum in the developing countries including the Indian subcontinent. To keep pace with the information explosion, veterinary professionals need to be informed of the latest development in the field of veterinary science so that they can effectively deliver the goods. To achieve this, library system being integral part of every veterinary college, cannot be overlooked. In this context, the present study occupies much significance in India.

3. OBJECTIVES OF THE STUDY

The consortia being an association of like-minded libraries and in the present context to provide access to e-journals and databases. It can have its own structure of governance and can act as a corporate body on behalf all members with set goals and benefits mentioned below.

a. Increase the access base -More e-journals
b. Rational utilization of funds - A little more pays a lot
c. Ensure the continuous subscription
d. Qualitative resource sharing - Effective document delivery service
e. Avoid price plus models - Pay for up-front products not for R&D
f. Enhanced image of the library - Visibility for smaller libraries
g. Improve existing library services - Boosting professional image
h. Harness developments in IT - Facilitate building digital libraries
i. Cost sharing for technical and training support
j. Increase user base - Access from desktops of users

A library consortia formation can be at local, state wide, national and inter institutional level for making available the veterinary resources and services available both within the premises of members and outside for the benefit of users.

4. RESEARCH DESIGN AND METHODS

4.1 Study Population

The population of the study consists of Veterinary College Libraries in India. There are 43 veterinary colleges in the country. Out of 43 veterinary colleges, 39 veterinary volleges located in different states of India responded with a response rate of 90.6%. These have been covered in the study, and research data pertaining to the collection development, annual budget, manpower, and technical processing, technological implications on libraries and facilities for resources access to the users have been collected and presented in the study.

4.2 Tool for Data Collection

Survey method has been employed to elicit information from the Veterinary College Libraries in India which has been imparting veterinary and animal science education.

The questionnaire and interview schedule has been pre-tested by conducting a pilot study at Madras Veterinary College, Chennai and based on their feedback and valuable input, the research tool i.e. questionnaire and interview schedule have been finalized.

An attempt has been made in this article to analyze and interpret the research data collected from the Veterinary College Libraries in India in the light of the objectives of the study. For the convenience of the research study, data collected has been analyzed and highlighted the status of consortia with respect to year of establishment of veterinary college libraries in India.

5. DATA ANALYSIS AND INTERPRETATION

The first veterinary college of the country was established in Bombay (Maharashtra) during 1886, which was also the starting point of the first veterinary college library in India. At present, there are 43 veterinary colleges and equal number of libraries established in the country. It is also observed that the Government of India has given more emphasis for establishment of Veterinary Colleges especially during 1950s and 1980s.

Table 1 Establishment of Veterinary Colleges in India

Sl. No.	Block Period	No. of Veterinary Colleges	Percentage
1	Before 1940	04	10.26
2	1941-1950	05	12.82
3	1951-1960	09	23.08
4	1961-1970	03	7.69
5	1971-1980	01	2.56
6	1981-1990	09	23.08
7	1991-2000	06	15.39
8	After 2001	02	5.12
	Total	39	100.00

Data in Table 1 depicts that there has been gradual growth of veterinary colleges in India over a period of time. As per the decade wise break-up, the number of veterinary Colleges established during 1951-60 and 1981-90 is found to be more, accounting to 23.08% (9 Colleges). On the other hand, only one veterinary college has been established during 1970s.

The 39 veterinary colleges, under study are located in different states of India. They have been imparting veterinary and animal science education. The libraries attached to their colleges cater to the information needs of the undergraduates, postgraduates, scientists and faculty members in the field of veterinary and animal husbandry. The state-wise distribution of veterinary college libraries is presented in Table 2.

From the Table 2, it is evident that maximum numbers of veterinary volleges are established in Maharashtra with six (15.4%) colleges, followed by Karnataka state with four (10.3%) colleges. Andhra Pradesh, state stands 3rd with three (7.68%) colleges. While, Assam, Gujarat, Madhya Pradesh, Uttar Pradesh, Jammu & Kashmir, Kerala and Tamil Nadu rank fourth with each

Table 2 State-wise Distribution of Veterinary Colleges in India

Sl. No.	State	Number of Colleges	Percentage
1	Andhra Pradesh	3	7.68
2	Assam	2	5.13
3	Bihar	1	2.56
4	Chattisgarh	1	2.56
5	Gujarat	2	5.12
6	Haryana	1	2.56
7	Himachal Pradesh	1	2.56
8	Jammu &Kashmir	2	5.13
9	Jharkhand	1	2.56
10	Karnataka	4	10.3
11	Kerala	2	5.13
12	Madhya Pradesh	2	5.13
13	Maharashtra	6	15.4
14	Manipur	1	2.56
15	Orissa	1	2.56
16	Pondicherry	1	2.56
17	Punjab	1	2.56
18	Rajasthan	1	2.56
19	Tamil Nadu	2	5.13
20	Uttar Pradesh	2	5.13
21	Uttaranchal	1	2.56
22	West Bengal	1	2.56
	Total	39	100

state having two (5.12 %) veterinary colleges and the remaining 12 states are having one (2.56%) each. Thus,veterinary colleges are scattered around the country.

Veterinary sciences has occupied significant role emerging as an independent discipline catering to the academic and research needs of the societies in the field of veterinary and animal sciences. Except Maharashtra state, the availability of veterinary colleges in other states is found to be very less. Therefore, keeping in view of the significance of the discipline and its requirements in different states of the country, there is a need for establishment of more veterinary colleges in each state of the country.

Table 3 Access to Library Networks and Consortia among Veterinary College Libraries

Member of Library Consortia	No. of Libraries	Percentage
INDEST	1	2.56
ARIS	9	23.08
CeRA (Consortium for e-Resources in Agriculture)	29	74.36
INFLIBNET	3	7.7
DELNET	1	2.56
MALIBNET	1	2.56

It is observed from the Table 3 that majority of the veterinary college libraries (74.36 %) are subscribing to CeRA consortium accessing online journals and electronic databases available in the field of veterinary and animal sciences, while 23.08% of veterinary collegelibraries form consortia members of ARIS network. It is also observed from the table that only one library is a part of INDEST consortium. About 7.7% of libraries are members of INFLIBNET network and one (2.56%) library is connected to DELNET and one to MALIBNET.

Although three fourth of veterinary college libraries are part of CeRA consortia, and ICT infrastructure is found to be very less for exploring CeRA consortia. Adequate ICT infrastructure with better bandwidth is essential for maximum exploitation of the facilities available.

In order to provide access to various electronic journals and online databases available under national consortia to the users, veterinary college libraries have been following different approaches for accessing e-resources under consortia, which is presented in Table 4.

One third of the (33.33%) libraries are accessing full text e-sources under consortia through Internet, while 30.76% of libraries are getting articles in the form of soft copies and 25.64% of veterinary college libraries are approaching other libraries to fulfill the requirements of users.

Table 4 Methods of Accessing E-resources Under Consortia

Sl. No.	Methods Used for Meeting the Requirement of the Users	No. of Libraries	Percentage
1	Getting articles in the form of soft copies	12	30.76
2	Consultation facility & approach to other libraries	10	25.64
3	Access to full text of publications through Internet resources	13	33.33
4	Exchange of publications	05	12.82

The primary objective of academic libraries is to organize and provide access to information. Under the present scenario of declining budget and higher subscription costs of journals, it is becoming very difficult to meet the demands of library/information users. The only solution to the problem is the pooling and sharing of print as well as electronic resources by way of consortia using latest Information and Communication Technology gadgets.

Table 5 Resource Consortia Activities

Sl. No.	Consortia A ctivities	No. of Libraries	Percentage
1	Co-operative Acquisition	9	23.07
2	Union Catalogue	9	23.07
3	Document Delivery of Service	6	15.38
4	Exchange of Experience & Expertise	5	12.82

It is observed from Table 5 that 23.07% of veterinary college libraries are carrying out co-operative acquisition activities and have union catalogue; where as 15.38% of libraries are following co-operative document delivery service among the participating libraries. Similarly, 12.82% of libraries exchange their experiences and expertise of the staff through the consortia activities among participating member libraries.

The idea behind resource consortia is to achieve co-operation among libraries in sharing manpower, resources and services assessing maximum benefit spending limited resources. The result from the Table 5 calls for improving and enhancing resource consortia activities among Veterinary College Libraries in India.

Budget estimate for establishing network facilities in a Veterinary College is shown in Table 6, which provides a clear picture about the technical infrastructure and allied components required for campus network in a veterinary colleges.

Table 6 Budget Estimate for Establishing Network Facilities in a Veterinary College

Equipments	**Configuration** (Minimum)	**Students**		**Departments & Clinical Blocks (20) (1:5)**	**Quantity**	**Cost (In lakhs)**
		UG (300) (1:10)	**PG & PhD (100) (1:5)**			
Computer Systems	Pentium IV	30	20	100	150	45.00
Main Servers	Quad Core Intel® Xeon® 8Th 3Ml, Cache Server, Hot Swap, Raid Controller	-	-	-	2	9.00
OFC Cable & E-CAT Cable	Single & Double core, CAT 6 or higher	-	-	-	2 bundles (based on plinth area)	4.00
Data Optic Switches	CISCO or D-Link (24 port & higher)	-	-	-		1.50
Firewall	Anti-virus (Corporate edition)	-	-	-		0.90
Internet Bandwidth	Leased Line (Min. 2 mbps)	-	-	-		3.70
Manpower for network setup	Technical Personnel	-	-	-		1.00
					Total	65.10
Annual Maintenance Contract	Reserve 10% of the total cost of equipments	-	-	-		5.00

The strength of students on an average enrolled in the veterinary colleges in India are between 300 and 400 students comprising of Undergraduates, Postgraduates and Research scholars based on the results of Table 1.

Each veterinary college needs to set up campus network by initial investment of Rs 65.10 lakh, which may vary from one institute to other in the interest of effective information transfer and e-governance. Although the approximated cost (vide Table 1) looks bit high, it should be noted that it is a one time investment for long term benefit.

6. ESTABLISHING VETERINARY LIBRARY NETWORK (VETLIBNET)

The databases of all individual libraries will be merged. This has a major advantage from the user's point of view; it will be easy to veterinarians as well as faculty and students to access /get required information where the centralized databases are available. The unique library software is very much essential for creating the database and accessing the information from central node.

VETLIBNET (Veterinary Library Network) is a proposed network of libraries (Figure 1) under the purview of veterinary council of India covering 43 veterinary colleges in India, whose main mission is to create a virtual network of library information sources and services to provide effective and efficient access to knowledge through perseverance, innovation and collaboration. In this direction, Indian Veterinary Research Institute (IVRI), being one of the premier research institutions with Deemed University status can take lead in establishing library network for all the veterinary institutes in the country. By establishing campus network in all the veterinary college libraries as proposed earlier, cost on establishing Veterinary Library Network at national level would be easier. By establishing national network, individual libraries will be benefited by the resources available in the veterinary libraries at national level.

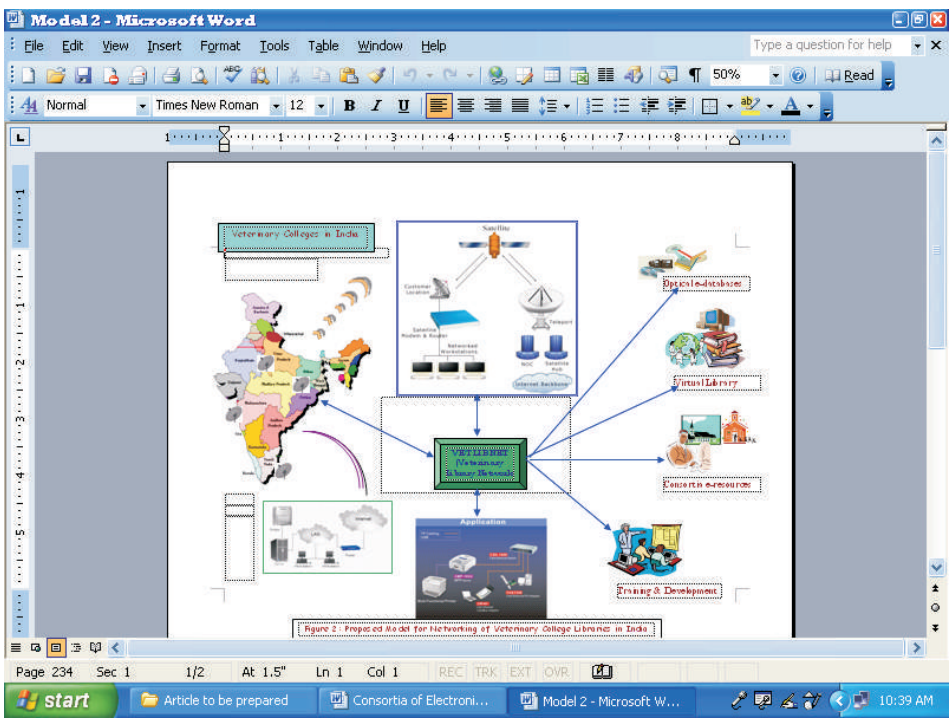


Fig. 1 Proposed veterinary library network (VETLIBNET)

The major activities and functions of this proposed VETLIBNET (Veterinary Library Network) are to strive to devise and execute the following:

a. Database management should be of high priority insisting on library automation in each and every veterinary college library and thereby creating databases of books, serials holdings, current serials, theses, experts and research projects. To achieve this, national policy be framed in selecting a uniform library software for consistency and compatibility so that union catalogue of participating libraries can be established acting as a national gateway to the veterinary information resources to the world at large.

The major activities and functions of this proposed VETLIBNET (Veterinary Library Network) are to strive to devise and execute the following:

a. Database management should be of high priority insisting on library automation in each and every veterinary college library and thereby creating databases of books, serials holdings, current serials, theses, experts and research projects. To achieve this, national policy be framed in selecting a uniform library software for consistency and compatibility so that union catalogue of participating libraries can be established acting as a national gateway to the veterinary information resources to the world at large.

b. Developing standards and uniform guidelines in techniques, methods, procedures, computer hardware and software, services and promote their adoption in actual practice by all libraries, in order to facilitate pooling, sharing and exchange of information towards optimal use of resources and facilities.

c. National consortium exclusively in the field of veterinary sciences should be worked out to identify core journals and databases of relevance to support academic and research activities of veterinarians / scientists in the country.

As such, regular education and training should be imparted to the library professionals working across the country so that the emerging technologies could be properly implemented in their respective libraries. Further national meets/ conferences are organized every year as a platform for exchange of ideas/skills and keeping up-to-date in the development of the library and information science.

7. CONCLUSION

Veterinary libraries are at infant stage. Any planning can be easily adopted and implemented in the initial stage and therefore the veterinary libraries can be developed on modern lines to suit the changing needs of users and technological developments, so that investments will be less and the output efficiency will be optimum to meet the organizational goals.

The proposed model of service delivery needs to be implemented with sound ICT infrastructure with innovative library services to manage electronic resources and develop opportunities using technology for the desktop delivery of services and continuing to manage efficiently and effectively the print collections in the knowledge age.

With this changes, library staff can spend significantly less time on collection management tasks and technical tasks such as document delivery, cataloguing, acquisitions, inter-library loans etc., which are now undertaken by the Knowledge Resource Centre, and more time on proactive service delivery and the development of value added information products. More specifically, the veterinary libraries have to work on current awareness services, assistance to patrons with bibliographic searching, need based training, development of virtual libraries, develop and access consortia based e-resources, promotion and training in use of knowledge management tools, online collaboration tools and maintenance and updating.

REFERENCES

[1] S.P.S. Ahlawat and Rupasi Tiwari, “Veterinary Education in India: Present Satus and Prospectus”, University News, Vol. 46, 2008, pp. 17-23.

[2] R. De Gannaro, “Escalating Journal Prices: Time to Fight Back”, American Libraries, Vol. 8, 1977, pp. 69 – 74.

[3] D.W. King *et.al*., “Statistical Indicators of Scientific and Technical Communication (1960-1980)”, Rockville:King Research Inc.,Centre for Quantitative Sciences, Vol. 2, 1976.

[4] D.W. King and Carol Tenopir,“Economic Cost Models of Scientific Scholarly Journals”, University of Tennessee School of Information Sciences Center for Information Studies, Paper Presented to the ICSU Press Workshop, Keble College, Oxford, UK, 31 March - 2 April 1998.

[5] Sarah Anne Murphy *et al*., "Standards for the Academic Veterinary Medical Library", Journal of the Medical Library Association (JMLA), Vol. 93, No.1, pp.130-132.

Information Retrieving Habits of Art Faculty Members at University of Allahabad, Allahabad, Utter Pradesh: A Survey

Ashwani Kumar[1] and Pravish Prakash[2]

[1]Department of Library and Information Science, B.B. Ambedkar University, Lucknow - 226 025, Utter Pradesh, India

[2]Tagor Library, University of Lucknow, Lucknow - 226 007, Utter Pradesh, India

E-mail: ashbds.amb@gmail.com, pravishprakashbhu@gmail.com

(Received on 03 May 2011 and accepted on 28 May 2011)

Abstract

This study identifies the information retrieving habits of art faculty members in University of Allahabad, Allahabad, Utter Pradesh including preferred information sources, type of information sources and methods of information access. In this study, questionnaire method was used to collect the information from art faculties of Ambedkar University, Allahabad. The findings of this study show that most of the respondents i.e. 85% stated their method of retrieving information by consulting a knowledgeable person in the concern field. 75% of faculty members retrieve information for preparing lectures. It is revealed that 87 % of the art faculty members used text book. On the basis of survey it is find out that Internet has been almost universally adopted and google.com was mostly used as the search engine for retrieving information by respondents. It is observed that the majority, 81% of the faculty members faced common problem i.e. unavailability of information.

Keywords: *Art Faculty, Information Retrieving, University of Allahabad*

1. INTRODUCTION

According to Vishwanathan, Information is the data of the human brain in the action. It may be abstract or concrete [1]. When an individual begins to think, a variety of images and sensations flash across his/her mind. This makes some information to accumulate in his/her mind and his/her memory retains some pieces of knowledge [2].

Information is the data that have been retrieved and processed. Information retrieving habits is a broad term, which involves a set of actions, that and individual takes to express information need, retrieve information, evaluate and select information, and at last uses of this information to satisfy his/her information needs [3]. There are various factors which may determine the information retrieving habits of an individual or a group of individuals.

There is a universal assumption that man was born innocent or ignorant and should actively retrieve the knowledge information retrieving is thus a natural and necessary mechanism of human existence [4].

Information retrieving habits is the purposive retrieving for information as consequence of a need to satisfy some goals. Information retrieving habits involves personal reasons for retrieving information the kind of information which are being sought [5].

1.1. University of Allahabad

The University of Allahabad enjoyed the central status at the time of its incorporation in 1887. The University community at large and its alumni had been demanding the restoration of the central status for more then four decades. The Government of India by a Gazette notification on June 23, 2005, declared the University of Allahabad to be an institution of national importance and consequently the University was granted central status. The Ministry of Human Resource Development notified that the central status shall become effective from July 14, 2005. The Government of India has also constituted the Academic Council and Executive Council of the University. The first Vice-Chancellor, the Registrar and the Finance Officer of the University are likely to be appointed very soon. The University is now poised to take rapid strides to reach new heights in the years to come.

Graduate and Post-graduate courses in the inter/multi-disciplinary mode are being specially designed to address new and emerging areas of Theoretical and Applied Sciences and the Social Sciences. Of these, B.Sc. programme in Applied Sciences and the Masters Programmes in Human Resource Development and Management, Bio-Technology, Cognitive Science, Bio-Informatics, Environmental Science, Food Technology and Nutritional Science are already operational, and Masters Programmes in Applied Behavioural Science and Nano Science and Technology are on the anvil. The University is moving towards the concept of five-year integrated graduate and Post-graduate programmes in almost all faculties. Several innovative Diploma and Certificate Courses (in the Self-financing mode) have already been launched in tune with new career/vocational opportunities. Professional Bachelors programmes in Fine Arts (BFA) and Music (BMus) have been developed to supplement the general graduate courses in Music and Painting and would eventually replace the latter, while professional/quasi-professional Bachelors programmes have already been instituted in Journalism and Mass Communication (BJMC) and Physical Education (BPE). Many departments are exploring cross-disciplinary methodologies and techniques in research problems specific to their respective disciplines, and some entities have instituted the M. Phil. degree while others are in the process of following suit. The vision and objectives animating the endeavours of the University in these respects are set out in the Vision of the University of Allahabad for the Next Ten Years. This Vision Plan is in accordance with the experience of the University in charting out its way through the constructive turbulence of the times and the understanding of potentialities and possibilities it has gained in this process. The Vision Plan is the cornerstone of recent initiatives and developmental programmes of the University.

2. REVIEW OF RELATED LITERATURE

The literature of information retrieving habits of users available is greatly broad ranging. An attempt has been made to cover number of works that go beyond discussions of the information retrieving habits itself and its direct applications to closely related topics such as information retrieving.

Challener [6] investigated artists and art historians teaching in five liberal arts colleges and three universities. Results found that they need information for teaching. The participants almost all subscribe to art journals, and many read newspapers. They visit libraries frequently, usually more than one library, and unlike previous reports, the majority are willing to ask the librarian for help. A large percentage of both art historians and artists are using computers for teaching. All 27 participants use slides extensively in the classroom, supplemented in most cases by textbooks.

Shokeen and Kushik [7] studied about information retrieving habits of social scientists working in the universities located in Haryana. They reported most of the social scientists visit the library daily. The first preferred method of searching the required information by the social scientists followed by searching through indexing and abstracting periodicals, and citations in articles respectively. The social scientists use current journals followed by books.

Suriya, Sangeetha and Nambi [8] carried out a research work on "Information retrieving habits of faculty members from Government Arts Colleges in Cuddalore District." The purpose of their study was to investigate, how faculty members seek information from the library. It mentions that most of the respondents (38.12%) visited the library several times a week to meet their information needs. Regarding the type of search made by the respondents the majority of the respondents (56.87 %) made their search by subject.

3. OBJECTIVES OF THE STUDY

This study has the following specific objectives:

1. To evaluate the information retrieving habits of art faculty members to retrieve the information;
2. To determine the kind of information are used by faculties;
3. To study the purpose of information retrieving by faculties;
4. To reveal the preference of language of reading materials;
5. To find out the problems faced by art faculties in University of Allahabad, Allahabad while retrieving and using information.

4. SCOPE OF THE STUDY

The scope of the study confines to the analysis of the information requirements of art faculty members in different departments under the faculty of art in University of Allahabad, Allahabad. Information retrieving habits is defined as "those activities a person may engage is when identifying his or her own words for information search for such information is any and using for transferring the information". The concepts of information retrieval and information retrieving habits are objects of investigation of information science. Within the scientific discipline a variety of studies has been undertaken analyzing the interaction of an individual with information sources in case of a specific information need, task and context. There are total 16 departments under the faculty of art at University of Allahabad, Allahabad, out of which questionnaires were distributed to the respondents of faculty of Political Science, Hindi, Education, Physical Education, Urdu, Sanskrit, Arabic & Persian, Philosophy, Psychology, Medill & Modern History, Music & Performing Arts, Journalism and Mass communication, etc.

5. METHODOLOGY

This survey includes all faculty members of Arts distributed to 83 respondents by hand. Faculty of Arts falls under the various departments such as Political Science, Hindi, Education, Physical Education, Urdu, Sanskrit, Arabic & Persian, Philosophy, Psychology, Medill & Modern History, Music & Performing Arts, Journalism and Mass communication, etc. at University of Allahabad, Allahabad, UP which comprises different departments and about 54 faculty members was selected. The questionnaires were distributed to the members who were present or free in their departmental office. 54 filled-in questionnaires were returned by the respondents with the overall response rate being 65%.

6. DATA ANALYSIS AND INTERPRETATION

A total of 83 structured questionnaires were distributed among art faculty members at University of Allahabad, Allahabad. A Total of 54 questionnaires were received. All received sample questionnaires were analyzed statistically. The open-ended questions were analyzed using content analysis. The number of respondents (faculty members of Arts) who respondents the dully filled questionnaires were 54 i.e. 65% (Table 1).

Table 1 Responses from Art Faculty Members

Name of the Department	Details Regarding the No. of Respondents		
	Distributed Questionnaires	Received Questionnaires	%
Dept. of Political Science	17	13	76
Dept. of Hindi	13	8	61
Dept. of Education	15	11	73
Dept. of Physical Education	7	5	71
Dept. of Urdu	2	1	50
Dept. of Sanskrit	2	1	50
Dept. of Journalism & Mass Communication	2	1	50
Dept. of Philosophy	2	-	-
Dept. of Psychology	2	1	50
Dept. of Medill & Modern History	2	1	50
Dept. of Music & Performing Arts	4	2	50
Dept. of Arabic & Persian	2	-	-
Dept. of Ancient History	3	1	33
Dept. of Geography	3	1	33
Total	83	54	65

6.1. Classified Data on Respondents

The analysis of data in Table 1 shows that out of 54 respondents, maximum numbers of respondents i.e. 19 representing 76% of total respondents are from the Dept. of Political Science. It is followed by other departments.

6.2. Method of Information Retrieving

The question was asked about the method used by respondents for retrieving information. Table 2 depicts that 85% of respondents consulted knowledgeable person in the field, 61% Internet surfing, 57% discussed with colleagues and 53% of faculties use Review articles to retrieve information.

Table 2 Method of Information Retrieving by Art Faculties

Method	Faculty Members	
	No. of Respondents	%
Consult a knowledgeable person in the field	46	85
Internet Surfing	33	61
Discussion with colleagues	31	57
Review articles	29	53
Library Catalogue	20	37
Abstracting journals	16	29
Seminar/ conferences	14	25
Indexing journals	14	25
Workshops	13	24

6.3. Purpose of Retrieving Habits

Table 3 exposes about the purpose of retrieving information by the respondents. Following table shows that 75% of faculty members sought information for preparing class lectures, 72% for keeping up-date knowledge, and 37% for guiding researchers.

Table 3 Purpose for Information Retrieving of Art Faculties

Purpose	Faculty Members	
	No. of Respondents	%
For preparing class lectures	41	75
For updating knowledge	39	72
For guiding researchers	20	37
Reference Collection	20	37
For writing and presenting paper	18	33
Social purpose	11	20

6.4. Type of Information

In Table 4, respondents were asked to indicate the type of information source which they used to retrieve information. On the basis of responses, text books are more popular source of information to retrieve information among 87% of faculty members of art.

Table 4 Type of Information Source Used by Art Faculties

Type of information sources/ Reading materials	Faculty Members	
	No. of Respondents	%
Textbooks	47	87
Periodicals	34	63
Newspapers	28	52
Exhibition	16	30
Government Publication	17	31
Reference books	35	65
Pamphlets	24	44
General books	26	48
Patents	29	54
Thesis/Research reports	39	72

6.5 Problems with Retrieving Information

The faculty members were asked to mention their problems faced while retrieving information. Table 5 shows that the majority of the respondents 81% of faculty members faced the major problems i.e. unavailability of materials. 72% of faculty members have other problems of shortage of journals in library.

Table 5 Problems Faced by Art Faculties

Problems	Faculty	
	No. of Respondents	%
Material is not available	44	81
Shortage of Journals	39	72
Incomplete information	29	54
Outdate material	27	50
Information scattered is too many sources	21	39
Library staff are unwilling for services	7	13
Lack of time	7	13
Do not know how to use the catalogue	--	--

6.6. Use of Internet

The art faculties at the University of Allahabad were asked about the use of the Internet. It is observed that the use of internet among all the respondents is very common. It is surveyed that 77% of art faculties use the internet daily for educational purpose in office. They also mentioned that they use e-mail frequently for communication.

6.7. Use of Internet Search Engines

The use of search engines is explored in Table 6**.** The following table depicts that 76% of art faculties use popular search engines especially Google, followed by yahoo 63% and so on.

Table 6 Use of Search Engines by Art Faculties

Search Engine	Research Scholars	
	No. of Respondents	%
Google.com	41	76
Yahoo.com	34	63
Opera.com	19	35
MSN.com	21	39
Rediff.com	21	39
AltaVista.com	13	24
Khoj.com	4	7
Any other	-	

6. CONCLUSION AND SUGGESTIONS

The study sought to examine the information retrieving habits of faculty members of art at University of Allahabad, Allahabad, by taking samples from all various departments under the faculty of Arts to get an overview of the information retrieving habits of faculties. The choice of collection should meet the need and requirements of the end users consequently, librarians must be aware of how the faculties retrieve information. The first three preferences given by faculties to retrieving information are text books, reference books and theses & research report. On the basis of the observation the majority of faculties i.e. 75% sought information for preparing class lectures, 72% for keeping up-date knowledge, and 37% for guiding research scholars.

In regard to information retrieving habits of University of Allahabad, Allahabad, UP, is recommended that library staff or reference librarians could use their time in a better way by focusing on assisting the users. Reference librarians should help users to improve their skills in information retrieving activities and to find the different types of information need. University library provide adequate ICT facilities for reference librarians, such as Internet, laser printers, scanners, fax machine, telephone, etc to offer various services in the library. Librarian should also assist users in e-learning, learning the use of websites available through the various networks. University's central library should have air-conditioned, properly

illuminated and ventilated that make libraries worth sitting and should free from dust. Reading room should be separate for faculties and other type of users, and it should be adjoining the stack area and have at least one attendant to take out the books and other reading materials from stack room.

REFERENCES

[1] E. Abels, "Information Seekers' Perspectives of Libraries and Librarians", Advances in Librarianship, Vol. 28, 2004, pp.151-170.

[2] A. Asemi, "Information Searching Habits of Internet Users: A Case Study on the Medical Sciences University of Isfahan, Iran", Webology, Vol. 2, No.1, 2005.

[3] A. Boyd, "Multi-Channel Information Seeking: A Fuzzy Conceptual Model", ASLIB Proceedings, Vol. 52, No. 2, 2004, pp. 81-88.

[4] C.M. Brown, "Information Seeking Behaviour of Scientists in the Electronic Information Age: Astronomers, Chemists, Mathematicians, and Physicists", Journal of the American Society for Information Science, Vol. 50, No.10, 1999, pp. 929-943.

[5] J.M. Budd and K.A.Williams, "CD-ROMs in Academic Libraries: A Survey", College & Research Librarians, Vol. 54, No. 6, 1993, pp. 529-535.

[6] J. Challener, "Information Seeking Behavior of Professors of Art History and Studio Art", Master Dissertation, School of Library and Information Science, Kent State University, 2005.

[7] A. Shokeen and S.K. Kushik, "Information Seeking Behaviour of Social Scientists of Haryana Universities", Library Herald, Vol. 40, No.1, 2002, pp. 8-11.

[8] M. Suriya, G. Sangeetha and M.A. Nambi, Information-Seeking Behaviour of Faculty Members from Government Arts Colleges in Cuddalore District, In: H.K. Kaul and S.K. Patil (Eds), Library and information Networking (NACLIN 2004) New Delhi, 2004, pp. 285-292.

Analysis of Academic Library Services Available to the Users: With Special Reference to Puducherry Region

S.S. Balasubramanian and M. Sadik Batcha
Department of Library and Information Science, Annamalai University, Annamalai Nagar - 608 002, Tamil Nadu, India
E-mail: bala.sivam@rediffmail.com
(Received on 04 May 2011 and accepted on 31 May 2011)

Abstract

In every academic institution, libraries are the central nerve system which enables the effective functioning of all academic related programs. In fact the trend in providing the services to the user community in most of the academic libraries has changed radically. The expectations from the users have also increased at an enormous level. Consequently the libraries in academic institutions are expected to equip it with the adequate infrastructure facilities, and latest technology devices, well trained staff structure and so on. This paper envisages the fact that the services provided in academic libraries and effectiveness among its users of Puducherry region.

Keywords*: Document Delivery Services, Information and Communication Technology, User Community*

1. INTRODUCTION

The Libraries in Academic Institutions are considered to be a prime source of imparting knowledge among the learning community [1]**.** The libraries are becoming Knowledge Centers. Academic libraries support and supplement the academic programs. Academic libraries are important resource of the academic community and help their members for their self development, fulfillment of curriculum requirements and for promotion of study and research.

Academic libraries are considered to be a backbone of any academic institutions [2]. They need to be equipped with adequate infrastructure namely sufficient space with necessary furniture for users, well trained staff so as to provide services to the users for making use of the library resources at a maximum level [3]. Essential technological devices are also equally important to help in speedy and efficient provision services [4]. This paper aim in bringing out the effective and efficient means of services provided in the academic libraries of Puducherry region.

2. OBJECTIVES

a) To know the existence of ICT based service in academic libraries in Puducherry region;
b) To know the level of document delivery service;
c) To analyze the Inter Library Loan Service in academic libraries of Puducherry region;
d) To emphasize the effective ways and means for providing improved services.

3. METHODOLOGY

A questionnaire had been designed and the same were distributed among the users of academic libraries of Puducherry region. The respondents mainly consist of students as well as faculties both male and female library users of Puducherry region after having necessary approval from concern authorities. The collected data were analyzed and interpreted in the form of tables.

4. DATA ANALYSIS AND INTERPRERATION

Table 1 ICT Based Services

Service Category	Availability		Total
	Yes	No	
Internet Service	653 (72.6%)	247 (27.4%)	900 (100%)
Access to Web Based Resources	555 (61.7%)	345 (38.3%)	900 (100%)
E - Journals	627 (69.7%)	273 (30.3%)	900 (100%)
E - Books	507 (56.3%)	393 (43.7%)	900 (100%)
Electronic Thesis Dissertations	257 (28.6%)	643 (71.4%)	900 (100%)
Access to Web Based Course Materials	391 (43.4%)	509 (56.6%)	900 (100%)

From the Table 1**,** it is evident that service category of internet service, e-journals, access to web based resources have occupied a higher level of satisfaction by the users. 72.6% of users are availing the facility of internet service, 61.7% of users are accessing the web based resources from their library. Like wise the facility of accessing e-journals also being benefited by the 69.7%of users. The remaining service category of e-books, electronic thesis dissertation, access to web based course materials are being provided by lesser number of academic libraries

Table 2 College - Wise ICT Based Services

Factors	College/University Libraries														
	PEC			PU			RGCET			CEC			SMVEC		
	Service Level			Service Level			Service Level			Service Level			Service Level		
	H	M	L	H	M	L	H	M	L	H	M	L	H	M	L
Internet Services	1			1					3			3			3
Access to Web Based Resources	1			1					3			3			3
E-Journals	1			1				2			2			2	
e-Books		2			2				3			3		2	
E-Theses and Dissertation	1			1				2				3			3
Access to Web Based Course Materrials		2			2				3			3			3

H - Highly M - Moderate L - Low

PEC - Pondicherry Engineering College

RGCET - Rajiv Gandhi College of Engineering and Technology

CEC - Christ Engineering College

SMVEC - Sri Manakula Vinayagar Engineering College

From the Table 2**,** it is clearly evident that Pondicherry Engineering College and Pondicherry University are providing ICT Based Services to its users effectively when compare to other colleges.

Table 3 Document Delivery Services by Academic Libraries

Factors	College/University Libraries														
	PEC			PU			RGCET			CEC			SMVEC		
	Service Level			Service Level			Service Level			Service Level			Service Level		
	H	M	L	H	M	L	H	M	L	H	M	L	H	M	L
DELNET	1			1			2					3		2	
INFLIBNET	1			1					3		2			2	
BLDSC		2			2		1			1					3
E-mail from Network Libraries	1			1					3			3			3
Web based Services	1			1				2				3			3

From the Table3**,** it is observed that Pondicherry Engineering College and Pondicherry University have occupied the H position in providing the Document Delivery Service, when compare to other colleges. Among the five colleges PEC library and PU library have almost in the same level of position in providing the service. Likewise the RGCET and SMVEC have occupied same level of second position. The C E C has occupied the third position in providing the above said service.

Table 4 Inter Library Loan Service

Factors	Faculty		Students		Overall		Total	%
	Male	Female	Male	Female	Male	Female		
Search / access the printed union catalogue of partner libraries	12 (1.3%)	4 (0.4%)	186 (20.7%)	41 (4.6%)	198 (22.0%)	45 (5.0%)	243	27.0
Search/access the database on CD ROM of Partner Libraries	6 (0.7%)	2 (0.2%)	152 (16.9%)	40 (4.4%)	158 (17.6%)	42 (4.7%)	200	22.2
Search / access the Web OPAC, Web based Union Catalogue of Partner Libraries	23 (2.6%)	9 (1.0%)	89 (9.9%)	22 (2.4%)	112 (12.4%)	31 (3.4%)	143	15.9
No Such Service	22 (2.4%)	2 (0.2%)	239 (26.6%)	51 (5.7%)	261 (29.0%)	53 (5.9%)	314	34.9
Total	63 (7.0%)	17 (1.9%)	666 (74.0%)	154 (17.1%)	729 (81.0%)	171 (19.0%)	900	100.0

The Table 4 shows the distribution of sample on the basis of Inter Library Loan service. Out of 900 library users 243 (27.0%) of them declared search/access the printed union catalogue of partner libraries, 200 (22.2%) of them declared search/access the database on CD ROM of partner libraries, 143 (15.9%) of them declared search/access the Web OPAC, Web based union catalogue of partner libraries and 314 (34.9%) of them have No Such Service. The statistical result shows that P value is < 0.001, which are significant shows that there is an association in type of respondents and Inter Library Loan service.

5. FINDINGS

1. Adequate infrastructure for providing the library services to the users can be seen at a satisfactory level in Pondicherry University and Pondicherry Engineering College when compare to other Colleges.
2. Students are the major user of libraries than faculties.
3. Inadequate fund allocation reflects in providing library services to the users.
4. Lack of adequate trained and skilled staff in providing ICT based services.

6. CONCLUSION

Based on the study, it can be concluded that the Library Services to the users are depending on the financial support and proper infrastructure provided by the management. Moreover lack of adequate skilled staff also plays an important role in providing the library and information services effectively.

REFERENCES

[1] S.D. Vyas, "Best Practices in Academic Libraries in India: A Study", ICAL 2009, Management Models and Framework, pp. 418-421

[2] NAAC, Best Practices in Library and Information Services, Case Presentations, NAAC 2006.

[3] D. Jotwani, Best practices in a Modern Library and Information Center: The case of Central Library, IIT Bombay; International CALIBER-2008.

[4] http://en.wikipedia.org/best practices.

Use of Electronic Resources by Users in the Faculty of Dentistry, Annamalai University: A Study

S. Thanuskodi
Library & Information Science Wing, Directorate of Distance Education, Annamalai University,
Annamalai Nagar - 608 002, Tamil Nadu, India
E-mail: thanuskodi_s@yahoo.com
(Received on 02 May 2011 and accepted on 27 May 2011)

Abstract

The coming of the World Wide Web has propelled vigorous growth of the electronic forms of communication which simply does not fit into the traditional publishing format. With the coming age of e-journals, there has been total transformation in the way scholarly communication is disseminated throughout the world. Sources of information available via the Internet are increasing exponentially. This comes with a steady increase in Internet use for education and for research. The Internet is also making substantial inroads in patient care and dissemination of health care information. It is changing the way health sciences professionals obtain information. They use the Internet and electronic resources to do things like accessing medical records, providing remote patient care through telemedicine facilities, and accessing health care literature. Dentists also depend more and more on the Internet. Dental product information, continuing education resources, online supply catalogs, and reference information have made Internet increasingly popular in dentistr . The present study is an attempt to examine the role of the Internet and electronic resources in Faculty of Dentistry, Annamalai University, Tamil Nadu.

Keywords: *CD-ROM, Dental Studies, E-resources, E-books, E-journals, Internet, Web Sites*

1. INTRODUCTION

Libraries are the lighthouses of information dissemination, an important component of any educational institution, and hub of learning activities where students, researchers, and teachers can explore the vast amount of information resources. The present age is regarded as the 'age of information' and information has become the commodity in today's context of information explosion where we are living in the information society. Information has become an essential requirement for every ones life. Each one of us requires information for our day-to-day activities. In this context, Library and Information Centres (LICs) are playing an important role in extending the required latest information services quickly to their users. In the 1960s and 1970s, librarians were using electronic databases as a part of library services. In the 1980s, libraries started using CD-ROM versions of electronic databases. In 1990s and from 2000 onwards, Internet access and consortia approach of journals subscriptions diversified the availability of electronic information. Presently many libraries in India have provisions to access the same electronic information in multiple ways.

As electronic information and its access has grown, selection of information sources has become complex. When alternatives were limited, selection was primarily based on the access and cost factors. As CD-ROM and tape-loaded with electronic information became available, local area networks (LANs) and interfaces became important issues in their selection. Now with multiple sources of information, human, demographic, and technological factors have become important in their selection process. In addition to these, factors like training standards, password protection mechanism, links-to-holdings, and full-text availability are the parameters used by the users for the selection process. Because of the dynamic nature of electronic information, traditional selection criteria are not effective, so new criteria must be developed or adopted. Internet has made tremendous impact on the academic activities of the faculty members, researchers, and the students. After the advent of Internet, a significant transition is seen in users' approach and the way they seek information and the methods they use in research and learning activities. This has become possible as Internet provides a wealth of new course materials and acts as a powerful supplement to the traditional ways of studying and learning. Internet is now

facilitating electronic communication, exchange of ideas, and collaboration in research globally. Internet can be accessed for the latest developments in one's area of research at an amazing speed. It also plays a significant role in distance education and conferencing and thus transforming the academicians as facilitators in providing guidance, drawing students, and steering observations. The Internet, therefore, creates an excellent academic environment where the academic community can perform their activities in a rejuvenated manner.

2. LITERATURE REVIEW

Doraswamy (2005) studied the use and familiarity of electronic information resources in paper titled "Familiarity and Use of the Available Electronic Information Resources by the Students in U.R Siddhartha Engineering College Library, Vijay Wada: Survey". The study was conducted by using questionnaire method. The findings show that 61.25% students are familiar with electronic information resources, 27.50% of the students use the computer daily and 5.63% have never used it. A small percentage of students, i.e., 2.5% of students used CD-ROM, 33.13% internet, 38.13% e-mail, 36.87% search engines, and 21.25% use VRSECE website 'daily' respectively. The online databases are used by 25% and VRSECE catalogue' once a month.18.75% of students use online journals rarely. 42.50% of the students use electronic information resources for communication purposes. The main problems faced while using electronic information resources were lack of training and time [1].

Kanwal, Ameen studied the "Barriers in Collection Sharing among Libraries of Pakistan: University Library Managers' Viewpoint". A survey method was used to explore the barriers to collection sharing among the well-established chartered university libraries situated in the major cities of Pakistan. The survey followed a qualitative design based on an interview technique of data collection. Twenty Chief / Head librarians from five major cities of Pakistan were interviewed. In-depth, semi-structured interviews were conducted at the librarians' workplaces during 2003 to 2004. The results of the present study revealed that various technical, procedural, psychological, and behavioral barriers in achieving planned and meaningful Collection-Sharing (CS) programs still prevail. It suggests analyzing the possibilities, opportunities, and challenges of CS in the emerging paradigm [2].

Razaand and Upadhyay (2006) carried out a survey was to examine the usage of e-journals by the researchers at Aligarh Muslim University. They used questionnaire method to find out purpose and place used by research scholars for using e-journals. The survey reveals that all the researchers are aware of e-journals in AMU. Many research scholars are consulting e-journals from their departmental labs and computer centers, not only for research purposes but also to update their own knowledge. Some problems like lack of training and slow downloading has been found and the researchers felt about the need for print journals as well as electronic journals [3].

Robinson (2005) examined in his research titled "Internet Use among African-American College Students: An Explanatory Study" the internet use among African-American college students. The respondents were surveyed by using the 43-items questionnaire to determine the frequency of use of internet. The results of the study indicated 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 work place with 49% response or at home with 47% response and they spent on an average 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 [4].

Shoham and Roitberg (2005) studied to measure purpose for visiting the academic library and uses made on its workstations in the paper titled "From Electronic Library to a Learning Centre in the Academic Library: Integrating Traditional and New Uses in the Library Workstation." Two methods were used to collect the data; questionnaires which were distributed in the sample libraries, and computerized observations which were done in one large library. The findings show that non-library user is the major activity on academic library workstations and that libraries with large number of workstations are more exposed to this trend and the non-library uses support learning [5].

Woo (2005) conducted the survey for users to evaluate the performance of the main library and the branch libraries, to identify performance gaps and to find out user preferences for print and electronics materials in the paper titled "The 2004 User Survey at University of Hong Kong Libraries". An online users' survey, with the option to complete in the print format was adopted as a method for study. The results show that 68.8% of the respondents prefer to use online journals as compared to 31.2% who prefer to use print journals, and 71.8% of the respondents prefer to use print books as compared to 28.2% who prefer to use electronic books [6].

4. OBJECTIVES

The objective of this study was to analyze the patterns of use of Internet and electronic resources for patient care, the Internet skills of the dentists, and problems faced by them while using the Internet and electronic resources. The study was conducted to find the satisfaction derived by the researchers with the Internet and electronic resources and to find an answer to the question: Can Internet and electronic resources replace print resources?.

5. METHODOLOGY

Keeping in view the above objectives in mind, a structured questionnaire was prepared to collect data from the students and faculty members in the faculty of dentistry, Annamalai University. Questionnaire contains various questions pertaining to the use of internet and e-resources. For this purpose a total of 110 questionnaires were distributed among students and faculty members in the faculty of dentistry, Annamalai University. Out of 110 questionnaires distributed, 97 valid questionnaires were collected and then data was analysed, tabulated, interpreted and presented in form of this paper.

6. DATA ANALYSIS

Analysis of data is the ultimate step in research process. It is the link between raw data and significant results leading to conclusions. This process of analysis has to be result oriented.

Table1 Sex-Wise Distribution of Respondents

Gender	No. of Respondents	Percentage
Male	74	76.28
Female	23	23.72
Total	97	100.00

Personal detail section of the questionnaire provides information regarding the sex and different qualifications as can be seen from Table 1. It is shown in Table 1, 76.28% of population studied were males and only 23.72 % of total were females, who can use internet and e-resources available through library for different purposes.

Table 2 Category-wise Distribution of Respondents

Academic Status	No. of Respondents	Percentage
Faculty Members	55	56.70
Students	42	43.30
Total	97	100.00

Table 2 shows that 56.70 % of the respondents werefaculty members and only 43.30 % were students.

The frequency of library visits by the user is usually influenced by factors such as collection, organization, and maintenance of the library resources along with the library resources, facilities and the library services.

Data presented in Table 3 indicate the category wise respondents' frequency of library visits. It could be noted that majority of the faculty members respondents (36.36%) make library visit as and when required. Around one fourth of the student respondents (26.19%) make library visit as and when required. A considerable number of students (16.67%) make library visit daily. It could be seen clearly from the above discussion that students and faculty members mainly make library visit as and when required.

The use of e-resources partially depends on the extent of internet access. Most of electronic information resources are accessible through internet. The respondents have been asked to indicate the frequency of access to Internet. The responses are given in Table 4.

Table 3 Category-Wise Respondents' Frequency of Library Visits

Category	Daily	Thrice in a Week	Twice in a Week	Once in a Week	Once in a Fortnight	As and When Required	Total
Faculty Members	5	6	7	8	9	20	55
	(9.09)	(10.91)	(12.73)	(14.55)	(16.36)	(36.36)	
Students	7	5	6	6	7	11	42
	(16.67)	(11.90)	(14.29)	(14.29)	(16.67)	(26.19)	
Total	12	11	13	14	16	31	97
	12.37	11.35	13.40	14.44	16.49	31.95	

Table 4 Category-wise Respondents' Frequency of Access to Internet

Category	Less than 2 Hours	2-3 Hours	3-4 Hours	4- 5 Hours	Above 5 Hours	Total
Faculty Members	5 (9.09)	6 (10.91)	7 (12.73)	11 (20.00)	26 (47.27)	55
Students	9 (21.43)	8 (19.05)	6 (14.29)	9 (21.43)	10 (23.81)	42
Total	14 (14.44)	14 (14.44)	13 (13.40)	20 (20.61)	36 (37.11)	97

Data presented in Table 4 indicate the category wise respondents' frequency of access to internet. It could be noted that majority of the faculty member respondents (47.27%) have above 5 hours of access to internet. Around one third of the student respondents (23.81%) have above 5 hours of access to internet. It could be seen clearly from the above discussion that 4-5 hours of access to internet is quite common among the respondents of students and faculty members.

The respondents were asked to indicate their level of Internet and computer literacy. It is evident from Table 5 that majority of the respondents (50.51%) have an expert level of Internet and computer literacy. Only 35.05% admitted that they are average level of internet and computer literacy. 14.44 % of the respondents reported that they have below average level of Internet and computer literacy.

Table 5 Level of Internet and Computer Literacy

Variables	Number	Percentage
Expert	49	50.51
Average	34	35.05
Below Average	14	14.44
Total	97	100.00

Table 6 Methods of Learning Internet Skills

Variables	Number	Percentage
Trial and Error	17	17.52
Guidance from Colleagues and Friends	27	27.83
Training Courses Offered by University	32	32.98
External Courses	21	21.65
Total	97	100.00

Table 6 depicts that the most popular method of acquiring the necessary skills to use Internet is via training courses offered by university. A majority of the respondents (i.e. 32.98%) used this method to learn the Internet, followed by guidance from colleagues and friends with 27.83% responses. 21.65% of the respondents learnt the Internet through external courses and 17.52% through trial and error.

Table 7 highlights the location from where the Internet and electronic resources are mostly accessed by the dental teachers and students. A majority of the respondents i.e. 50.52% access the Internet from the university or work place, while 31.95 % also access from home. Another 17.53% use cyber cafes for accessing the Internet and electronic resources.

Table 7 Place of Internet and Electronic Resources Access

Variables	Number	Percentage
Home	31	31.95
University of Work Place	49	50.52
Cafe	17	17.53
Total	97	100.00

The respondents were asked to indicate the main reasons for using the Internet and electronic resources. Table 8 shows that 59.79 % of the respondents use the Internet and electronic resources for perceiving the health / dental sciences information, followed by research with 21.65% responses and 18.56% for patient care.

Table 8 Main Reason for Using the Internet and Electronic Resources

Variables	Number	Percentage
Research	21	21.65
Health/ Dental Information	58	59.79
Patient Care	18	18.56
Total	97	100.00

Table 9 depicts the use of Internet services and electronic resources. E-mail has been chosen as the most popular Internet service and e-journals as the most popular electronic resource with 65.97 % and 70.10 % responses respectively. The use of Internet services in order of preference is WWW 53.60 %, Frequently Asked Questions (FAQs) 49.48%, chat 39.17 %, Internet telephony 32.98 % and blog 27.83 %. Similarly, the use of electronic resources in order of preference is e-books 57.73%, e-databases 46.39% and DVD/CD-ROMs 39.17%.

Table 9 Use of Internet Services and Electronic Resources

Variables	Number	Percentage
Internet Services		
E-mail	64	65.97
www	52	53.60
FAQ	48	49.48
Chat	38	39.17
Internet Telephony	32	32.98
Blog	27	27.83
Electronic Resources		
E-Journals	68	70.10
E-Books	56	57.73
E-Databases	45	46.39
DVD/CD –ROMs	38	39.17

Table 10 depicts the problems faced by the users in surfing. 76.28% of the respondents find overload of redundant information on the Internet. 43.29% find it difficult to get the relevant information from the Internet. 57.73% of the respondent's opinion that they face the problem of virus in the computers. 24.74% of the respondents also reported that data available on the Internet is not much authentic.

Table 10 Problems Faced by the Users

Variables	Number	Percentage
Difficulty in finding relevant information	42	43.29
Overload of information on the Internet	74	76.28
Virus	56	57.73
Data authenticity	24	24.74

Table 11 Do You Think Internet and Electronic Resources Can Replace Physical Resources?

Variables	Number	Percentage
Yes	68	70.11
No	29	29.89
Total	97	100.00

A majority of the respondents (70.11%) feel that Internet and electronic resources can replace print resources. Only 29.89 % of the respondents feel that the Internet and electronic resources cannot replace the physical resources (print resources), but only supplements the print resources.

7. RECOMMENDATIONS

Based on the findings of the study the following suggestions are made:

1. The Internet and allied technologies should be included in the curriculum of Dental sciences.
2. There should be complete campus-wide networking with the Internet browsing facility connecting the dental teachers' rooms as well as student hostels.
3. Libraries of dental colleges should subscribe more e-journals and e-databases.

4. Some orientation training progammes should be organized by the colleges at regular intervals so that the maximum users can improve their excellence or proficiency in the use of the Internet for academic purposes.
5. Information regarding the popular and the latest websites with their addresses should be displayed on the notice board in the computer lab.
6. The qualified IT staff should be appointed to provide the expert guidance to users about e-resources and Internet.

8. CONCLUSION

The growth rate in usage of electronic information resources is sufficiently high and if this trend continues for few more years, a time may come when the print versions will get 'totally eclipsed'. The coming of the World Wide Web has propelled this vigorous growth of the electronic forms of communication, which simply do not fit into the traditional publishing format. With the coming of the age of the e-journals, the way scholarly communication is disseminated throughout the world has totally altered. The Internet as medium of communication is useful in medicine, and has become an important means of delivering dental care. The use of the Internet is an evolving phenomenon at this stage. Its use in the dental colleges and hospitals under study is still in a state of infancy or early maturation. We can very well visualize a situation when all users will have achieved near perfection in the use of and full dependency on the Internet for their information needs. So still there is a vast scope of future research in different types of users' behaviour and comparison of users' behaviour towards the Internet.

REFERENCES

[1] M. Doraswamy, "Familiarity and Use of the Available Electronic Information Resources by the Students in U.R Siddhartha Engineering College Library, Vijay Wada: A Survey," NACLIN, 2005, pp.234-244.

[2] Ameen Kanwal, "Barriers in Collection Sharing among Libraries of Pakistan: University Library Managers'Viewpoint", Library and Information Science Research Electronic Journal, Vol. 18, No. 1, 2008, March http://libres.curtin.edu.au/

[3] M.M. Razaand and A.K. Upadhyaye, "Usage of E-journals by Researchers in Aligarh Muslim University: A Study," The International Information & Library Review, Vol.38, No.6, September 2006, pp. 170-179.

[4] Janniew Robinson, "Internet Use among African-American College Students: An Exploratory Study," Dissertation, George Washington University, DAI-A 65/12, 2005, Aug.2005.http://wwwub.uni.com/hersertations /fullert/3156015.

[5] Snunith Shoham and Nurit Roitberg, "From Electronic Library to a Learning Centre in the Academic Library: Integrating Traditional and New Use in the Library", 2005,

[6] Helen Woo, "The 2004 User Survey at the University of Hong-Kong Libraries", College and Research Libraries, March 2005, pp.115-130.

Awareness on Information Literacy of the Respondents in Tamil Nadu Agricultural University, India: A Discriminant Function Analaysis Approach

R. Jayaraman[1], S. Srinivasaragavan[2] and M.R. Duraisamy[3]
[1]Agricultural College and Research Institute, Madurai - 625 104, Tamil Nadu, India
[2]Department of Library and Information Science, Bharthidasan University, Trichy - 620 024, Tamil Nadu, India
[3]Depatment of Family Resource Management, Home Science College and Research Institute, Madurai-625 104, Tamil Nadu, India.
E-mail:jayaraman@gmail.com
(Received on 03 May 2011 and accepted on 31 May 2011)

Abstract

The study relates to the importance of different library information services and information literacy variables in determining the information seeking behaviour of the sample respondents of Tamil Nadu Agricultural University. The contributing variables towards the awareness on information literacy are overall rating Library resources (X_1), Information literacy satisfaction (X_2), Number of e-resources (X_3),Opinion about circulation (X_4), Opinion about user education (X_5),Usefulness of current literature (X_6) and Use of browsing internet (X_7). The results of discriminate function analysis have showed that out of 450 respondents, the percentage of correctly classified respondents was 70.7 % towards the awareness on information literacy. The percentage of wrongly classified respondents under awareness on information literacy groups is 28%. The percentage of wrongly classified respondents under unawareness on information literacy groups is 39%.

Keywords*:Discriminate Function, Factors of Information Literacy, Information Literacy, Library and Information Services.*

1. INTRODUCTION

Agriculture is the prime sources of income for majority of the people in our country. Development in this sphere largely depends upon the information gathered from teaching, research and extension activities. The history of modern higher education in agriculture in India can be traced back to establishment of agricultural colleges during 1905 at Nagpur, Kanpur, Lyalpur, and Coimbatore. At the time of independence, there were about 11 colleges offering programmes in agriculture and allied sciences. The establishment of a postgraduate school at Indian Agricultural Research Institute during 1958 was one of the important mile stones in the history of farm education. Today, we have 50 Agricultural Universities with 212 Colleges producing annually about 21,000 Undergraduates, 10,000 Postgraduates and around 2,700 Research scholars in the varied disciplines of agriculture. About 26,000 teachers and scientists are involved in agriculture education and training activities [1].

Tamil Nadu Agricultural University (TNAU) has been playing a significant role in the agricultural development of Tamil Nadu for the past four decades by conducting research in agriculture and disseminating the information for the development of agriculture in Tamil Nadu. Tamil Nadu Agricultural University library is one of the oldest libraries in India.

Information literacy is the ability to define one's information needs, and then to access, process, evaluate and use information for decision making, learning, and problem-solving. It is a tool for lifelong learning in the network era. Libraries are providing extensive support and training to users and also supplying access to information resources using all the available technologies [2].

The information services are the keys to the development of agriculture, agriculture based education, research, extension services and agribusiness etc. Various services are provided by the agricultural libraries for the betterment of the users and the country as a whole.

2. OBJECTIVES

The present study has the following objectives:

1. To determine the factors that discriminate the respondents into awareness and unawareness groups of information literacy;
2. To suggest the policy implication to improve the awareness of information literacy for the development of the sample respondents

3. HYPOTHESIS

The factors of Information Literacy and Library Information Services discriminate the respondents into two groups.

4. SAMPLING PROCEDURE AND COLLECTION OF DATA

The users of libraries of ten constituent colleges of TNAU viz., Under-Graduate and Post-Graduate students, Research scholars and Faculty were purposively selected for the study. From the list of users, the respondents were selected by simple random sampling technique. Data were collected from 450 respondents from ten Constituent Colleges of Tamil Nadu Agricultural University which includes 259 Undergraduates, 87 Postraduates, 33 Research Scholars and 71 Faculty Members.

The primary data were collected during the period of 2008-09. From the selected respondents by using pre-tested standard questionnaire, secondary data were collected from published and un-published sources.

5. TOOLS OF THE ANALYSIS

Discriminant function analysis was carried out to classify the respondents into two groups namely awareness group and unawareness group of information literacy. The mathematical model of the discriminant function is as follows [3]:

$$Z = \sum_{i=1}^{n} I_i X_i$$

Where Z =Total discriminant score for Information Literacy awareness group and Information Literacy unawareness group.

I_i = Co-efficient of the i^{th} variable estimated from the data i = 1,2,…….

X_i = Information Literacy and Socio-economic variables i = 1,2,……..n

6. VARIABLES

X_1= Over all Rating Library Resources

X_2= Information Literacy Satisfaction

X_3= Number of R-resources

X_4= Opinion about Circulation

X_5= Opinion about User Education

X_6= Usefulness of Current Literature

X_7= Use of Browsing Internet

7. DATA ANALYSIS

The discriminant function analysis was applied to identify the factors of Information Literacy and Library Information Services that discriminate the respondents into awareness of Information Literacy group and unawareness of Information Literacy group. The results are furnished in the following tables:

1. Group Means and Mean Differences for Discriminating Variables;
2. Percentage Contribution Individual variables to the Total Discriminant Score;
3. Classification of Respondents into Awareness of Information Literacy Group and Unawareness of Information Literacy Group by Using Discriminant Function.

Table 1 Group Means and Mean Differences for Discriminating Variables

S.No.	Variable	Awareness Group	Unawareness Group	Mean Group Difference
1	Over all Rating Library Resources (x_1)	2.68	2.25	0.43
2	Information Literacy Satisfaction (x_2)	3.47	3.05	0.42
3	Number of e-resources(x_3)	6.29	5.33	0.96
4	Opinion about Circulation(x_4)	3.07	3.33	-0.26
5	Opinion about User Education(x_5)	3.18	3.41	-0.23
6	Usefulness of Current literature(x_6)	3.46	3.00	0.46
7	Use of Browsing Internet(x_7)	3.94	3.31	0.63

The mean difference of awareness group and unawareness group of information literacy was worked out from the individual mean of the two groups for the significant variables such as over all rating library resources, information literacy satisfaction, number of e-resources, opinion about circulation, opinion about user education, usefulness of current literature, use of browsing internet. It is observed that the highest mean difference between the two groups with respect to the variable 'number of e-resources' was 0.96. The lowest mean difference for the two groups with respect to the variable 'opinion about user education' was -0.23. The relative contribution of the factors to the total discriminant score was estimated and expressed in percentage form. The results are furnished in Table 2.

Table 2 Percentage Contribution Individual Variables to the Total Discriminant Score

S. No.	Variable	Co-Efficient	Mean Group Difference	Co-efficient x Mean Difference	Percent Contribution
1	Over all Rating Library Resources (x_1)	0.55	0.43 (3.81)**	0.24	18.60
2	Information Literacy Satisfaction (x_2)	0.29	0.42 (2.95)**	0.12	9.30
3	Number of E-resources(x_3)	0.28	0.96 (2.24)*	0.27	20.93
4	Opinion about Circulation(x_4)	-0.49	-0.26 (-2.11)*	0.13	10.08
5	Opinion about User Education(x_5)	-0.42	-0.23 (-1.91)	0.09	6.98
6	Usefulness of Current Literature(x_6)	0.37	0.46 (2.74)**	0.17	13.18
7	Use of Browsing Internet(x_7)	0.43	0.63 (3.58)**	0.27	20.93
Total				1.29	100

Figures in the parenthesis are the calculated t values
* Significant at 5 percent level of significance ** Significant at 1 percent level of significance

The table shows that the variables 'over all rating library resources', 'information literacy satisfaction', 'number of e-resources', 'opinion about circulation', 'opinion about user education', 'usefulness of current literature', 'use of browsing internet' were the major factors of information literacy and library information services which classified the respondents into two groups namely Awareness and Unawareness of Information Literacy.

The table shows that the variables 'over all rating library resources', 'information literacy satisfaction', 'number of e-resources', 'opinion about circulation', 'opinion about user education', 'usefulness of current literature', 'use of browsing internet' were the major factors of information literacy and library information services which classified the respondents into two groups namely Awareness and Unawareness of Information Literacy.

Their respective power in discriminating two groups were 20.93, 20.93, 18.60,13.18,10.08,9.30 and 6.98 % respectively. Further, student't' test was applied to test the significant of mean differences of seven variable used for discriminating the two groups. The test showed that awareness group differed significantly from unawareness group with respect to all the seven variables. Therefore the discriminate equations which classify the respondents into two groups are as follows:

$Z = 0.55x_1 + 0.29x_2 + 0.28x_3 - 0.49x_4 - 0.42x_5 + 0.37x_6 + 0.43x_7$

The discriminant function was applied to test whether the sample respondents are classified into awareness on information literacy and unawareness of information literacy correctly or not. The results of application of discriminate function are furnished in the following Table 3.

Table 3 Classification of Respondents into Awareness of Information Literacy Group and Unawareness of Information Literacy Group by Using Discriminant Function

Respondents	Actual Number of Respondents in the Category	No. of Respondents in the Category as Placed by Discriminant Function	No. of Respondents Wrongly Classified	Percentage of Wrongly Classified Respondents
Awareness of Information Literacy Group	386	279	107	27.72
Unawareness of Information Literacy Group	64	39	25	39.06
Total	450	318	132	29.33

The Table 3 shows that out of 450 samples, 132 samples were wrongly classified. The percentage of respondents classified correctly out of total sample of 450 respondents was 70.7%. Out of 386 respondents under awareness information literacy group 107 respondents were wrongly classified and out of 64 respondents under unawareness of information literacy group 25 respondents were wrongly classified. The percentage of wrongly classified respondents under awareness information literacy group was 28%. The percentage of wrongly classified respondents under unawareness of information literacy group was 39%. Hence, the null hypothesis which stated that the factors of Information Literacy and Library Information Services which do not discriminate the respondents into awareness and unawareness groups of Information Literacy is being rejected. It indicated that socio-economic variables and factors of Information Literacy and Library Information Services discriminate the respondents sufficiently is accepted.

8. FINDINGS AND POLICY IMPLICATIONS

It is found that the percentage of respondents classified correctly out of total sample of 450 respondents is 70.7%. The percentage for wrongly classified respondents under awareness on Information Literacy group is 28%. The percentage for wrongly classified respondents under unawareness on Information Literacy group is 39%.

1. The awareness programmes on information literacy have to be arranged to improve the knowledge of information literacy of library users in different colleges of Tamil Nadu Agricultural University.
2. Library services have not been fully utilized at the optimum level. Hence, the awareness should be created among the library users in Tamil Nadu Agricultural University to use the library resources at the optimum level.

3. The awareness on e-journals should be created among the researchers at Tamil Nadu Agricultural University to improve the quality of research and knowledge in the field of interest.

4. The librarians at Tamil Nadu Agricultural University should take the initiative to prepare a list of websites for various disciplines like agriculture, horticulture, forestry, agricultural engineering, sericulture, home science, biotechnology etc, that are useful to the research workers and the students.

5. The awareness of e-resources should be created through seminars and conferences to improve the knowledge about Information Literacy of the library users at Tamil Nadu Agricultural University.

9. CONCLUSION

The various factors of information literacy and library information services discriminate the total respondents into awareness group and unawareness group on information literacy. The percentage contribution of the above variables in discriminating the total respondents into two groups is very useful to formulate the policies for libraries of Tamil Nadu Agricultural University.

REFERENCES

[1] Indian Council of Agricultural Research, Handbook of Agriculture, ICAR, New Delhi, 2009, pp. 1-17.

[2] Michael. B. Eisenberg, "Information Literacy: Essential Skills for the Information Age, 2nd Edn.", Librarians Unlimited, West port, 2004, pp. 13.

[3] A.K. Singh, *et al*., "Responsible Socio-Economic Characters of Borrowers for Non-Repayment of Crop Loan: A Discriminant Function Aanlysis", Cooperative Perspective, Vol. 37, No. 4, 2003, pp.11-18.

A Glance on Manpower in Public Library System in Kenya

Henry D S Kinya
Africa Nazarene University, Nairobi, Kenya
E-mail: hhkinya5@gmail.com
(Received on 03 May 2011 and accepted on 27 May 2011)

Abstract

Every public library in the community is unique and different in one way or the other by the community needs and services required by those it services, it should be reflected in distribution of manpower, also posting of the staff of the same job description and qualification is duplication of services and resources. Without diversifying and prioritizing services, duplication can deny users fundamental professional library information services like provision of subject analysis, statistical information and users' guidance. In assisting information users to access and use not only online information services but also access other websites services the role of public libraries within the information age context is changing from that of information provider to that of service provider and so is the roles of librarians; changing its old-age manual operations of print to print service to that of library networking to facilitate information sharing services and activities fundamentally requires the new dimension of trained manpower in ICT. In this paper manpower development, distribution and qualification in public libraries in Kenya has been discussed.

Keywords: *Public Libraries, Public Library Manpower Development*

1. PREAMBLE

Productive contribution and the development of democracy depend on acceptable education as well as on free and unlimited access to thought, culture and information. As per UNESCO public library manifesto (UNESCO, 1994), the public library, the local gateway to information make available a basic condition for lifelong knowledge, sovereign decision-making and cultural development of the individual and social groups.

Manifesto declares UNESCO's belief in the public library as a breathing force for education, culture and information, and as an indispensable agent for the nurturing of peace and spiritual wellbeing through the minds of men and women. UNESCO therefore supports national and local governments to maintain and actively take part in the development of public libraries. The enormous amount of information produced per second worldwide front is a greatest challenges to library system more so the public libraries in the history of publication. With advancement of standards through IFLA/UNESCO public libraries are stirring from the conventional and conservative services to expansion of database and information sharing through network accessibility of resources.

Public libraries represent an indispensable link in the scientific system chain, a crucial role link in the development and maintenance of wide range and intensity of knowledge modernization and ideas in society and at individual level.

2. PROPOSED RESEARCH

Many information scientists have used different terms for public library system study. The recognition of public library first took place in Western-Saxon countries. The term public library first appeared in Latin (bibliotheca publica) as a technical term in 17th century to distinguish the general university libraries of Oxford and Cambridge by then from those of endowed libraries. The historical combination of the growth of printing, public education, democratic institutions and urbanization during 19th century led to the establishment and development of public libraries in USA and UK. UNESCO stated that 'the public library is the principal means whereby the records of man's thoughts and ideas

and the expression of his imagination are made freely available to all'.

The term system has been incorporated in the public libraries in recent development to denote all segments of the library i.e. legislation, funding, manpower, collection, services, building and ICT. Although in practice all those segments are often inseparable in any public library

2.1 Public Library System

It is the communication of ideas and information for any type of users for their inseparable utilization in the promotion of democratic development of education to raise their economy as a result of sincere participation. Mostly it takes a pyramidal structure in nature with, state central libraries, district central libraries and village libraries [1].

2.2 Kenya National Library Services (KNLS)

The Kenya National Library Service (KNLS) Board [2] is a national corporation established by an Act of Parliament, Cap 225 of the Laws of Kenya in 1965 the Board commenced its mandated functions in 1967.

Board is empowered to develop public library services in Kenya to fill the vacuum that existed before and soon after independence regarding the provision of public library services hence bridge the level of literacy [3]. The headquarters library in Nairobi opened its doors to the public in 1969. Currently, the Board is responsible for managing eight libraries in eight provinces and over 32 libraries spread throughout the country at district level.

3. OBJECTIVES OF THE STUDY

The fundamental principle of creating a national public library network is to provide information and library services to users. The basic purpose of the study was to evaluate the performance of KNLS manpower. The specific objectives of the study are:

1. To evaluate the performance of manpower in public library system in Kenya;
2. To suggest best policy on manpower development in public library system in Kenya.

4. HYPOTHESES

The researcher, initiated the process of investigation, and so it resorted to the following hypothesis for the study:

1. Cultural and social situation of the country has its impact on public library system;
2. Public libraries in Kenya are economically disadvantaged;
3. Manpower development in public libraries in Kenya is in the developing stage.

5. SCOPE AND LIMITATIONS

Scope of the study was limited to the manpower development in public library system in Kenya e.g. KNLS.

6. RESEARCH METHODOLOGY

Present study used survey method as well as comparative method. A survey is one of the most effective and sensitive instrument of research which produces much needed knowledge.

7. DATA ANALYSIS

Attempt was made to collect data on manpower in KNLS 32(100%) libraries which is presented in Table 1.

The Table 1 shows total manpower distribution in KNLS 32(100%) libraries. It can be noted that the provincial libraries have a range of 5.00% - 16.51% manpower while district libraries have a range of 0.70% - 4.88%. Further it was noted that out of the total 860 KNLS manpower women were 40% of the total staff while men were 60%. The researcher attempted to response on the professional distribution which was not disclosed by the librarians in charge, due to personal reasons, this necessitated to get information from KNLS Director who gave information as presented in Table 2. The gender imbalance in KNLS is due to the cultural and social factor.

Table 1 Total Manpower

Name of Library	Number of Staff	Percentage
Nairobi	142	16.51
Buruburu	14	1.63
Mombasa	85	9.88
Kwale	12	1.40
Kilifi	15	1.74
Voi	18	2.10
Kisumu	45	5.23
Kisii	34	3.96
Ukwala	10	1.05
Nyilima	18	2.10
Awendo	8	0.93
Embu	48	5.88
Meru	13	1.51
Mwingi	21	2.44
Kithasyu	12	1.40
Nakuru	36	4.19
Eldoret	27	3.14
Kabarnet	16	1.86
Kericho	24	2.80
Silibwet	20	2.33
Kapsabet	14	1.63
Laikipia	21	2.44
Rumuruti	18	2.10
Nyeri	45	5.23
Thika	22	2.56
Naivasha	18	2.10
Karatina	15	1.74
Olkalou	10	1.05
Kakamega	43	5.00
Garissa	24	2.80
Wajir	6	0.70
Mandera	6	0.70
Total	860	100.00

An attempt was made to collect data on manpower i.e. designation, qualification and pay scale in KNLS 32(100%) libraries, which is presented in Table 2.

The Table 2 shows manpower presentation in KNLS in 32(100%) libraries. It can be noted that manpower in KNLS ranging from master degree and 12th class in the academic qualification. Further it was observed that manpower with a certificate to a master degree in library and information science in KNLS are 45.69% of the total manpower in KNLS, this representing 0.71% of total registered members, while those on the supporting staff are 54.31%. It can be observed that KNLS has over staffed on non-profession grades i.e. drivers, cleaners and clerks. The gap in the profession in KNLS has been attributed with lack of local institutions of higher learning offering the education in library and information science till 1990 when MOI University started the course. Most of the senior professionals are graduates from foreign countries. Also library science being a young profession in the country has not attracted many people to join it so is their pay scale it has not been fully recognized as a fully profession as lawyers and doctors.

On the refresher course offered to the KNLS staff it was observed from the librarian 32(100%), libraries confirmed to have received two refresher course in 2008; i.e. i) Performance contract ii) Supervisory skills, however, they stated that refresher course are done at the convenience of the management without prior consultation of the staff needs and knowledge gaps in the profession.

Table 2 Man Power in KNLS

Designation	No. of Posts	Qualification	Pay Scale(Ksh)
Director	1(0.12%)	MLISc (Master in Library & Information Sci)	450,000-550,000
Deputy Director	2(0.24%)	MLISc	150,000-200,000
Chief Librarian	1(0.12%)	MLISc	120,000-150,000
Principle Librarian	9(1.05%)	MlISc	90,000-120,000
Senior Librarian	14(1.63%)	MLISc	70,000-90,000
Librarian I	28(3.26%)	MLISc	60,000-70,000
Librarian II	36(4.19%)	MLISc /Bachelors/ Diploma in Library Sci.	50,000-60,000
IT Officer	15(1.74%)	Degree in Computer Sci.	50,000-60,000
Senior Library Assistant	126(14.65%)	Diploma in Library Sci./ Certificate	20,000-60,000
Library Assistant	178(20.69%)	Certificate in Library Sci.	10,000-20,000
Library Clerk	201(23.37%)	12^{th} Class	10,000-20,000
Library Attendant	146(16.98%)	12^{th} Class	7,000-10,000
Support Staff	103(11.98%)	12^{th}	7,000-10,000
Total	860		

8. CONCLUSION

Manpower gender imbalance and professional storage be addressed from the policy level. KNLS has 860 total numbers of staff in the whole republic: of which 45% of these are professionals, being a national information service provider this picture (Table 1&2) is below recommended IFLA public library staffing, hence service provision is affected with this shortage. 40% of the total staff being ladies again this imbalance has impacted even the registered members of the library indirectly. Less on books and more on educated staff, far better results would be obtained and KNLS goals and objective will be realized. The available manpower with library technical skills should be transformed to be having better communication skills, managerial skills, training skills and facilitation skills. These skills are acute and specific in enhancing better services to the users of KNLS in this era of technology. Staff will further acquire information analysis skills, repackaging, consolidation, technical reporting and downloading both structured and unstructured information available through internet for users.

REFERENCES

[1] V.K. Iyer, Public Library System in India. New Delhi, Rajat Publication, 1999.

[2] KNLS(Kenya National Library Services), 2008, http://www.knls.org).

[3] The Kenya National Library Board Act (Cap225) / Republic of Kenya, Nairobi, Government Printer, 1986.

Higher Education, Libraries, and Nigeria Government's Vision 20-2020 Project

Isaac Echezonam Anyira
Western Delta University Oghara, Eelta State, Nigeria
Email: anyiraisaac@yahoo.com

(Received on 04 May 2011 and accepted on 31 May 2011)

Abstract

This study explored the role of higher education and libraries in attaining the vision 20:2020 of the Nigerian Government. The study utilized the purposive sampling method to select 300 educationists and librarians in Niger Delta Region of the country. It was found that Nigerian libraries are greatly under stocked, and internet services are lacking in the library. It was moreover discovered that librarians lack adequate skills to render effective services to support the human capital target of vision 20:2020 of the federal government, and Nigerian libraries are grossly under funded. It was recommended that Nigerian Government should prioritize the development of internet services in all higher institution and public libraries to enable them support the vision; librarians should engage in ICT training; higher institutions in Nigeria should come up with an ICT/library development policy which must include how the library should be funded; and the public and the private sector should come together in partnership to ensure that libraries are adequately funded.

Keywords: *Human Capital Development, Higher Education, Libraries, Nigeria: Vision 20:2020.*

1. INTRODUCTION

Human survival can only be quickened with full access to the past intellectual contributions of scholars as well as being up to date with the growing and ever adding knowledge. Libraries are established to provide access to the past and present in order to overcome life's present challenges through access to past and present records of human intellectualism. Libraries have now become integral parts of modern societies and their contributions are more in the areas of education, information and development. The format of library resources is changing rapidly as more and more technological innovations emerge. With the introduction of the internet and the World Wide Web for instance, information has become more accessible than in the print regime, and it is now considered a key resource and asset in every aspect of life. Information resources available in modern day libraries include e-journals (current and archives), e-books, wiki resources, reports, websites, newspapers, reference resources, virtual library resources etc. According to Grillon the entrance into the information age has had many impacts on our way of life [1]. One of these impacts is the changes in information storage and retrieval. The jobs and functions performed by all and sundry are becoming increasingly information dependent. Nowadays, we are living in an information economy where information is the key resource and the library is charged with the responsibility of providing information.

The Library is a formal institution responsible for selecting, acquiring, processing or organizing, storing, retrieving information resources by using both manual and computerized methods. Many Libraries around the world store large amounts of information resources in different formats such as printed (books) and non-print (electronic) materials in different subject areas or disciplines. The challenge of making these materials available to library patrons is the essence of cataloguing and classification of library materials. Thus, in the bid to facilitate the retrieval of materials, the library design tools such as the library catalogue, the online public access catalogue (OPAC), shelf lists, indexes and abstracts, bibliographies etc., through which documents can be accessed via the author's name, title of the work, or the subject of the document. These retrieval tools

contain surrogates of information resources or documents that make up the library collection, which aid their retrieval.

The importance of libraries in education cannot be successfully underestimated. Education as a key component for human capital formation is recognized as being vital in creating the productive capacity of people. Education contributes directly to economic growth by making individual workers more productive and indirectly by leading to the creation of knowledge, ideas, and technological innovation. It is the library that provides the platform for education to thrive by making information resources readily accessible to teachers and students alike. This paper seeks to find out if the material stock, ICT infrastructure, librarian ICT skills, and funding of libraries in Nigeria's Niger Delta Region is adequate to provide effective services for the attainment of the 20:2020 vision of the federal government.

2. LITERATURE REVIEW

Though, education is recognized as the only instrument through which the society can be transformed, the library is the central nervous system of the educational sector. According to Anyira *et al.,* [2] research and library are not mutually exclusive. Sadiq [3] posited that no good research is possible without a good library. This is because the library provides the needed required materials, data, information, and literature for research. The library provides research facilities and resources, and in addition renders technical information services.

As a matter of fact, no nation's higher education can effectively be developed without its library first of all being developed. This is because the library is responsible for providing information resources that aid learning. This prompted Akingbola [4] to state that human capital development pre-supposes investment activities in library development and processes that produce knowledge, skills, health or values that are embodied in people. Therefore, library development is bedrock for education advancement and human capital development.

But, it was stated by Oladoyin and Dauda [5] that in the early 1970s Nigeria had a lot to spend as a result of the oil windfalls which accounted for the upsurge in the number of educational institutions and flourishing library services during the period. However, they stated that since the advent of democratic regime in 1999, successive Nigerian governments have underscored the need to invest substantially in library services and the educational sector in general. According to them, the Nigeria's educational system (including library institutions) was also accompanied by structural defects, inefficiency and ineffectiveness which today place the country at its lowest ebb in human capital development and utilization. The educational system tended to produce more of those who lack job skills for employment than those the economy requires to remain vibrant. The emphasis has been on linear expansion in the size of the educational system as well as libraries without any broad and dynamic conception of the qualitative dimensions of the system. The result of this include, lack of adequate material for research, lack of deployment of information and communication technology, brain drain, poor ICT skill, under funding and mismanagement of financial resources [6]. All these underscore the fact that libraries in Nigeria, the Niger Delta Region especially, are incapacitated to support education to produce the desired results in human resource development.

In spite of the gains derivable from quality education and library services, the sector continues to face a number of critical problems, Odukoya [7] stated that poor funding of libraries in Nigeria has resulted to unpaid salaries, degradation of library facilities at all levels, incessant strike actions and industrial unrests, which have culminated into increased rate of illiteracy. In addition, non-implementation of visions and plans especially the non-remittance of 10% of the re-current budget of every University to the library for development attests to the fact that libraries in Nigeria are facing critical challenges.

Notwithstanding, Anyira [8] revealed that the current curriculum is no longer adequate for training the 21st

century librarians. He also identified other challenges to include lack of ICT skills among librarians, and fear of job loss as a result of ICT deployment. Furthermore, Odukoya (2009) reported that Nigeria tertiary institutions are experiencing acute shortages of infrastructure and facilities across all levels of higher education. Besides, he further noted that frequent changes in government negatively affect the education system in general. In line with this, Professor Ajayi, one time provost of Federal College of Education Osiele, Ogun State observed that "within the eight years (1991-1999) that I served as Provost, the nation passed through five different regimes (Babangida in 1993; Shonekan for less than four months in 1993; Abacha 1993-1998; Abubakar 1998-1999; Obasanjo 1999-2007). Within this period, I had to operate fewer than eight different ministers of education. The same thing happened at the state level. Each of the Presidents, Ministers, Governors, Commissioners, had their own different conception and policies on education that they tried to implement during their tenure. With such instability in the system of governance, coupled with constant changes, one should not be surprised at the level of crisis the nation's education system has witnessed over the years and the inconsistency and often contradictory nature of the educational policies. It is one step forward and two steps backward". Instability in government affects Nigerian Libraries and higher education because they are mostly funded by the government. Only private institutions are spared to some extent.

3. MATERIALS AND METHODS

The descriptive survey method was used in the study. The questionnaire and interview were used to obtain data from respondents. The purposive sampling method was used to select 300 librarians and educationists in higher institutions of learning and public libraries in the Niger Delta Region of Nigeria. Data were analyzed with simple percentage count.

4. DATA ANALYSIS

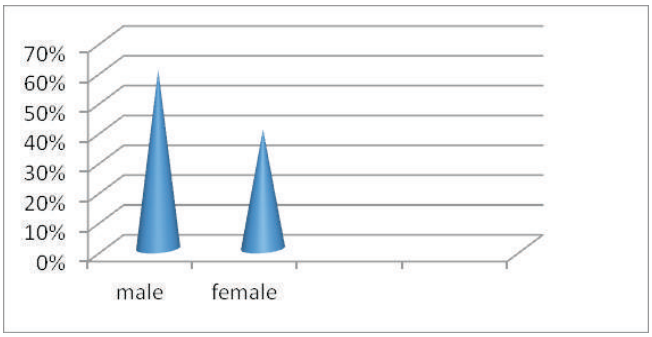


Fig. 1 Sex distribution of the respondent

The Figure 1 shows that 60% of the respondents are male, while 40% of them are female.

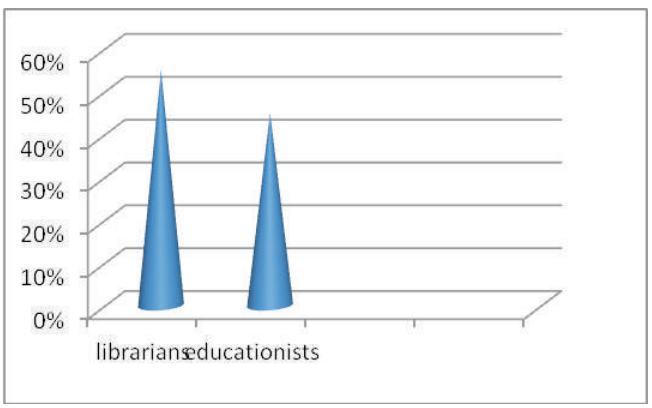


Fig.2 Profession of the respondents

The Figure 2 shows that 55% of the respondents are librarians, while 45% of them are educationists.

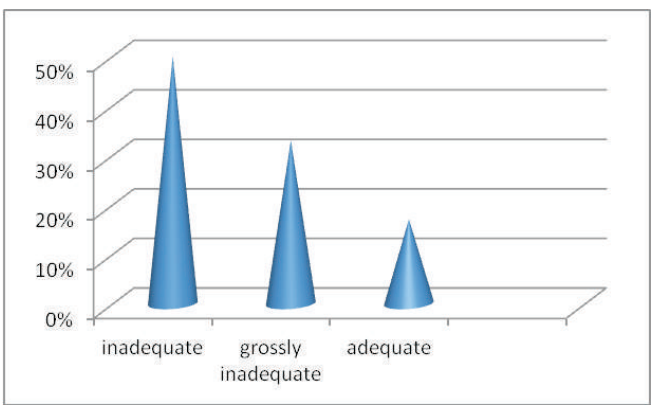


Fig. 3 Adequate of the library resources

The Figure 3 shows that 50% of the respondents said their library has inadequate materials, 33% of them said grossly inadequate, while 17% said they have adequate materials.

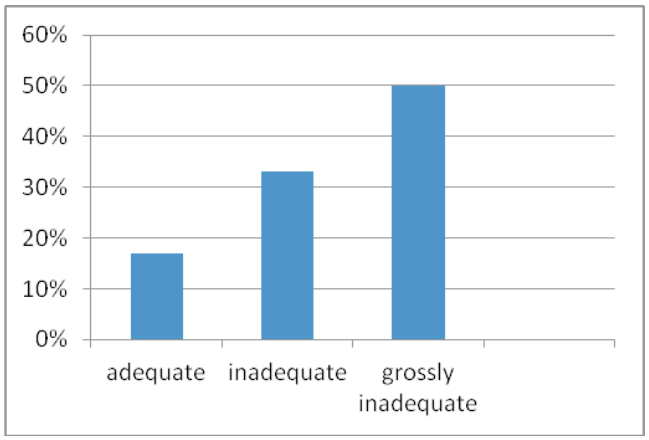


Fig. 4 Level of adequacy of Internet facilities in the libraries

The Figure 4 shows that 50% of the respondents said that ICT is grossly inadequate in their library, 33% of them said it is inadequate, while 17% said they have adequate ICT facilities.

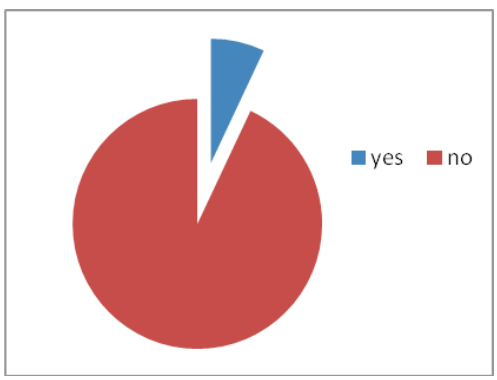


Fig. 5 Effective services are rendered with library ICT infrastructure

The Figure 5 shows that 93% of the respondents said that their ICT infrastructure is not enough to render effective services, while 7% of them said that it is enough to render effective services.

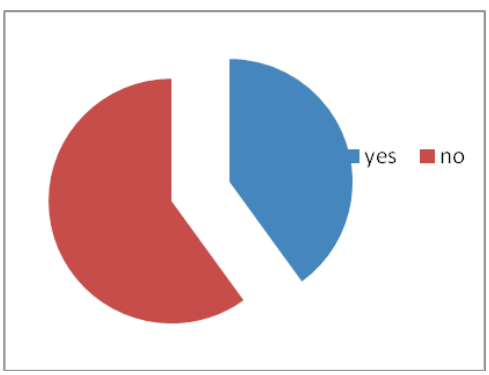


Fig. 6 Adequate skills to render effective library services

The Figure 6 shows that 60% of the respondents said that librarians do not have adequate skills to render effective services to clients, while 40% of them said that librarians have adequate skills.

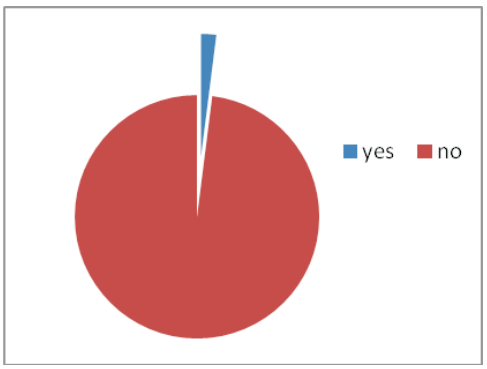


Fig. 7 Present level of funding is adequate for effective library services

The Figure 7 shows that 98% of the respondents agreed that the present level of funding is not adequate for effective library services, while 2% of them said that it is adequate.

5. RESEARCH FINDINGS

It was found that Nigerian libraries are greatly under stocked. It was also found that internet services are lacking in the library. It was discovered that librarians lack adequate skills to render effective services to support the human capital target of vision 20:2020 of the federal government. Nigerian libraries are grossly under funded.

6. CONCLUSION AND RECOMMENDATIONS

It is not possible to attain vision 20:2020 without the library providing information support. Nigerian libraries are greatly incapacitated to provide support for the development of manpower target of the vision. There is therefore funding implication which falls directly on funding authorities responsible for providing funds for acquiring library materials, and deploying library ICT. There is also implication for the librarians responsible for providing information to the community as they stand the threat of becoming irrelevant as a result of lack of skills. Policy implication will also arise as it is highly important to guide the development of libraries and the provisions of services.

It was therefore recommended that:

1. There is an urgent need for Nigerian Government to prioritize the development of internet services in all higher institution and public libraries to enable them support the vision.
2. There is the need for librarians to engage in ICT training aimed at acquiring sound ICT skills to take full advantage of the numerous information resources on the internet.
3. There is a need for higher institutions in Nigeria to come up with an ICT/library development policy which must include how the library should be funded.
4. There is a need for public and private sector to come together in partnership to ensure that libraries are adequately funded.

REFERENCES

[1] Joy Grillon, "Information as A Resource: An Overview of the Characteristics of Information as a Resource in the Information Age, 1994", Retrieved December 20, 2010 from http://www.capita.wustl.ed/infores.html.

[2] I. Anyira, A. Nwabueze, O. Ivwighreghweta and K. Onoriode, K, "The Role and Responsibility of the Library in Consolidating Research in Nigerian Private Niversity Libraries: A Case Study of Western Delta University Oghara", Library Philosophy and Practice, 2010.

[3] M. Sadiq, Role of the Library in Research, 2005, Retrieved February 16, 2009 from http://www.gu.edu.pk/GUJR/PDF/pdf%20dec52 02005/115-116%20sadiq3.pdf.

[4] E. Akingbola, "Human Capital Development: Meeting the Challenges of the Global Economic Meltdown", The Guardian Newspaper, July 10, 2009, pp. 54-55.

[5] R.Oladoyin and S. Dauda, "Investment in Education and Economic Growth in Nigeria: An Empirical Evidence", International Research Journal of Finance and Economics, 2010, Retrieved February 20, 2011 from http://www.eurojournals.com/finance.htm.

[6] A. Borishade, "Restructuring the Educational System as a Long-Term Solution to the Unemployment Problem in Nigeria", Bullion, Vol. 25, No.4, 2011, pp. 15-19.

[7] D. Odukoya, Formulation and Implementation of Education Policies in Nigeria, 2009, Retrieved on 22 February, 2011 from http: // www.slideshare.net.

[8] I. Anyira, "One Among the Twelve: How Librarians Pose a Serious Challenge to the Deliverance of 21st Century Library Services", Paper presented at the Annual Conference of the Delta State Chapter of the Nigerian Library Association at Delta State Polytechnic Mossogar, 18 January, 2011.

Use of E-Resources by Engineering Faculties in Selected Universities of Western Uttar Pradesh, India: A Survey

Sunil Tyagi
Library & Information Centre, Indian Pharmacopoeia Commission, Ministry of Health & Family Welfare, Government of India, Ghaziabad - 201002, Utter Pradesh, India
E-Mail:suniltyagi1979@gmail.com
(Received on 01 May 2011 and accepted on 31 May 2011)

Abstract

The present study sought to identifies trends among engineering faculties at Selected Universities of Western Uttar Pradesh in utilizing conventional/electronic information resources and services to develop their teaching, research and personal knowledge. The problem has been studied based on the information available in the open literature and a survey conducted on the use, awareness and utilization of collections and services in higher education. The study is based on questionnaire method. A questionnaire was distributed among the faculties to collect desired data. A total of 200 questionnaires were distributed to the selected sample for the session 2010-11; 191 valid samples were collected. The result showed a growing interest in electronic information resources among the engineering faculties at Universities of Western Uttar Pradesh. All the faculties belonging to the concern Universities use of e-journals, e-articles, databases, e-books, downloading services and online search facilities available in the university. All the faculties belonging to the concern Universities used Science Direct, IEEE/IEE IEL online, Springer, INSIGHT and EBSCO online. The result showed that all the respondents got better informed, get current, comprehensive information and save time by using Electronic Information Resources. All the respondents preferred online version of journals and all the respondents stated that by using e-resources the quality of research improved highly.

Keywords: *CD-ROM, E-resources, Online Database, Online journals*

1. INTRODUCTION

In the fast-emerging and ever-growing information explosion it is very difficult to retrieve particular information without wasting time. Recent advances in the field of information technology contribute significantly to improve the services of libraries. Now-a-days libraries are not only seen with printed document and non-print document but also with computers. The impact of technologies such as CD-ROMs, multimedia, computer networks, Internet, etc. have lead to a paperless society. With the availability of computers, capable of computing at very high speed and having large disc storage space, it is possible to digitize and store information in the form of high quality graphics, colour images, voice signal and video clips at a relatively affordable cost.

Scholarly use of information services has changed substantially in recent years. Members' research practices and teaching methods have both shifted, most often at a disciplinary level. Network-level services, such as digital content resources, a variety of new kinds of discovery tools, new services for information organization and use, and scholarly and pedagogical interaction and collaboration tools, have been the most important factor in leading this change. This section examines some of the most important trends in information discovery and use, and, because these services are increasingly provided online rather than locally, the profound challenges they pose for a diverse range of information service providers. Traditional research practices relied heavily on the library itself and on locally implemented library-provided tools for discovery of books, journal articles, and other materials. Today, there are numerous alternative avenues for discovery, and libraries are challenged to determine what role they should appropriately play. Basic scholarly information use practices have shifted rapidly in recent years, and as a result the academic library is increasingly being disinter mediated from the discovery process, risking irrelevance in one of its core functional

areas. This section examines how patterns of information discovery and usage by faculty members are changing and the implications of these changes for their perceptions of traditional and emerging roles of the library.

2. PROBLEM STATEMENT

An ever-increasing portion of library collections dollars are committed to purchase of networked services. Yet relatively little is known about how these services are used, who uses them, and what the overall impact of these services is. There has been no study conducted so far to measure the use of these services and e-resources in the Universities Libraries of Western Uttar Pradesh to assess factors that may influence the usage of these resources. Moreover, the cited literature reveals that the studies of use, user perception and user satisfaction with services and e-resources have been conducted in the Country. However, Universities in India lack systematic user-centred research. Therefore, an inquiry is deemed necessary to explore the frequency of use of Web-based e-resources in the Universities and the barriers that influence the effective use of these vital resources.

3. REVIEW OF LITERATURE

Several authors discussed how to distinguish among overused, underused and average used classes. Baljinder Kaur and Rama Verma [1] conducted the survey that was an attempt to study the issues like use of electronic information resources, its impact on the collection of print and electronic journals its awareness among the users, and the places where the users are accessing these resources. A survey was conducted in the academic year 2006-07 at the Thapar University, Patiala. A total number of 504 users from the undergraduate, postgraduate, research scholar and faculty members were selected and their response was obtained with the help of questionnaire. The findings how that users from all these categories were using e-resources; the awareness about e-resources encourages users to use such resources to the maximum; and the users are using computer centre and hostels more for accessing the information. The impact of e-resources was visible from the decrease in number of printed journals in comparison to the increase in number of electronic journals. The use of e-journals has increased manifold. The printed material is being quickly replaced by the electronic resources.

Razaand, M-Masoom and Upadhay [2] carried out a survey at AMU to study the usage of electronic resources by the researchers. They found that many researchers are consulting electronic resources for research purposes.

4. OBJECTIVES OF THE STUDY

The present study sought to identifies trends among engineering faculties at Selected Universities of Western Uttar Pradesh in utilizing conventional / electronic information resources and services to develop their teaching, research and personal knowledge. The specific objectives of the study are:-

1. To identify the various sources of information and services used by them;
2. To analyze the different purposes for which the EIS is used by the respondents;
3. To know the impact of usage of EIS on education;
4. Finally to assess the satisfaction level of the users with the access to EIS in the Universities.

5. SCOPE OF THE STUDY

The present study deals with use and impact of e-resources on faculties in Selected Universities of Western Uttar Pradesh. This can be extended over to the other academic libraries. Detailed analysis can be taken to see the impact of technology on libraries and usage. There is a vast scope for further research to study different types of users' behaviour and comparison of users' behaviour and attitudes towards the e-resources. Finally investigator believes that studies are needed on ways to improve and encourage users to use maximum of electronic information resources. The results will help collection developers in designing suitable policy and assess the technical intricacies faced by the library staff in providing effective EIS services. It will also help in designing the efficient infrastructure requirements for managing journals in both the formats.

6. METHODOLOGY

The present study was carried out to assess the use, awareness of collections and services of libraries by engineering faculties at Selected Universities of Western Uttar Pradesh. Research method followed was a survey method. Questionnaire tool was used to collect the data. The sample consists of 6 Universities in the Western Uttar Pradesh (see details in table given below). The sample respondents chosen for the study consists of Professors, Associate Professors, Assistant Professors and Lecturers. A total of 200 questionnaires were distributed (randomly) to the selected sample for the current year; 191 valid samples were collected and analyzed.

S.No.	Name of the University	Location
1	Amity University	Noida
2	Chaudhary Charan Singh University	Meerut
3	SRM University's NCR Campus	Ghaziabad
4	Sardar Vallabh Bhai Patel University	Meerut
5	Swami Vivekanand Subharti University	Meerut
6	Shobhit University	Meerut

7. DATA ANALYSIS AND INTERPRETATION

Although it is not our intension to discuss the data collected in detail, since they relate to a specific universities, it might be insightful to consider a few representative examples of both information collected and action plans.

By job roles: 35 (18.32%) were Professors, 41 (21.47%) were Associate Professors, 48 (25.13%) were Assistant Professors, and 67 (35.08%) were Lecturers (Table 1).

Table 1Demographics of Respondents

S.No.	Designation	Response	Percentage (%)
1	Professors	35	18.32%
2	Associate Professors	41	21.47%
3	Assistant Professors	48	25.13%
4	Lecturers	67	35.08%
	Total	191	100%

According to their own assessment, a majority (80.10%) of the respondents stated that they are having "average skill" in the use of computers, (19.90%) of the respondents opined to have "above average skill" in the use of computers. On the whole, respondents' self-perceived ability to use the computer for electronic information sources is quite high (Table 2).

The respondents were asked to mark the library services used by them in the university premises. The services provided by university libraries depicted in Table 3. The analysis shows that all the faculties belonging to the concerned universities use e-journals, online databases, internet, CD-ROM databases and Scan/Xerox/Printout facilities provided by the library of concerned universities (table 3).

The respondents were asked to indicate the conventional sources mostly consult. The analysis shows that majority of the respondents belonging to the concerned universities used journals [Professors (80.00%), Associate Professors (65.85%), Assistant Professors (68.75%) and Lecturers (61.19%)]. The overall response of consulting printed journals was 67.53% (Table 4).

Table 2 Perceived Level of Computer Literacy

Computer Literacy			
Professional Status	**Average**	**Above Average**	**Total**
Professors	29 (82.86%)	6 (17.14%)	35 (100%)
Associate Professors	35 (85.37%)	6 (14.63%)	41 (100%)
Assistant Professors	38 (79.17%)	10 (20.83%)	48 (100%)
Lecturers	51 (76.12%)	16 (23.88%)	67 (100%)
Total	153 (80.10%)	38 (19.90%)	191 (100%)

Table 3 Use of Library Services

Library Services	Professors	Associate Professors	Assistant Professors	Lecturers
Lending Service	11 (31.42%)	9 (21.95%)	12 (25.00%)	23 (34.32%)
Reference Service	5 (14.28%)	8 (19.51%)	7 (14.58%)	11 (16.41%)
Internet Facility	35 (100%)	41 (100%)	48 (100%)	67 (100%)
Online Database	35 (100%)	41 (100%)	48 (100%)	67 (100%)
E-Journals	35 (100%)	41 (100%)	48 (100%)	67 (100%)
CD-ROM Database	35 (100%)	41 (100%)	48 (100%)	67 (100%)
CAS	9 (25.71%)	11 (26.82%)	11 (22.91%)	12 (17.91%)
SDI	13 (37.14%)	15 (36.58%)	11 (22.91%)	9 (13.43%)
Scan/Xerox/Printout	35 (100%)	41 (100%)	48 (100%)	67 (100%)

Table 4 Use of Conventional Library Materials by the Faculties

Resources	Professors	Associate Professors	Assistant Professors	Lecturers	Total %
General Books	9 (25.71%)	3 (7.31%)	12 (25.00%)	18 (26.86%)	42 (21.98%)
Reference Books	8 (22.85%)	9 (21.95%)	8 (16.66%)	15 (22.39%)	40 (20.94%)
Journals	28 (80.00%)	27 (65.85%)	33 (68.75%)	41 (61.19%)	129 (67.53%)
General Magazines	-	-	2 (4.17%)	9 (13.43%)	11 (5.76%)
Newspapers	-	7 (17.07%)	10 (20.83%)	13 (19.40%)	30 (15.70%)
Newspaper Clippings	10 (28.57%)	2 (4.88%)	7 (14.58%)	5 (7.46%)	24 (12.56%)
Thesis	11 (31.42%)	11 (26.82%)	9 (18.75%)	17 (25.37%)	48 (25.13%)
Conference Proceedings	10 (28.57%)	12 (29.26%)	11 (22.92%)	19 (28.35%)	52 (27.22%)
Technical Reports	15 (42.85%)	12 (29.26%)	10 (20.83%)	4 (5.97%)	41 (21.46%)

The analysis shows that all the engineering faculties belonging to the concerned universities used mostly education related information on the internet. The other purposes depicted in Table 5.

Table 5 Information Seeking at Internet

S.No.	Purpose	Respondent	%
1	Education	191	100%
2	Entertainment	37	19.37%
4	Health	18	9.42%
5	Sport	26	13.61%
6	Any other	7	3.66%

Table 6 shows the percentage of faculties using various e-resources provided by their library. All the faculties belonging to the concerned universities preferred e-journals, e-articles, databases, e-books, downloading services and online search facilities available in the university.

Table 6 Use of Electronic Information Resources

Type of E-information Used	Professors	Associate Professors	Assistant Professors	Lecturers
E-Journals	35 (100%)	41 (100%)	48 (100%)	67 (100%)
E-Articles	35 (100%)	41 (100%)	48 (100%)	67 (100%)
E-Thesis	35 (100%)	41 (100%)	48 (100%)	67 (100%)
Databases	35 (100%)	41 (100%)	48 (100%)	67 (100%)
E-Books	35 (100%)	41 (100%)	48 (100%)	67 (100%)
E-Archives	19 (54.28%)	17 (41.46%)	7 (14.58%)	-
Downloading Services	35 (100%)	41 (100%)	48 (100%)	67 (100%)
Online Search	35 (100%)	41 (100%)	48 (100%)	67 (100%)
Subject Gateways	23 (65.71%)	7 (17.07%)	7 (14.58%)	-
Newsgroups	13 (37.14%)	2 (4.87%)	-	-

On analyzing the data it was observed that, all the faculties belonging to the concerned universities used Science Direct, IEEE/IEE IEL online, Springer, INSIGHT and EBSCO online mostly. The table 7 also shows the usage of other online journals.

Table 7 Use of Specific Types of Subjects and Allied Areas Electronic Information Sources

Online Journals/	Professors	Associate	Assistant	Lecturers
ABI/INFORM	13 (37.14%)	12 (29.26%)	11 (22.92%)	19 (28.35%)
ASCE Journals	5 (14.28%)	9 (21.95%)	8 (16.67%)	15 (22.38%)
ASME(TAMR)	5 (14.28%)	8 (19.51%)	7 (14.58%)	11 (16.41%)
Science Direct	35 (100%)	41 (100%)	48 (100%)	67 (100%)
IEEE/IEE	35 (100%)	41 (100%)	48 (100%)	67 (100%)
J-Gate	7 (20.00%)	12 (29.26%)	10 (20.83%)	4 (5.97%)
Springer	35 (100%)	41 (100%)	48 (100%)	67 (100%)
INSIGHT	35 (100%)	41 (100%)	48 (100%)	67 (100%)
EBSCO online	35 (100%)	41 (100%)	48 (100%)	67 (100%)
ESDU	10 (28.57%)	2 (4.88%)	7 (14.58%)	4 (5.97%)
GMID	10 (28.57%)	2 (4.88%)	2 (4.17%)	4 (5.97%)

The respondents were asked to give reasons as to why they use electronic information resources. Various professional purposes for which electronic information resources was used were elicited from the respondents. Table 8 indicates the purpose of using the electronic information resources. All the faculties belonging to the concerned universities used EIS for ongoing research work, writing a research/review paper for publication and for gathering subject specific information (Table 8).

Table 8 Purpose of Using Electronic Information Sources

Purpose	Professors	Associate Professors	Assistant Professors	Lecturers
EIS Use for Research Work	35 (100%)	41 (100%)	48 (100%)	67 (100%)
EIS Use for Preparation of Thesis/Dissertations/Projects	5 (14.28%)	9 (21.95%)	8 (16.67%)	15 (22.38%)
EIS Use for Writing a Research/Review Paper for Publication	35 (100%)	41 (100%)	48 (100%)	67 (100%)
EIS Use for Gathering Subject Specific Information	35 (100%)	41 (100%)	48 (100%)	67 (100%)

Table 9 reveals that all the faculties belonging to the concerned universities preferred online version of Journals, whereas (54.28%, 41.46%, 16.67% and 22.38%) faculties preferred Print Version.

Table 9 Preference Level of Using Online Journals

EIS	Professors	Associate Professors	Assistant Professors	Lecturers
Print Version	19 (54.28%)	17 (41.46%)	8 (16.67%)	15 (22.38%)
Online Version	35 (100%)	41 (100%)	48 (100%)	67 (100%)
Both	10 (28.57%)	9 (21.95%)	8 (16.67%)	4 (5.97%)

Users perceive electronic information sources to hold many advantages. Some of the main benefits of using electronic information resources are listed in Table 10. From the analysis it is evident that all the respondents got better informed, get current, comprehensive information and save time by using Electronic Information Resources (Table 10).

Table 10 Benefit of Electronic Information Sources

Nature of Benefit of EIS	Professors	Associate Professors	Assistant Professors	Lecturers
Access to information more better	35 (100%)	41 (100%)	48 (100%)	67 (100%)
Time saving fact	35 (100%)	41 (100%)	48 (100%)	67 (100%)
Better Access to current information	35 (100%)	41 (100%)	48 (100%)	67 (100%)
Better Access to comprehensive information	35 (100%)	41 (100%)	48 (100%)	67 (100%)

Electronic Information Resources provide latest, comprehensive and up to date information which are essential for research. The respondents were asked to indicate to what extent they feel the impact of E-Resources on quality of research. All the respondents stated that by using e-resources the quality of research improved highly (Table 11).

All the respondents are highly satisfied with the infrastructure provided by the library for accessing online journals and their databases at different levels (Table 12).

Table 11 Impact of E-Resources on Quality of Research

Impact on Research	Professors	Associate Professors	Assistant Professors	Lecturers
Highly Improved	35 (100%)	41 (100%)	48 (100%)	67 (100%)
Improved	-	-	-	-
Moderately Improved	-	-	-	-
Little Improved	-	-	-	-
Not Improved	-	-	-	-

Table 12 Satisfactory Level

Satisfactory Level	Professors	Associate Professors	Assistant Professors	Lecturers
Highly Satisfied	35 (100%)	41 (100%)	48 (100%)	67 (100%)
Satisfied	-	-	-	-
Average	-	-	-	-
Not Satisfied	-	-	-	-

8. CONCLUSION

The emergence of electronic information and communication environment has provided the academic community with wide opportunities to satisfy their information needs. In terms of information seeking, today's user seems to be comfortable with using a wide variety of sources for information. Internet search engines, e-print servers, author Web sites, full-text databases, electronic journals, and print resources are all used to some degree by most users. The relative amounts of use and enthusiasm for use vary as described above, but today's users are mostly flexible and adaptable.

Both browsing and searching remain important information- seeking behaviours, but there is some evidence that the amount of searching is going up when users have access to multi-title, full-text databases. Browsing through journal issues is done in print issues or in electronic journals for core journal titles. Articles from non-core journals are most often located through searching. Convenience remains the single most important factor for information use—all types of users prefer electronic journals only if they make their work easier and give them the information they need. Desktop access, speed of access, and the ability to download, print, and send articles are top advantages of electronic journals for all groups.

Results of this survey obviously ascertained the opinion that engineering faculties at universities in Western Uttar Pradesh seem to be equipped with fairly good computer skills that enable them to search and utilize e-resources. It seems the possession of computer skills alone are not adequate for efficient use of e-resources, hence more organized training programs are needed to familiarize some of the members with the e-resources, even though the results didn't explicitly show there was a severe lack of training or that librarians offered insufficient bibliographic instruction.

REFERENCES

[1] Baljinder Kaur and Rama Verma, “Use of Electronic Information Resources: A Case Study of Thapar University”, DESIDOC Journal of Library & Information Technology, Vol. 29, No. 2, 2009, pp. 67-73.

[2] M. Masoom Razannd and Upadhyay, “Usage of E-Journals by Researcher in Aligarh Muslim University: A Case Study”, International Information and Library Review, Vol. 38, No. 3, 2006, pp. 170-179.

Alternative Formats Availability and its Utilisation by Visually Impaired Students in Nigerian Secondary Schools

Niran Adetoro
Department of Library and Information Science, Tai Solarin University of Education, Ijebu-Ode, Nigeria
E-mail: niranadetoro@yahoo.com
(Received on 02 May 2011 and accepted on 30 May 2011)

Abstract

Visually impaired students need alternative format in braille, talking books and large prints to function like sighted students. Because few materials get converted into these formats, the availability and consequent use of alternative format for study and leisure by visually impaired students has been of concern. This study reveals the availability and use of alternative formats by visually impaired students in Nigerian Secondary Schools. The study is a survery and it purposively focused on southwestern, Nigeria. Using total enumeration technique, data were collected 123 students from six purposively selected secondary schools in southwestern Nigeria. A questionnaire having two rating scales on availability and utilisation of alternative format with reliability scores of $\alpha = 0.77$ and $\alpha = 0.73$ respectively were used. 104 (84.5%) of the instrument was correctly admistered. The study found, that braille (77%), talking books/tape recordings(65.4%) are not readily availabile while large prints (96.2%) are not available. Braille is the most frequently used on dailly basis (91.3%) followed by talking books (34. 6%) while large prints are not used. There was no significant positive relationships between alternative formats availability and its utilisation in the selected libraries. The study recommends increased transcription of information materials into alternative formats for the students, adequate funding from government and donors and the building of a balanced collection of alternative formats in the school libraries.

Keywords: *Alternative Formats, Nigeria, Secondary Schools, Utilisation, Visually Impaired Students*

1. INTRODUCTION

Sighted persons can naturally read and communicate using the types of information materials available such as books, reference sources, serials, internet etc. But for persons with visual impairment, reading and communication comes in alternative format such as Braille, talking books and large prints. This is because the visually impaired cannot use the medium of the sighted owing to the consequence of their visual impairment which result in their being blind, partially sighted or low visioned.

Braille is a six embossed dots tactile device used by the blind as a medium of reading and communication. Talking books are audio recordings from books which the visual impairment can listen to, thereby providing the visual impaired with the opportunity of reading through listening. Large print materials have their print size enlarged such that this becomes visible to a low visioned or partially sighted person [1].

The provision of information materials in schools for the education of visually impaired children has remained worrisome to educationists, producers and providers of alternative formats. A few materials ever get converted to alternative formats. For instance, only five percent of books published in the United Kingdom (UK) make it into alternative format (RNIB, 2006). Without alternative formats, persons with visual impairment cannot read and function well as members of the society. This is why it is crucial for every country to have a well organised arrangement for the production and utilization of information materials by its visually impaired children and citizens [2].

In Nigeria, blind children did not enjoy formal education until 1953 when the first school for the blind was established at Gindiri, Plateau State [3]. The Pacelli School for the blind and partially sighted, a Roman Catholic primary school in Lagos, Nigeria, provides information materials at the primary school level. In many primary and secondary schools, pupils themselves

have been known to make private and individual arrangements for study materials.It is believed that there is acute shortage of information materials and other information resources in alternative format at the primary and secondary school levels [4].

Non-governmental organisations (NGOs) and private associations also make information materials available to visually impaired children in schools. Notable among these are Nigerwives, an association of foreign women married to Nigerian men, the Anglo-Nigerian Welfare Association for the Blind (ANWAB), the Nigerian Society for the Blind, Hope for the Blind, Gindiri Material Centre for the Blind and a few others around the country. Some Nigerian secondary schools mainstream visually impaired children with the sighted. Specialised secondary school for the visually impaired is non-existent in Nigeria. Schools with visually impaired students usually keep a sizable collection of alternative formats in an alternate library for the use of their visually impaired students. These schools lack transcription facilities,but they depend on NGOs and private bodies for the transciption of their information materials into alternative formats.

Libraries of secondary schools with visually impaired students in Nigeria are presently faced with the problem of meeting the high demand for information material in alternative formats by students. The visible inadequacies in these schools had made it difficult for the libraries to meet the growing demand for information materials by the visually impaired students.

The task of making alternative format availabile for use by visually impaired students is not an easy one. In Nigeria, Basharu [5] and Atinmo [4] have highlighted the fact that secondary school persons with visual impairment have visited their school libraries asking for reading materials to either read or borrow. They also bring their printed matter to be transcribed to braille. These schools also contend with shortage of braillists and braille teachers, which has greatly discouraged persons with visual impairment from education and learning.

2. STATEMENT OF THE PROBLEM

Several years of observation suggest that there is acute shortage of alternative formats available in libraries of Nigerian secondary schools with visually impaired students. The schools lack transcription facilities,so very few formats are believed to have been transcribed into braille, audio recordings and large prints for use by the students. Inadequate number of available alternative formats in the school libraries, possibly explains low utilisation levels for the formats despite increased demand. This study investigates the availability and use of alternative formats for visually impaired students in selected secondary school libraries in Southwestern Nigeria.

3. RESEARCH QUESTIONS

1. What are the alternative format available to visually impaired students in the selected school libraries ?
2. What is the frequency of use of alternative formats by visually impaired students in the selected school libraries ?

4. HYPOTHESIS

The hypothesis formulated was tested at 0.05 level of significance:

Availability of alternative formats is not significantly related to its use by visually impaired students in the selected school libraries.

5. METHODOLOGY

The study is purposively limited to Southwestern Nigeria and this is because this region has in it, those schools with appreciable number of visually impaired students and information materials in alternative formats useful for this study. The study adopts survey research design and the population of the study is made up of all visually impaired secondary school students in Southwestern Nigeria. In Nigeria, few secondary schools admit visually impaired persons as students alongside sighted students as there are no secondary schools specifically meant for visually impaired students. A preliminary investigation by the author puts the number of secondary schools with visually impaired students in Southwestern Nigeria at six. These schools were purposively chosen for the study because they have in them appreciable number visually impaired students with information materials in alternative format useful for this study. The schools have a total population of 123 students who are visually impaired.

Table 1 Profile of Secondary School with Visually Impaired Students

Name of School	Location	State	Population
Queens College	Lagos	Lagos	18
Kings College	Lagos	Lagos	20
Federal Government College, Ijanikin	Lagos	Lagos	20
Yewa College	Ilaro	Ogun	20
Adeniran Memorial Grammar School	Ogbomosho	Oyo	18
Owo High School	Owo	Ondo	30

Source: Field work, 2008 n = 123

Total enumeration technique was used to cover all the 123 visually impaired students in the six schools. Data were gathered using a questionnaire. The questionnaire elicited information on the background of respondents, the availability and utilisation of alternative formats in the schools.Validity of instruments was achieved through expert advice while reliability of instrument came through pre-test of instrument to visually impaired students at Federal College of Education (special) Oyo who were not part of the study. The questionnaire had two scales on availability and utilisation of alternative formats. The scales had reliability scores of $\alpha = 0.77$ and $\alpha = 0.73$ respectively. The questionnaire was read to the hearing of the respondents and their responses were affected directly on the questionnaire. Out of 123 respondents, the researcher and his assistants were able to administer correctly a total of 104 visually impaired students which represents 84.5% response rate.

6. RESULTS

6.1 The Alternative Formats Available in the Selected Libraries

The study sought from the respondents, the availability of alternative formats which include Braille, talking book or recorded materials and large prints. It was found that Braille materials are not readily available in the libraries surveyed according to 80 (77%) of the respondents; 4 (3. 8%) of the respondents thought that Braille books are not available while just one (1.0%) of the respondents said that Braille are available in the libraries. For talking book or recorded materials, the study revealed that 68 (65.4%) and 36 (34.6%) of the respondents said that talking books were not available and not readily available respectively in the school libraries covered by the study. In effect, (100%) of the respondents surveyed are of the view that talking books are either not readily available or not available. The data for large prints shows that large print materials are not available in the schools selected for the study representing 100 (96.2%) while a mere 4 (3.8%) said large prints are not readily available. These results have shown clearly that majority of alternative formats for persons with visual impairment in the libraries surveyed are either not available or not readily available.

Table 2 Alternative Formats Availability in the Selected School Libraries

Alternative Formats	Readily Available		Available		Not readily Available		Not Available		Total	
	Freq.	%	Freq.	%	Freq.	%	Freq.	%	Freq.	%
Braille Materials	19	18.3	1	1.0	80	77	4	3.8	104	100
Talking Book/ Recorded Materials	-	-	-	-	36	34.6	68	65.4	104	100
Large prints	-	-	-	-	4	3.8	100	96.2	104	100

Sources: field work 2008

6.2 The Frequency of Use of Alternative Formats in the Selected Libraries

From the data gathered on the frequency of use of alternative formats, it was discovered that Braille materials enjoy high frequency of use among the respondents. 95 respondents (91.3%) used Braille materials daily while 6 respondents (5.8%) used Braille two or three days in a week. The survey revealed that the frequency of utilization of talking books or recorded materials among the students persons with visual impairment in the school libraries was less, compared to Braille materials. 36 respondents (34.6%) use talking books daily. However 17 respondents (16.3%) use talking books once in a week while 22 (21.2%) consult talking books once a month . Large prints according to this study are not used daily. However, 101 (97.1%) said they used large prints once in a month. This low level of utilization for large prints could be attributed to the fact that large print publications and availability is very low in Nigeria and also that majority of the respondents are totally blind and cannot use large prints.

Table 3 Frequency of Utilization of Alternative Format

Period of utilization	Braille		Talking Books		Large Prints	
	Freq.	%	Freq.	%	Freq.	%
Daily	95	91.3	36	34.6	-	-
Two/three days weekly	6	5.8	26	25	-	-
Weekly	1	1.0	17	16.3	2	2.0
Fortnightly	-	-	3	3.0	1	1.0
Monthly	2	2.0	22	21.2	101	97.1
Never	-	-	-	-	-	-
Total	104	100	104	100	104	100

7. HYPOTHESIS

Availability of alternative formats is not significantly related to its use by visually impaired students in the selected school libraries.

To test this hypothesis, alternative formats availability was correlated with its utilization by persons with visual impairment in the selected school libraries in order to predict the relationship between alternative formats availability and its use in the libraries. The findings showed a Pearson Correlation Coefficient r=.312 (P>0.05) calculated, which revealed no significant relationship between alternative format availability and its utilization. So the hypothesis was accepted. In effect, the availability of alternative formats in the selected school libraries had no positive relationship with its utilization by the visually impaired students.

Table 3 Correlation between Alternative Format Availability and Utilization in the Selected School Libraries

Variables	N	Mean (x)	Std. Deviation	R	Sig. Value	Remark
Alternative format availability	104	4.72	1.49	0.312	0.25	P>0.05
Alternative format utilization	104	9.39	2.42			

** Correlation is significant at 0.05 level (2 tailed)
Decision: Not Significant

8. DISCUSSION

Majority of the students in this study were below twenty years old. Many of them were also above teenage which is an indication of the slow educational progression of visually impaired students. The findings of this study has confirmed that educational space and opportunities for the visually impaired is limited, judging from the few schools that cater for the visually impaired in Nigeria.

The study has revealed that braille materials are not readily available in the school libraries studied. In the same vein, talking books/audio recordings as well as large prints are also not available. This clearly indicates that the level of availability of alternative formats in the school libraries leaves much to be desired and would not complement the teaching and learning activities of the schools. This is not only common in developing countries as Atinmo [2] and Ng"anga [6] have corroborated, but also in many developed countries as reported by Vitzansky [7] and Bruce and Baker [8]; while users have consistently shown strong desire for information materials in readable format.

Braille materials form the bulk of materials available in the libraries surveyed. Talking books are few while large prints were practically non-existent in many of the libraries. Many of the respondents (the partially sighted) complained that they hardly came across large print materials for use. In summary,alternative formats available in the school libraries selected for this study are inadequate to meet the reading interest and information needs of the visually impaired students. Braille materials available in the secondary schools surveyed were not being used by the students regularly because the materials needed by the students were sourced through private arrangement by the students.

As observed from the result, the most frequently used alternative format among visually impaired students in the school libraries was braille, followed by talking books or tape recordings. The reason for Braille being the most utilized format in this study could be because alternative formats use are limited by availability. Braille is the most utilised because it is the most available.

The study revealed that alternative formats availability in the libraries surveyed is not significantly and positively related with utilization of alternative formats materials. The import of this finding is that availability of alternative format in the libraries studied is not bringing about appreciable levels of utilization. The availability of materials in the libraries is not encouraging or serving as incentive for the utilization of the alternative materials. Utilization of information materials cannot take place unless materials are available; though there is general inadequate information materials in alternative formats for persons with visual impairment in Nigeria.

9. CONCLUSION AND RECOMMENDATIONS

The study has brought to the fore the conditions of libraries servicing the visually impaired students in Nigerian schools; in terms of the availability and the use of alternative formats. The study clearly suggest that attention and policy needs to be refocused on making alternative formats available for the use of the visually impaired students in schools. Another implication of the findings of this study is that alternative format use by the students is rather low which is a consequence of low transcription activities of information materials into alternative formats in Nigerian schools with visually impaired students.

The study recommends that increased transcription of information materials into alternative format should be done in order to improve upon the number of information materials in the school libraries. Adequate funds by the government and donors should also be directed for this purpose. They should also balance their collection by increasing talking books and large prints collections considerably as well as braille, such that available formats will adequately address the reading interest and information needs of the students for leisure and academic purposes.

REFERENCES

[1] A.A. Adetoro, Relationship Among Reading Interest, Information Materials Availability and Alternative Format Utilisation by Persons with Visual Impairment in Selected Libraries in Southwestern Nigeria, Ph.D Thesis, Department of Library, Archival and information Studies, University of Ibadan, 2009.

[2] M.I. Atinmo, "Availability and Accessibility of Library Resources to the Visually Handicapped in Nigeria: The Way Forward", Journal of Association of Libraries for the Visually Impaired, Vol.1, No.1, 2000, pp.15-22.

[3] J.O. Olukotun, Teaching Children with Blindness and Visual Impairment,Ibadan : Codat.Pupl, 2001.

[4] M.I. Atinmo, Nigeria National Proposal for Visually Impaired Persons, A Proposal for IFLA / Ulverscoff Foundation for the Fredrick Thorpe Award for organisation, 2002, pp. 8.

[5] D. Basharu, "Equipping Libraries for the Blind with Reading Materials. Journal of Association of Libraries for the Visually Impaired", Vol. 1, No.1, 2000, pp. 56-61.

[6] S.K. Ng'ang'a, "Why Deliver Services to Print handicapped People through Public Libraries: The Kenyan Experience", Paper Presented at the World Library and Information Congress. 69th IFLA General Conference and Council Berlin, 1-9 August, 2003.

[7] W. Vitzansky, The Development of National Strategies for Library Service for Blind and Print Handicapped People. Paper Delivered at the 62nd IFLA General Conference, 25-31 August, 1996. Retrieved 5th November 2005 from http.www.ifla.org/iv/66/conference proceedings/papers.

[8] I. Bruce and M. Baker, Access to Written Information and the View of 1000 people with Sight Problems London: RNIB, 2001. Retrieved 31st December 2005 from http/www.bpm.mb-online.org/chapter5/html.

Asian Journal of Information Science and Technology
(ISSN: 2231 - 6108)

Guidelines for Submission

The manuscript should be about 8-10 pages in length, typed in double space with Times New Roman font, size 11, double column on A4 size paper with one inch margin on all sides and should include 75-200 words abstract, 5-10 relevant keywords. The pages should be consecutively numbered, starting with the title page and through the text, references, tables, figures and legends. The title should be brief, specific and amenable to indexing. The article should include an abstract, introduction, body of paper containing headings, sub-headings, illustrations and conclusions.

References

A numbered list of references must be provided at the end of the paper. The list should be arranged in the order of citation in text, not in alphabetical order. Each reference number should be enclosed by square brackets.

Example

[1] Baljinder Kaur and Rama Verma, "Use of Electronic Information Resources: A Case Study of Thapar University", DESIDOC Journal of Library & Information Technology, Vol. 29, No. 2, 2009, pp. 67-73.

[2] C.M. Brown, "Information Seeking Behaviour of Scientists in the Electronic Information Age: Astronomers, Chemists, Mathematicians, and Physicists", Journal of the American Society for Information Science, Vol. 50, No.10, 1999, pp. 929-943.

For more details please visit www.sriraam.org/ajist_submission.html

SUBSCRIPTION

Sriraam Publication presents peer-reviewed engineering and scientific journals in print form only. Free online versions are available in the respective journals site.

Title of the Journal	Domestic (INR)	International (USD)
Asian Journal of Computer Science and Technology (AJCST)	1500	150
Asian Journal of Engineering and Applied Technology (AJEAT)	1500	150
Asian Journal of Science and Applied Technology (AJSAT)	1500	150
Asian Journal of Information Science and Technology (AJIST)	1500	150
Indian Journal of Information Sources and Services (IJISS)	1000	150

Contact Information

For Subscription, please contact directly to the publisher (address given below) or contact your preferred subscription agent. All orders should be accompanied by payment. Please make Demand Draft in favor of **Sriraam Publication** payable at **Coimbatore**.

The Subscription Manager

Sriraam Publication

(A Global Research Publishing House)

1/611, Sriraam Enclave, Maruthi Nagar, Rakkipalayam Post

Coimbatore - 641 031, Tamil Nadu, India • Ph: +91 99425 57347 • E-mail: sriraampublication@gmail.com

AJIST
Asian Journal of Information Science and Technology

Asian Journal of Information Science and Technology

Volume 1 Number 1, January – June 2011

CONTENTS

SRIRAAM PUBLICATION

Published by
Journals Division
Sriraam Publication
(A Global Research Publishing House)
Coimbatore – 641 031, Tamil Nadu, India

Ph : +91 99425 57347
E-mail : ajistjournal@gmail.com
Web : www.sriraam.org