IJISS

ISSN: 0973-8967
Vol. 6 No. 1&2

January - December 2012

Indian Journal of
Information Science and Services

A Refereed Research Journal on Library and Information Science

Published by
Learning Resource Centre
BANNARI AMMAN INSTITUTE OF TECHNOLOGY
(Autonomous Institution Affiliated to Anna University, Chennai -
Approved by AICTE & NAAC Accredited with 'A' Grade)
Sathyamangalam - 638 401 Erode District Tamil Nadu India
Ph: 04295-226340 - 44 Fax: 04295-226666
Web: www.lib.bitsathy.ac.in E-mail: ijiss@bitsathy.ac.in

BANNARI AMMAN INSTITUTE OF TECHNOLOGY
Stay Ahead

Indian Journal of Information Science and Service

IJISS is a refereed research journal published half-yearly by the Learning Resource Centre, Bannari Amman Institute of Technology. Responsibility for the contents rests upon the authors and not upon the IJISS. For copying or reprint permission, write to Copyright Department, IJISS, Learning Resource Centre, Bannari Amman Institute of Technology, Sathyamangalam, Erode District - 638 401, Tamil Nadu, India.

Indian Journal of Information Science and Services

Volume 6 Number 1&2 **January - December 2012**

CONTENTS

Digital Preservation of File Formats in Digital Library

R.Saranagapani[1] and P.Srinivasaraghavan[2]
[1]Rajiv Gandhi Engineering College, Puducherry - 607 402, Tamil Nadu
[2]VelTech University, Avadi, Chennai - 600 062, Tamil Nadu
E-mail: rspani1967@gmail.com

Abstract

The aim of digital preservation is to ensure that digital records are filed and made available all the time. There are different digital preservation strategies such as migration., emulation etc., One of the important aspects or key parts of any digital preservation activity is the format of the document in which the digital document is created and added in the digital library or repository. Each digital library consist of different documents which file formats.

Keywords: *Digital preservation, File formats, PRONOM, PADI and GDFR..*

1. INTRODUCTION

File format is one of the core issues in any digital preservation approach. Digital information is produced in a variety of standard and proprietary formats, including ASCII, common image formats, word processing, spreadsheets, database documents, formulate, charts, multimedia files and audio and videos. As a result of such a heterogeneous nature of storable information, a high number of file formats are now spread, and many of them often need specific software to edit the file. These formats are continuously evolving and becoming more complex due to features and functionality. Before preserving digital records it is necessary to know in which file format the digital record is created. For example, to view an old word processing file, one needs software to display that properly on the screen. Thus several factors need to be considered while adding any document in digital repository.

2. MEANING AND DEFINITION OF FILE FORMAT

Digital information can be saved on any medium that is able to represent the binary digits (0 and 1). The meaning sequence of bits with no intervening spaces, punctuation or formatting is called bit stream. A file is nothing more than a sequence of bits and the file format in nothing but interpreting the bit stream.

Brown (2006) defined file format as the internal structure and encoding of a digital object, which allows it to be processed, or to be rendered in human-accessible form. A digital object may be a file or a stream embedded within file".

The aim of digital preservation is ensuring that records are filed and made accessible throughout time, but as a result of progress in software and hardware technology old formats soon become unreadable. Different research initiatives are focusing on this issue, trying to define preservation - friendly standard formats, as well as strategies for records to be made available over time. There are many initiatives taken place to read and convert old file formats.

3. CLASSIFICATION OF FILE FORMATS

3.1 Open Formats

Open formats are always fully documented, They are not licensed as the user can freely modify the format structure. One can use open formats for unlimited period. There are no license fee for open formats and there are no patent owners for open formats as well. Their full documentation is made available permanently. One can also make modifications in these formats.

3.2 Close Formats

Close formats are licensed and their full documentation is not always available. The user cannot modify the format freely. Their license agreement gets changed. There may be restrictions for using and modifying any closed file formats. In closed formats, their format code sequence is not available to the end user.

4. TYPES OF FILE FORMATS

There are different categories of file formats available today for different applications. The official categorization

of file formats is the MIME type., provided by IANA. They define the following main categories of formats:

i. Text File Format
ii. Images File Format
iii. Audio File format
iv. Video File Format
v. Spreadsheet File Format
vi. Database File Format
vii. Presentation File Format
viii. Markup Languages File Format,
ix. Compression File Format and
x. Other file Format (eg. Executable)

Here are a few examples of different formats used for different applications

Text Files	Image Files
MS Office Document (DOC) Rich Text Format (RTF)	Joint Photographic Experts Group (JPEG) Tagged Image File Format (TIFF) Portable Network Graphics (PNG)
Audio Files	**Video Files**
MPEG Layer 3 WAVE (WAV) Musical Instrument Digital Interface	Movie (MOV) Windows Media Video (WMV) Flash (SWF) Audio Video Interleave (AVI)
Spreadsheet File	**Databases File**
Excel (XLS)	Microsoft Database (MDB)
Presentation Files	**Markup Language Files**
Power Point (PPT & PPS)	HTML, HTM,SGML, XHML & XML)
Compression File	**Others**
Zone Information Protocol (ZIP)	Executable (EXE)

5. CHALLENGES IN DIGITAL FILE FORMATS

i. Many file formats become obsolete as they go out of business.
ii. Format depends on obsolete hardware or Operating system.
iii. Format is Propriety and
iv. New version of application software may not support earlier format version.

6. FILE FORMAT SPECIFICATION

A file format specification indicates the proper sub division, encoding, sequence, arrangement, size and internal relationships that uniquely identify the particular format and allow it to be properly interpreted and rendered.

For Example, a format specification indicates the location of meaningful boundaries within the bit stream whether a particular subunit should be interpreted as an ASCII character, a numerical value, a machine instruction, a color selection or something else. Without a format specification, a file is just a meaningless sequence of 0s and 1s.

7. FILE FORMAT REGISTRIES

A format registry is a repository for format specification information or in other words, descriptive, administrative and technical metadata about digital formats, including the definition of the syntactic and semantic characteristics of the registered formats. This metadata defines the significant properties of digital formats with regard to the long term preservation of digital objects.

Brown (2004) defined file format registries as authoritative and publicly available sources of technical information, supporting identification, accession, preservation and access of files. File format registries are excepted to be persistent, trustworthy and publicly discoverable.

A number of projects are investigating or developing systems which provide repositories of file format and representation information for use in digital preservation. The popular format registries are PRONOM and GDFR which provide detailed information about internal specifications of file formats and tools required to render the format.

7.1 PRONOM Services

The first version of PRONOM was developed by The National Archives digital preservation department in March 2002. Its genesis lies in the need to have ready access to reliable technical information about the nature of the electronic records that is now being stored in our Digital Archive. By definition, electronic records are not inherently human-readable - file formats encode

information into a form which can only be processed and rendered comprehensible by very specific combinations of hardware and software. The accessibility of that information is therefore highly vulnerable in today's rapidly evolving technological environment. This issue is not solely the concern of digital archivists, but of all those responsible for managing and sustaining access to electronic records over even relatively short timescales.

Technical information about the structure of those file formats and the software products which support them is therefore a prerequisite for any digital preservation regime. PRONOM was developed to provide this function initially as an internal resource for National Archives staff and now on the Internet.

7.2 Preserving Access to Digital Information (PADI) Services

The National Library of Australia's **Preserving Access to Digital Information** (PADI) initiative aims to provide mechanisms that will help to ensure that information in digital form is managed with appropriate consideration for preservation and future access.
Its objectives are:

i. To facilitate the development of strategies and guidelines for the preservation of access to digital information;
ii. To develop and maintain a website for information and promotion purposes;
iii. To actively identify and promote relevant activities; and
iv. To provide a forum for cross- sectoral cooperation on activities promoting the preservation of access to digital information.

The PADI website is a subject gateway to digital preservation resources. It has an associated discussion list for the exchange of news and ideas about digital preservation issues.

7.3 Global Digital Format Registry (GDFR)

Global Digital Format Registry will function as a sustainable public service for the collection, maintenance and dissemination of authoritative information about the significant syntactic and semantic formats.

Detailed knowledge of the internal properties of digital formats is necessary to internet properly for the full information content of digital objects. All digital repositories need to be able to identify, validate, characterize and process those objects on a format – specific basis. Digital format representation information is of potential use to all institutions and individuals engaged in digital preservation.

Harvard University and the Massachusetts Institute of Technology are taking an initiative to establish a centralized registry of file format information. The initiative is currently at an early stage but has already seen international interest and contribution from a range of institutions and organization facing digital preservation problems (www.hul.harvard.edu/gdfr/).
The main objective of registry is to support a range of preservation functions such as:

i. Automatic identification of file formats
ii. Delivery – given object of format
iii. Verification of digital objects compliance to a relevant file format specification
iv. Transformation – given object format
v. Risk assessment – given an object of format
vi. Characterization – given a format.

7.4 Windows Registry

The Windows Registry is a hierarchical database that stores configuration settings and options on Microsoft Windows Operating Systems. It contains settings for low-level operating system components as well as the applications running on the platform: the kernel, device drivers, services, SAM, user interface and third party applications that all make use of the registry. The registry also provides a means to access counters for profiling system performance.

When first introduced with Windows 3.1, the Windows registry's primary purpose was to store configuration information for COM-based components. With the introduction of Windows 95 and Windows NT, its use was extended to tidy up the profusion of per-program INI files that had previously been used to store configuration settings for Windows programs.

8. RECOMMENDATION OF USING FILE FORMATS IN DIGITAL LIBRARIES

It is necessary to consider the following principles while creating any digital document in any format to make the format available for the long term explained by (**Christensen, 2004)** are as follows:

i. The file format should be simple to describe, understand and implement
ii. The format should not depend on specific software, hardware and operating system
iii. The format should be robust against single of failure.

In the digital library literature there are many contributions that suggest which are more appropriate file formats for preservation issue. The preferred formats should be those that remain usable for a significant amount of time. Four types of basic file formats are considered within the digital library communities: text, image, audio and video. These formats can be referred as preferred formats as they will remain usable over a significant amount or time (**Guercio, 2004**).

No.	Types of File	Format Files Suggested
1	Texts	MS Office, XML, PDF, & RTF
2	Images	JPEG ,TIFF,RAW & JNG
3	Audios	WAV, WMA & RARM
4	Videos	MPEG, OMF, 3G and AVI

Extensible Markup Language (XML) file format is now accepted as the universal format for data and document exchanging. Portable Document Format (PDF) cannot be used as an archival format hence long term solutions are needed to keep digital PF records accessible for a long time length.

The file format known as "JPEG Interchange Format" (JIF) is specified in Annex B of the standard. However, this "pure" file format is rarely used primarily, because of the difficulty of programming encoders and decoders that fully implement all aspects of the standard due to certain shortcomings of the standard:

i. Color space definition
ii. Component sub-sampling registration
iii. Pixel aspect ratio definition

9. CONCLUSION

It is extremely important to standardize the document format by publishing its internal specifications and making them available to public. File Formats internal specification information plays a wide role in digital preservation activity. It is therefore necessary to use open formats while adding any documents in the digital repository to make these documents available over long - term.

REFERENCES

[1] S.L.Abrams and D. Seaman, "Towards A Global Digital Format Registry, Information Technology and Preservation and Conservation Workshop", Berlin, 2003.
[2] A. Brown, "Digital Preservation Technical Paper2", The PRONOM Unique Identifier Scheme. DPTP-02, No.2, 2006, pp.1-9.
[3] S.S. Christensen, "Archival Data format requirements. Stats Bibliotek Report of the Royal Library", Denmark, 2004.
[4] L.R. Clausen, "Handling File Formats", State Bibliotek, 2004.
[5] "Digital Preservation Management: Implementation Short- Term Strategies for Long Term Problems: Online Tutorial", 2004.
[6] M. Guericio and C. Cappiello, "File Formats Typology And Registries for Digital Preservation DELOS Report, 2004, pp.54.
[7] Internet Assigned Numbers Authority, MIME media Types.
[8] The Representation and Rendering Project, University of Leeds: Survey and Assessment of Sources of Information on file formats and software documentation, Final Report, 2003.
[9] J. Rothenberg "Ensuring the Longevity of Digital Documents", Scientific American, January 1995, pp.42-47.

Role of Public Libraries in Continuing Education Programme (CEP) in Chennai Corporation: A Study

K. Thavamani[1] and R. Madasamy[2]
[1]Dr. M.G.R. Medical University, Guindy, Chennai - 600 032, Tamil Nadu
[2]Anna Centenary Library,Kotturpuram, Chennai - 600 025, Tamil Nadu
E-mail: kottithavam@gmail.com,madasamyacl@gmail.com

Abstract

Public library system plays a significant role in enhancing the literacy and continuing education at grass root level which in turn develops socio-economic conditions of the society. It focuses on the pattern of functioning of the system of Continuing Education (CE) Libraries catering to neo-literate population of Chennai metropolitan area. This study has analyzed the various factors of users to develop their literacy to help their day-to-day life and highlighted suggestion for further development. It has found that women are the major beneficiaries through the continuing education liberties.

Keywords: *Continuing education programme, Public library*

1. INTRODUCTION

Education is a fundamental human right and access to educational opportunities including books and library facility that are central to realizing this right. "Education-for-all" is the vision with which adult-literacy systems throughout the world functions. In order to achieve effective service to the needy public, libraries in the adult and continuing education field have to essentially concentrate on the procurement, maintenance and distribution of reading materials and provide facilities. The aim of the processes should ensure that necessary supplies of books of the right quality and quantity are delivered at reasonable cost and at the right time through a fair and transparent system. While the national literacy functionaries have been striving to provide essential library services despite resource constraints, its efficacy needs to be examined further through a systematic and scientific research study that comprises of methodological rigor and academic insights.

'Education' and 'Library' are two inseparable-indivisible concepts, both being fundamentally and synchronically related to and co-existent with each other. One cannot be separated from the other and the existence of one is impossible without the other. None of them is an end in itself; rather both of them together are a means to an ultimate end. One dies as soon as the other perishes. One survives as long as the other exists. This inter-relation, this co-existence, this dependence of one upon the other have been coming down from the birth of human civilization to the posterity through a process of evolution in accord with varied needs, changes and circumstances of various stages of human life.

2. REVIEW OF LITERATURE

The initiatives taken by governmental, non-governmental agencies and various other organizations in propagating non-formal education among rural masses are briefly discussed[1]. The historical development of the rural library services in Africa and modern rural village libraries in Ghana and Burkina Faso within this context. It builds on previous studies of rural village libraries in Uganda and provides more support for the village community library concept as being a potentially powerful solution for provision of reading materials in rural areas. Literacy continues to be a major factor in terms of economic and personal development in underdeveloped nations and all libraries but perhaps these small village libraries even more so have the potential to play as important role in the eradication of illiteracy, development of reading culture and provision of services for the newly literate[2]. The public library is often considered a community learning center with the ability to effectively respond to the growth of adult and continuing education that has created greater needs for learning opportunities in rural area[3].

The role of the literacy as one of the essential ancillary services to the functions, activities and operations of literacy education has examined an adult is someone around fifteen years responsible for himself and others and who has probably missed the opportunity of attending formal school due to financial problems or other factors or has gone to school but has dropped out after spending one, two or three years. The need for library services that helps develop a habit of continuous readings even after literacy classes to completed. Library services are

needed to keep the skills alive that have been required through literacy classes by the provision of good literature. If adult education is to have a greater share in the molding and building of a happier individual and a better society, the providers of adult and continuing education must go beyond their roles as literacy facilitators to a more practical role of providing libraries for sustaining the newly acquired skills of adult learners[4]. Librarians who encourage development of reading and writing can make significant contributions to the profession, local cultures and the global community. It focuses on the immediate and long-term problem of illiteracy. It is intended to motivate librarians across the globe by providing information about the effects of illiteracy on individuals or marginalized groups[5].

The public libraries are providing family literacy programming to make a sound investment in future by developing the future of the family, the community, the library and the nation. Family literacy programs help the adult parent or caregiver to fulfill his/her role as the first and foremost teacher of his / her children. Public libraries are as natural as a family literacy provider. Many public libraries deliver many of the basic components of a sound family literacy program. In addition, family literacy programs bring more resources into the library than they use. It explains why this is so and provides a thumbnail sketch of the first statewide, state-funded, public library-based family literacy initiative for Literacy Program[6]. The recent education policy reforms in Sri Lanka, which emphasizes the expansion of literacy and lifelong learning and describes the role of the public libraries in this task and discusses the status of the Sri Lankan public libraries. It gives reasons for the unresponsiveness of public libraries to the changing educational requirements[7]. The role of UK public libraries in adult literacy provides support for promoting the pleasure of reading to adults with poor literacy. The re-branding of adult literacy collections was recognized as the ideal starting point for the rejuvenation of adult literacy work and identifying adults with poor literacy was acknowledged as part of multi-agency work[8].

National Institute of Adult Continuing Education (NIACE) has proposed a set of principles on which the new "adult higher education" should be based on reconceived, as a kind of learning not of institution and that it should be lifelong, learner-centred, achievement-led, economically proactive, explicit and diverse which also defines a set of three frameworks-for learner support, curriculum and credit[9]. The provision of resources is rarely sufficient to meet the learning needs of library users. Learners also require assistance from staff to identify their needs and then ensure that these are met successfully. Librarians will need a broad understanding of learning methods in order to recognize the many and varied ways in which their users approach learning. An appreciation of some of the concepts and techniques of both formal and informal education is delivered as part of librarians' initial training with additional opportunities to develop skills provided through continuing education[10]. The growth of a mass higher education system in the UK and the need for increased diversity of educational opportunity has meant that institutions have had to reshape radically their conventional provision. The main drive for qualifications and for vocational relevance has taken place in the context of major changes in the labour market and shifts in the UK's economy. The growths of an agenda for change as personal and professional learning converge have highlighted the innovations in teaching and learning methods for continuing education[11].

3. NEED AND SIGNIFICANCE OF THE STUDY

The human society cannot survive without being fully familiar with all the past intellectual contributions of man as well as keeping himself up to date with the growing and ever adding knowledge in the domain of disciplines such as Humanities, Social Sciences, Science and Technology etc. To overcome this problem, man has discovered libraries. Today, libraries have become the essential ingredients of a civilized society and its contribution is more towards education, research and training.

The importance of library service has been recognized for higher education and research; the same consciousness is not visible for general and mass education in all parts of the country. We have, on one hand, the developed university and college libraries, science and research libraries and on the other inadequate and underdeveloped school, rural and public libraries at the grassroot levels. In fact, it is the latter sector, which has greater relevance to post-literacy, continuing education and training of the masses. A public library, in simple terms, is a library which is maintained wholly out of public funds for providing free service to people regardless of race, colour, creed, age, sex, religion, language, status of educational attainment, etc. The significance of the public library service has been aptly highlighted by in the Manifesto UNESCO (quoted in Barua, 1996, p.44). "The public library is a practical demonstration of democracy's faith in universal education

as a continuous and lifelong process in the application of the achievement of humanity in knowledge and culture.

The functions of libraries and adult and continuing education are complementary and supplementary to each other as both aim at bringing the benefits of education to the public or masses. Thus, adult and continuing education and library services, with their symbiotic relationship, have identity of aims or unity of purpose, i.e. promotion of lifelong and continuing education. Library makes accessible to the stories of great human beings, human to aspirations, thoughts, ideas, expressions of creative imagination; achievements, etc. that have been recorded in books and allied materials. The library, if equipped properly with suitable resources and made accessible to semi-literate, neo-literate, literate and self-learning adults can undoubtedly be the best agency of continuing education because all adults often turn mainly to a library for their knowledge, information, instruction, consultation, recreation, self-development, self-actualization, etc. In this context, it is felt vital for knowing the functioning of Continuing Education Libraries.

4. OBJECTIVES OF THE STUDY

The main objective of the research study to identify CE Libraries and assess the functioning of such libraries in selected areas is as follows:

i. To find out the profile of the respondents (beneficiaries) in terms of their age, gender, occupation, duration of learning per week and level of reading skills improved.
ii. To find out the location of the CE Libraries and collection of books adequate to the users.
iii. To assess the influence of CE Libraries in retention of reading skills by the selected beneficiaries in the Continuing Education Libraries.

5. CONTINUING EDUCATION IN INDIA

Continuing Education Scheme was introduced in India in the year 1995-96 as an integrated and growth oriented scheme funded by the Government of India. The objective of the programme is to provide life-long learning facilities. The basic unit of the scheme was the Continuing Education Centre with a Nodal Continuing Education Centre overseeing and supporting the working cluster of Continuing Education Centres (CECs). The Continuing Education (CE) scheme implemented at the district level by the District Continuing Education Council, which functions under the district supervision and control of the respective District Collectors. The beneficiaries of the scheme include neo-literates, people who had discontinued education after reaching certain stage, school dropouts and any enthusiastic persons who want to continue their education.

6. NATIONAL LITERACY MISSION (NLM)

The National Literacy Mission was launched on 5th May 1988 and its objective is to achieve a sustainable threshold level of 75 percent literacy rate by 2007 AD. Its emphasis is to impart functional literacy to non-literates between 15-35 age groups. It adopts a novel approach to achieve its objective by means of Total Literacy Campaign (TLC), Post-Literacy Programme (PLP) and Continuing Education Programme (CEP). The Total Literacy Campaign has defined goals like area specific, time bound and total coverage of given age group, volunteer based approach, environment building and mass mobilization, improved pedagogy with emphasis on learning outcomes, monitoring and evaluation and low cost. In order to achieve the National Literacy Mission objectives.[14]

The main objectives of the scheme and activities of Adult and Continuing Education are as follows:[12]

i. Provision of facilities of retention of literacy skills and continuing education to enable the learners to continue their learning beyond basic literacy
ii. Creating scope for application of functional literacy for improvement of living conditions and quality of life.
iii. Dissemination of information on development programmes and widening and improving participation of traditionally deprived sections of the society
iv. Creation of awareness about national concerns such as national integration, conservation and improvement of the environment, women's equality, observance of small family norms, etc., and sharing of common problems of the community
v. Improvement of economic conditions and general well being as well as improvement of productivity by organizing short term training programmes, orientation courses for providing vocational skills and by taking up linkage between continuing education and development activities
vi. Organization of cultural and recreational activities with effective community participation.

7. CONTINUING EDUCATION PROGRAMME (CEP)

The CE programme is to provide life-long learning opportunities to all people beyond basic literacy and primary education. For this CE Libraries are the sole source.

7.1 Beneficiaries of the Continuing Education Programme

i. Neo-literates who complete the functional literacy / post-literacy in the Total Literacy Campaign (TLC) and Post-Literacy Programme (PLP)
ii. School drop-outs
iii. Pass-outs of primary schools and non-formal education programmes
iv. All other members of the community interested in availing the opportunity for life long learning

7.2 Establishing and Funding of Continuing Education Centres (CECs)

i. Establishing one CEC for population of 2000-2500
ii. One Nodal CEC for 10-15 CE centres
iii. 100% assistance from the Central Government for the initial 3 years of the project and in the subsequent 2 years State Government's shares to be alloted in the 50% of the budget. The State Government will take full responsibility for assistance of the CECs after completion of the initial 5 years.
iv. Additional funds provided for taking up innovative programmes

7.3 Continuing Education Programme in Chennai Corporation

The Continuing Education Programme was implemented in Chennai is 2002. The Continuing Education Programme through which the library and other functional programmes are carried out has been functioning from the slums. The libraries cum information centres numbering 330 are located in the major slums and are extending their services to the neo-literates, school drop outs, women and children. The city of Madras, now called Chennai has a population of 4,681,087 (4.6 million) as per 2011 census. The literacy rate is 90.33% with male 93.47% and female 87.16%, 1/3 of the city's population lives in 1214 slums, out of which a 1/3 of them have been found illiterate. The city of Chennai being an urban metropolis has shown gradual increase in literacy rate from 47.27% in 1961 to 85.33% in 2001. At present it has been increased to 90.33%. There are a ten reasons like migration, workload and lethargic attitude have been the reasons for slow progress, inspite of large-scale urbanization, besides attitude of males in attending the literacy centres. On the other hand female literacy shooted up due to full thrust on women i.e., by 15% during 1971-1981 and 30% during 1981-1991 and again 15% during 1991-2001. The reason has been the impact of the Total Literacy Campaign, Post-Literacy Programme and CE Programme and the didactic efforts of the local body.

7.4 Library and Reading Room for Neo-Literates and Non-Literates

Chennai Corporation has 330 NCE Libraries and CE Libraries that function in the slum areas and are located at corporation schools, corporation division offices, Integrated Child Development Service (ICDS) centres and local association buildings. Besides,newspapers, 1129 books are issued to each of the libraries where women and children most frequently use the library facilities and 1,54,729 have enrolled themselves as members and benefited through these libraries.

7.5 Public Libraries as Key Effective Force in Adult and Continuing Education

Public libraries play a vital role in the development of adult and continuing education. The library is an effective force for an adult education based on three assumptions (Kaula 1996).

i. Adult can learn
ii. It is essential that adults do learn and
iii. The library is in a strategic position to help the adults learn.

The role of Public Library described by America Library Association (ALA) is as follows:

i. Specific collection development
ii. Materials' supplying services
iii. Community informing services
iv. Planning activities
v. Training activities
vi. Advisory and counseling services
vii. Library extension services
viii. Social education activities
ix. Mobile library services
x. Services to specialized categories.

Prof. Kaula 1996 has summarized the library's role of adult and continuing education under six general categories of service (Kaula 1996)[13].

i. Supplying of books, films, recordings, tapes and other learning materials
ii. Planning the education all activities
iii. Advising the community on subjects, methods and materials
iv. Training the readers and the librarians in skills and techniques necessary to adult education activities
v. Informing the opportunities available though men and materials and
vi. Doing all possible activities to further the adult education

8. METHODOLOGY

The present study is based on Survey Method. The survey is a non-experimental, descriptive research method. The data has been collected through questionnaire method. For this study, the Chennai Corporation has been selected and it consists of 155 wards / divisions.

The target area of the definite universe of the study comprised of 330 CE Libraries in Chennai slums representing the low-income areas of the city where 1/3 of the underprivileged masses live. The slums are scattered throughout the city. Out of 1202 declared slums by Tamil Nadu Slum Clearance Board (TNSCB), 454 are in the North Chennai and 748 in the South Chennai. In a recent survey by the Continuing Education project of the Corporation of Chennai (2003), there are 1214 slums with a population of approximately 15,90,182 people. The literacy programme, implemented by the corporation of Chennai has gone through 3rd phase like Total Literacy Campaign, Post-Literacy Programme and Continuing Education Programme benefiting the slum population. For the purpose of this study, responses have been collected from 177 CE Libraries, representing the different geographical zones in Chennai Corporation. Total of 531 respondents have been selected in the present study. In each CE Library, three beneficiaries / respondents are selected based on their regular utilization of the library. The respondents have been selected at random from the users' list / records maintained by each CE Library using lottery method so as to ensure that the sampling is scientific and representative of the population studied.

Table 1Zone-wise Distribution of CE Libraries

Sl. No.	Name of the Zone	No. of NCE Libraries	No. of CE Libraries	Total
1	Zone – I Tondiarpet, Chennai – 600 021	3	30	33
2	Zone – II Basin Bridge, Chennai – 600 001	3	30	33
3	Zone – III Perambur, Chennai – 600 012	3	30	33
4	Zone – IV Ayanavaram, Chennai – 600 023	3	30	33
5	Zone – V Kilpauk, Chennai – 600 010	3	30	33
6	Zone – VI Triplicane, Chennai – 600 005	3	30	33
7	Zone – VII Nungampakkam, Chennai – 600 034	3	30	33
8	Zone – VIII Kodampakkam, Chennai – 600 024	3	30	33
9	Zone – IX Saidapet, Chennai – 600 015	3	30	33
10	Zone – X Adyar, Chennai – 600 020	3	30	33
Total	**10 Zones**	**30**	**300**	**330**

www.chennaicorporation.gov.in

9. DATA ANALYSIS AND INTERPRETATIONS

Table 2 Sex-wise Distribution of Respondents

Sl. No.	Sex	No. of Respondents	%
1	Male	60	11
2	Female	471	89
	Total	**531**	**100**

The above table clearly shows that the majority of the respondents (89%) are women. Only 11% of the respondents are men.

Table 3 Age-wise Distribution of Respondents

Sl. No.	Age - Group (in Years)	No. of Respondents	%
1	25 and Below	51	10
2	26 to 30	108	20
3	31 to 35	141	27
4	36 to 40	135	25
5	41 and Above	96	18
Total		**531**	**100**

The table shows that the majority of the respondents (27%) belong to the age group between 31 and 35 years, 25% of the respondents belong to the age group between 36 and 40 years, 20%, 10% and 18% of the respondents belong to the age group between 26 and 30 years, 25 years and below and 41 years and above respectively.

Table 4 Occupation-wise Distribution of Respondents

Sl. No.	Occupation	No. of Respondents	%
1	Coolies	330	62
2	Agricultural Labourers	24	5
3	Unemployed	132	25
4	Others	45	8
Total		**531**	**100**

Table 4 shows that the majority of the respondents (62%) are working as coolies i.e. on daily wages, 25% are unemployed, 8% are occupying different jobs including quasi-government jobs and only 5% are agricultural laborers.

Table 5 Week- wise Distribution of Respondents as per Duration of Learning

Sl. No.	Duration of Learning	No. of Respondents	%
1	2 Days and Below Per Week	78	15
2	3 Days Per Week	114	21
3	4 Days Per Week	201	38
4	5 Days Per Week	96	18
5	More than 5 Days Per Week	42	08
Total		**531**	**100**

Table 5 shows that the majority of the respondents (38%) have visited CE Libraries for 4 days per week, 21% were visited Continuing Education Libraries for 3 days per week, 15%, 18%, 8% have visited CE Libraries for 2 days and below per week, 5 days per week and more than 5 days per week respectively.

Table 6 Level-wise Distribution of Respondents

Sl. No.	Level of Reading Skills Improved in Studying at CE Libraries	No. of Respondents	%
1	Yes	525	99
2	No	06	01
Total		**531**	**100**

The table shows that the majority of the respondents (99%) have said that they have improved their level of reading skill gradually through studying at CE Libraries continuously. Rest of the 1% of the respondents has said that the level of reading skills has not create any impact in studying at CE Libraries.

Table 7 Area-wise Distribution of Respondents

Sl. No.	Location of CE Libraries	No. of Respondents	%
1	Urban	432	81
2	Rural	99	19
Total		**531**	**100**

The table shows that the majority of the respondents (81%) have said that the CE Libraries are located in the urban slum areas. Only 19% of the respondents say that the CE Libraries are located in the rural areas.

Table 8 Collection of Books-wise Distribution of Respondents

Sl. No.	Collection of Books Adequate to Users	No. of Respondents	%
1	Yes	447	84
2	No	84	16
Total		**531**	**100**

Table shows that 84% of the respondents have said that the collection of books in the form of journals, non-book materials and children related books have satisfied the users. Only 16% of the respondents have said that the collection of all books and non-book materials in the CE Libraries is not adequate.

Table 9 Pre-CE Library Usage in Quality of Reading-wise Distribution of Respondents

Sl. No.	Pre – CE Library Usage in terms of Quality of Reading	No. of Respondents	%
1	Very Poor	117	22
2	Poor	48	9
3	Moderate	120	23
4	Good	123	23
5	Very Good	123	23
Total		**531**	**100**

Table clearly shows that 22% of the respondents have said that before visiting the CE Libraries their quality of reading of books was very poor. 23% of the respondents in each have repeatedly said that their own reading quality before visiting the CE Libraries was moderate, good and very good respectively. Only 9% of the respondents have said that their reading ability before visiting the CE Libraries was poor.

Table 10 Post - CE Library Usage in Quality of Reading- wise Distribution of Respondents

Sl. No.	Post – CE Library Usage in terms of Quality of Reading	No. of Respondents	%
1	Very Poor	27	5
2	Poor	57	11
3	Moderate	60	11
4	Good	180	34
5	Very Good	207	39
Total		**531**	**100**

The table indicates that 39% of the respondents feel that after visiting the CE Libraries in terms of their quality of reading has been improved in a very good manner. 34% of the respondents have said that the quality of reading was good after reading the materials available in the CE Libraries. Repeatedly, 11% of the respondents feel that their reading quality was moderate and poor after reading the materials in CE Libraries. Only 5% of them have said that the reading quality was very poor even after visiting and reading the materials in CE Libraries.

10. SUGGESTIONS

i. Web junctions should be incorporated in the CE Library. Web Junction is addressing many of the online communication and training issues that has been identified. It is a huge resource in creating the online communities of practice and peer connectivity that are necessary to sustain public access computing and staff excellence.

ii. To maintain and access Information Technology (IT) for getting information and is designed to promote sustainable best practices and models of technical support for public accessing zcomputers in public libraries.

iii. Through the CE Library, the Government of India should organize symposium, seminars related to Information Technology, rural information system, libraries etc.,

iv. To allow more CE Library staff to participate in national, state and regional activities.

v. Government need to expand the CE Library users' circle and need to connect rural - affiliated groups who have a concern about and a stake in the successful development of local rural libraries. To bring people together who care about rural issues, not just about rural libraries, so that we can use all our assets and demonstrate that rural libraries are essential to rural communities.

vi. All the CE Libraries should have the study centres in future. Even a few of the 10th and the +2 students may be preparing for their competitive exams.

vii. Imparting and improving professional skills through special training and developing curricular linkages between fieldwork and action.

11. CONCLUSION

Organizing a library for an adult and continuing education programme is not difficult. Library services are of paramount importance to the success of the goals of adult and continuing education. Adult educators should incorporate library services into adult and continuing education programmes to complete the process of helping adults become literate and sustain that literacy. Public libraries are playing a vital role in uplifting the social status of the public in all aspects. They are knowledge centers and they contribute to lifelong leaning. To eradicate illiteracy and develop the people's literacy skills, the public library system in our country should play a major role to achieve this goal. It is necessary that all the public libraries and users should be well trained in the handling of information in the modern era using Information Communication Technologies (ICTs).

REFERENCES

[1] Laila T. Abraham, "Role of Public Libraries in Non-Formal Education in Kerala", KELPRO Bulletin, Vol. 14, No.2, 2010, pp.60-67.

[2] Valeda F. Dent Goodman, "Rural Library Services: Historical Development and Modern-Day Examples form West Africa", New Library World, Vol.109, No.11-12, 2008, pp.512-532.

[3] Jim Killacky, "Public Libraries and Adult Education: An Historical Review. Research in Rural Education, Vol. 2, No.2, 1983, pp.51-58.

[4] J.F. Onohwakpor, "The Role of Library Services in Adult Literacy Education", Library Philosophy and Practice, Vol.7, No.2, 2005, pp.21-23.

[5] Jim Agee, "Literacy, Illiteracy, and Lifelong Learning", New Library World, Vol.106, No.5-6, 2005, pp.244-252.

[6] Carole Talan, "Family Literacy, an Investment in the Future", The Bottom Line: Managing Library Finances, Vol. 14, No.1, 2001, pp.12-18.

[7] Pradeepa Wijetunge, "The Role of Public Libraries in the Expansion of Literacy and Lifelong Learning in Sri Lanka", New Library World, Vol.101, No.3, 2000, pp.104-111.

[8] Mcloughlin, Carla and Morries Anne, "UK Public Libraries: Role of Adult Literacy Provision", Journal of Librarianship and Information Science, Vol.36, No.1, 2004, pp.37-46.

[9] Stephen McNair, "An Adult Higher Education: A Vision of a Future", Education + Training, Vol.36, No.8, 1994, pp.3-7.

[10] Sarah McNicol, "Learning in Libraries: Lessons for Staff", New Library World, Vol.103, No.7-8, 2002, pp.251- 258.

[11] David Davies, "From the Further Education Margins to the Higher Education Centre? Innovation in Continuing Education", Education + Training, Vol.39, No.1, 1997, pp.4-13.

[12] Sanjay Kumar Kara, "The Role of Public Libraries in Adult Education with Special Reference in India", University News, Vol.46, No.26, 2008, pp.12-17.

[13] P. N. Kaula, "Adult Education and Liberties in Literacy Campaign and Libraries ed. V. Venkatappaiah", ESS. ESS Publications, New Delhi, 1996, pp.5-6.

[14] National Literacy Mission, "Scheme of Continuing Education for Neo-Literates", New Delhi: National Literacy Mission, Govt. of India, 1998, pp.9-10.

[15] Census of India-2011.

Exploring Educational Use of Blogs in Today's Classroom

M.R. Ramesh
Scientific Assistant, SP& HRDD, Indira Gandhi Centre For Atomic Research, Kalpakkam - 603 102
E-mail: Gascramesh@Gmail.com, Mr_Ramesh49@Yahoo.Com

Abstract

The world is undergoing numerous transformations due to rapid development and diffusion of information communication technology in all walks of life. Educational institutions need to develop strategies to improve the teaching – learning process and ensure that all teachers are well prepared to use the new tools for learning. In the classroom, we have moved from the days of chalk and talk to the use of overhead projectors and multimedia presentation techniques. New technological terms have replaced old terms such as banking into e-banking, money into e-money, commerce into e-commerce, governance into e-governance, education into e-learning, etc. E-learning tools are wikis, blogs, web browsers, RSS/feed tools, email, virtual world tools, mobile learning authoring tools, podcasting tools, etc. Blogs are reshaping our political, social and cultural environment. Blog technology has developed the fastest, the reason being that it is easy to use, can be combined with multimedia and it is individual centered, making it attractive to people.

Blogs can have information sharing application for use in life and socializing and in terms of educational application. Many users, teachers and authors use blogs as knowledge exchange or teaching platform. Nationwide, the use of blogs in the classroom becomes a must. Weblogs are used as educational tools not only teach students, but also as a means of keeping parents informed of what is going on in the classroom, as well as the entire school. This paper mainly deals with the important and use of weblogs in the classroom effectively.

Keywords *Blogs, Classroom management, Education, Teaching and learning, Virtual world tools, Wikis.*

1. RATIONALE OF THE STUDY

In classroom we are using so many tools to communicate to the students. Some of the commonly used tools are chalk boards, flipcharts, white boards and overhead projectors. Nowadays, different types of technologies can be used to improve student learning. Different technologies provide different kind of content and serve different purpose in the classroom. If new technology is introduced in the classroom, teachers also should get updated to it. Due to technology, teachers often find themselves acting more as coaches and less as lecturers. Rather than teaching to entire class, teachers spend more time individualizing their instruction. As a result, students are given much more individual attention due to the nature of some technologies.

The use of technology tends to fasten collaboration among students, which in turn will have positive effect on student achievement. The introduction of new medium of instruction like technology will have an enormous impact on the traditional classroom. Learning through technology is best supported by changes in the structure of school day, including longer class periods and more allowance for team teaching and interdisciplinary work. Teaching and learning with technology can be both the challenging and engaging for instructors and students. While technology makes it easier for instructors to create learning opportunities, provide prompt feedback and improve student engagement with content materials, they also pose challenges.
Following are some of the technological tools in teaching.

They may help you manage technology, support teaching more effectively avoiding some of the common pitfalls.

i. Using LCD projectors
ii. Smart board (interactive white board)
iii. Powerpoint
iv. Youtube
v. Podcast
vi. Teaching with the web
vii. Blogs and wikis

2. TEACHING WITH THE WEB (Blogs and Wikis)

Like podcast, wiki and other type of new technology, blogs can be used in classroom environment for diary entry. It can also be a useful tool to link communication between study groups within class or other class or even

schools. If used effectively blogs can create a learning environment that extends beyond the school yard.

There are numerous educational benefits of blogs. Blogs are,

i. highly motivating to students, especially those who otherwise might not become participants in class room
ii. excellent opportunity for students to read and write
iii. effective forum of collaboration and discussions
iv. powerful tool to enable scaffolding learning or mentoring to occur

As the internet becomes an increasingly pervasive and persistent influence in people lives, the phenomenon of the blog stands out as fine example of the way in which the web enables individual participation in the market place of ideas.

Blogs is often used as a personal journal that can be updated frequently and is intended for general public consumption. Blogs can be easily maintained and updated through a standard web browser without the need of additional technologies. They are often free of charge to establish. Blogs provide a communication spruce that teachers can utilize with students whenever there is a curriculum need to develop writing, sharing ideas and reflect on work being undertaken in the classroom.

From an educational perspective, the availability and ease of using blogging software makes creating blogs a viable classroom activity and a means for teachers to communicate with others.

3. DISCUSSIONS (BLOGS)

A blog is a frequently updated online personal dairy. It is a place to express you to the world. A place to share your thoughts and your passions, really its anything you want it to be, for our purposes well say that a blog is your own website that you are going to update on an ongoing basis. Blog is a short form i.e. the world weblog and the two words are used interchangeably.

A blog, also known as a web log is an online journal. Blogs are free to create and require no technical knowledge to build. Blogs can be used to record personal reflections, professional ideas and everything in between. They can be written by one person or by a group. Visitors can leave comments on blogs but cannot change the text of the original entry.

Why Includes Blogs?

i. A blog is often used as the personal journal that can be updated frequently and is intended for general public consumption. Blogs generally reflect the personality of the author.
ii. Blogs can be easily maintained and updated through a web browser without the need for additional technologies. They are often free of charge to establish
iii. Visitors to a blog can often contribute their thoughts and help build the content. Blogs can also draw upon content from other blogs (referred to as syndication form an RSS “feed”). For this reason, blogs have become a powerful medium for establishing web communities and special interest groups.

4. USER FRIENDLY TECHNOLOGY

Blogs are surprisingly easy to use. They require minimum technical knowledge and are quickly and easily created and maintained. Unlike design that can be changed relatively easily, best of all, students will find them convenient and accessible via home or library computers.

5. BLOGS IN THE CLASSROOM

As an educational tool, blog may be integrated in a multifaceted manner to accommodate all learners. The use of blogs in the classroom is becoming a must. Weblogs are used as educational tools to not only teach students, but also as a means of keeping parents informed of what is going on in the classroom as well as the entire school .

6. BLOGS WITH FOUR BASIC FUNCTIONS

6.1. Classroom Management

Class blogs can serve as a portal to foster a community of learners. As they are easy to create and update efficiently, they can be used to inform students of class requirements, post handouts, notices, and homework assignments or act as a question and answer board.

6.2 Collaboration

Blogs provide a space where teachers and students can work to further develop writing or other skills with the advantage of an instant audience. Teachers can offer instructional tips, and students can practice and benefit from peer review. They also make online mentoring

possible. For example, a class of older students can help a class of younger students develop more confidence in their writing skills. Students can also participate in cooperative learning activities that require them to relay research findings, ideas or suggestions.

6.3 Discussions

A class blog opens the opportunity for students to discuss topics outside of the classroom. With a blog, every person has an equal opportunity to share their thoughts and opinions. Students have time to react to ideas and reflect on learning. Teachers can also bring together a group of knowledgeable individuals for a given unit of study for students to network and conference with on a blog.

6.4 Student Portfolios

Blogs present, organize and protect students' work as digital portfolios. As older entries are achieved, developing skills and progress may be analyzed more conveniently. Additionally as students realize, their efforts will be published. They are typically more motivated to produce better writing. Teachers and peers may conference with a student individually on a developing work, and expert or peer mentoring advice can be easily kept for future reference.

7. IMPLICATIONS OF BLOG USING IN CLASSROOM

i. It provides students with a "live" audience
ii. The focus will be more on content
iii. It provides extra reading practice for students
iv. Blogs can be used as online student learner journals
v. To guide students to online resources appropriate of their level
vi. Blogs can increase the sense of community in a class
vii. To encourage shy students to participate
viii. To create a space for pre-class or post-class discussion
ix. To encourage a process writing approach
x. As an online portfolio or even an archive of student written work
xi. To help build a closer relationship between students in large classes

8. CONCLUSION

Education is a human right and is a key tool for national development. The economic growth of a country largely depends on technological improvements. Learning thought technology is best supported by changes in the structure of school day including longer class periods and more allowance for team teaching and interdisciplinary work.

The teacher is the yardstick that measures the achievements and aspirations of the nation. The worth and potentialities of a country get evaluated in and through the work of the teacher. The people of a country are the enlarged replica of their teacher. The importance of technology in today's world challenges teacher educators to create, technology proficient teachers, practitioners who can utilize existing technology, learn to work with emerging technology and adapt as needed when confronted with technological issues.

Technology is developing day-by-day and can be very useful for teaching students. It promotes problem based learning styles. Students acquire and use higher order thinking, analysis and problem solving. It is beneficial in education to both teachers and students. However, there are different types of technologies other than computers that can be used to improve students' learning. Different technologies provide different kind of content and serve different purposes in the classroom.

REFERENCES

[1] R. Accetta and Y.J.Wind, "E-learning Crossfire", Information Week Retrieved October 5, 2010, From http://www.informationweek.com/826/elearning-6side.html, 2001.

[2] Fitzwater, "A Little Online E-learning Goes A Long Way Computer User", Vol.18, No.12, 2000, pp.42.

Information Access Pattern of Legal Professionals Practicing at Madurai City, Tamil Nadu

P. Ganesan[1], K. Senkodi[2], P. S. Bagat Singh[3] and N. Murugesapandian[4]
[1]Alagappa University, Karaikudi - 630 003, Tamil Nadu
[2]Sanmuganathan Engineering College, Arasampatti - 622 507, Pudukkotai District, Tamil Nadu
[3&4]Ganesar College of Arts & Science, Melasivapuri, Pudukkotai District, Tamil Nadu

Abstract

The study on information access pattern was conducted among the legal professionals to find out the ways and means of accessing the information. The findings of the study revealed that books, internet sources and journals were the major sources of accessing the information and television, newspapers, colleagues and internet were the other major sources for acquiring latest information. The study also revealed that majority of the respondents used simple search and satisfied with the information available over the web. The study suggested that hands on training to be provided for accessing journals, CD-ROM databases and electronic resources.

Keywords: Access Pattern, Legal Professionals

1. INTRODUCTION

Human beings always search for information for various purposes like reading, teaching and research activities, since it is vital component for taking any decision. Information produced by various people like researchers, academicians and others will have no values, unless and until if it has not communicated properly. Libraries play vital role in procuring and disseminating the information in the form of books, journals, magazines to increase the quality of education and research[1]. In the traditional libraries, access to public knowledge is restricted to the users who are capable of traveling all the way to the libraries. It is a challenging job for the library professionals to make it available regarding the information to the remote users. Technological advancements have improved the library professionals job and it is very simple to make it available regarding the information to the users' desktops[2].

Due to advancements in Information and Communication Technology (ICT), most of the libraries have the collection of electronic resources such as Journals, e-Books, e-Databases, e-Magazines, e-Theses and Dissertations and so on. These collections are available in digital formats and can be accessed through the computers either locally or remotely[3]. ICT-enabled products and services and the availability of online information sources have changed the way the services of academic institutions[4]. In every stage, the face of the library has changed and used the latest technology for providing better sources and services to the users. Digital information is very good medium, through which the information can be rapidly communicated and helps to connect the people across the globe by breaking the barriers and simplifies the accessing of information [5]. Today most of the information is available in the digital form and most of the publishers have started publishing the information in the digital form. Hence, the users must be aware of both printed and electronic information in order to purse their course, teaching and research work. In this connection, this study is being taken to find out the users' awareness level and perception on information sources.

2. NEED FOR THE STUDY

Exponential growth of information, emergence of information and communication technologies has compelled the libraries and librarians to procure more and more information sources and innovative services to the users. Users access' pattern is dramatically changed in this digital environment, since their information needs and access pattern varies. In order to make the sources and services effectively, assessing the information needs of the users will help the researcher to find out the users' needs and help the library professionals to strengthen the collections and services.

3. OBJECTIVES OF THE STUDY

The following are the objectives of the study

i. To know more about the users' visit to the library
ii. To find out the source through which the users are accessing the information
iii. To find out the satisfaction level on the available information in their respective field
iv. To find out the users' access facilities and learning method of e-Resources.
v. To find out the barriers faced by the users while accessing the Internet sources
vi. To provide suitable recommendations based on the present study

4. METHODOLOGY

The study covers both primary and secondary data. The primary data has been collected by survey method using the questionnaire and secondary data has been collected from various sources like books, journals, and so on. For the purpose of the study, the data has been collected from legal professionals practicing in Madurai city irrespective of the courts, in which they are practising. A total of 150 questionnaires have been distributed to legal professionals and 114 have responded, in which 4 of the questionnaires are not properly filled are rejected. Hence, the total respondents for the study is 110 with a rate of 73.3%. Convenient sampling method has been adopted to collect the data.

4.1 Analysis

The collected data from the respondents have been tabulated and analyzed using simple percentage.

4.2 Scope of the Study

The study is confined to Legal professional practicing in courts of Madurai city only. This study can be extended to regional, state and national level to find out their information needs and how effectively they are searching their information.

4.3 Limitations of the Study

Efforts have been taken to make the study as accurate as possible. However, some unavoidable limitations have been crept into the study.
The following are some of the limitations of the study.

i. The study is limited to the Legal professionals practicing in courts of Madurai city only.
ii. The researcher has found little difficult in collecting the data.

5. ANALYSIS OF THE STUDY

5.1 Gender-wise Distribution of Respondents

Gender is one of the important socio-demographic variables that is listed in the Table 1.

Table 1 Gender-wise Distribution of Respondents

Gender	No. of Respondents (%)	Total Respondents
Male	78 (70.9)	110
Female	32 (29.1)	

It is found that majority of the respondents 78 (70.9%) are male and only 32 (29.1%) are female respondents. It is found from the above table that male legal professionals out number the female legal professionals.

5.2 Respondents Visit to the Library

In order to find out the frequency of visit to the library, data has been collected from the respondents and analyzed the data that are given in the Table 2.

Table 2 Respondents Visit to the Library

Library Visit	No. of Respondents	Total Respondents
Daily	56 (50.9)	110
Alternative Days	23 (20.9)	
Weekly	14 (12.7)	
Monthly	10 (9.1)	
Whenever needed	7 (6.4)	

Majority of the respondents 56 (50.9%) stated that they were visiting the library daily followed by 23 (20.9%) stated alternative days, 14 (12.7%) stated weekly, 10 (9.1%) stated monthly and only 7 (6.4%) stated whenever needed.

5.3 Source through which the Required Information Accessed by the Respondents

In this digital environment, both printed and electronic resources play important role in satisfying the information needs of the users. To find out the sources, which are important have been collected and analyzed. The analyzed data have been given in the Table 3.

Table 3 Source through which the Required Information Accessed by the Respondents

Source	No. of Respondents	Total Respondents
Books	78 (70.9)	110
Journals	45 (40.9)	
Magazines	38 (34.5)	
Reports	12 (10.9)	
Newspapers	34 (30.9)	
CD-ROM databases	18 (16.4)	
Internet Sources	56 (50.9)	

(Since the respondents opted more than one option, the percentage exceeds 100)

It is clear from the Table that Books were the major source for accessing the information 78 (70.9%), followed by Internet sources 56 (50.9%) and Journals 45 (40.9%) were the other major sources for accessing the information. CD-ROM databases 18 (16.4) and reports 12 (10.9%) were the least preferred sources.

5.4 Source through which Latest Information Accessed by the Respondents

There are number of sources are available through which latest information have been obtained. Respondents response regarding latest information accessing sources are given in the Table 4.

Table 4 Source through which Latest Information Accessed by the Respondents

Source	No. of Respondents	Total Respondents
Newspapers	78 (70.9)	110
Television	97 (88.2)	
Internet	45 (40.9)	
Current Journals	19 (17.3)	
Through Senior Counsels	17 (15.5)	
Colleagues	76 (69.1)	

(Since the respondents opted more than one option, the percentage exceeds 100)

It is found from the Table that Television 97 (88.2%) followed by Newspapers 78 (70.9%) are the sources through which the respondents get latest information followed by colleagues (69.1%) and Internet 45 (40.9%) are the other major sources through which the users have used to get the latest information and current journals 19 (17.3%) and Counsels 17 (15.5%) are the least preferred sources for getting the latest information.

5.5 Respondents Rating on Information Available on Internet

Table 5 Respondents Rating on Information Available on Internet

Rating of Information	No. of Respondents	Total Respondents
Very Much Satisfied	18(19.6)	92
Satisfied	45 (48.9)	
Somewhat Satisfied	25(27.2)	
Not at all Satisfied	4(4.3)	

It is clear from the Table that 45 (48.9%) of the respondents were satisfied with the information available on the internet followed by 25 (27.2%) stated some what satisfied and also noted that only 4 (4.3%) were not at all satisfied.

5.6 Learning Procedure to Access the Internet by the Respondents

Table 6 Learning Procedure to Access the Internet by the Respondents

Internet Learning Procedure	No. of Respondents	Total Respondents
Self	82 (89.1)	92
Attending Short term Course	7 (7.6)	
Through Friends	3 (3.3)	

It is found that majority of the respondents 82 (89.1%) have mentioned that they have learned the access to internet by self and 7 (7.6%) and 3 (3.3%) have stated that they have learned by attending short term course and through friends.

5.7 Access Facility to the E-Resources

Table 7 Access facility to the e-Resources

E-Resources	Yes	No	Total Respondents
e-Books	31 (33.7)	61 (66.3)	92
e-Journals	56 (60.9)	36 (39.1)	
e-Databases	14 (15.2)	78 (84.8)	
e- Magazines/ Newspapers	67 (72.8)	25 (27.2)	

Regarding various electronic sources, 67 (72.8%) and 56 (60.9%) respondents opined that they have access facility to e-Journals and e-Magazines and newspapers and only 31 (33.7%) and 14 (15.2%) have stated that they have access facility to e-Books and e-Magazines/ newspapers.

5.8 Use of Search Engines by the Respondents

Table 8 Use of Search Engines by the Respondents

Use of Search Engines		If 'yes'		Total Respondents
Yes	76	Simple Search	59 (77.6)	76
No	16	Advanced Search	17 (22.4)	

Regarding use of search engines, out of 92, 76 have pointed out that they are used to search the search engines, in which 59 (77.6%) respondents have mentioned that they have used simple search and only 17 (22.4%) have used advanced search.

5.9 Problems Faced by the Respondents while Searching the Information

Table 9 Problems Faced by the Respondents while Searching the Information

Source	No. of Respondents	Total Respondents
Information Overload	44 (57.9)	76
Redundant Information	13 (17.1)	
Slow Speed of Internet	12 (15.8)	
Lack of Computer Facility	7 (9.2)	

It is noted from the Table that 44 (57.9%) of the respondents stated that information overload was the problem on Internet and 13 (17.1%) and 12 (15.8%) respectively stated that redundant information and slow speed of internet were the problem and only 7 (9.2%) stated that lack of computer facility was the problem of accessing internet.

5.10 Satisfaction on Information Sources Available on Internet

It is observed that 40 (52.6%) respondents stated that they were some extent satisfied with the information sources available on Internet and 35 (46.1%) stated large extent satisfied and only 3 (3.9%) were less satisfied and none of the respondents stated as not at all.

Table10 Satisfaction on Information Sources Available on Internet

Source	No. of Respondents	Total Respondents
Large extent	35 (38.0)	92
Some extent	40 (43.5)	
Less extent	10 (10.9)	
Not at all	7 (7.6)	

6. MAJOR FINDINGS

Following are the major findings identified from the analysis.

i. Majority of the respondents 79 (71.8%) visited the library either daily or alternative days, 24 (21.8%) stated weekly and monthly and only 7 (6.4%) stated whenever needed.

ii. It is found that Books, Internet sources and Journals were the major sources for accessing the information and CD-ROM databases and reports were the least preferred sources.

iii. More than one third of the respondents stated that television and newspaper were the major sources through which the respondents got latest information followed by colleagues (69.1%) and Internet 45 (40.9%) were the other major sources through which the users used to get the latest information and current journals 19 (17.3%) and Counsels 17 (15.5%) were the least preferred sources for getting the latest information.

iv. It is found that 45 (48.9%) respondents were satisfied with the information available on the internet followed by 25 (27.2%) stated some what satisfied and also noted that only 4 (4.3%) were not at all satisfied.

v. It is found that more than three fourth of the respondents mentioned that they have learned the access to internet by self and 10 (10.9%) stated that they have learned by attending short term course and through friends.

vi. Regarding various electronic sources, more than half of the respondents opined that they have access facility to e-Journals and e-Magazines and newspapers and only 31 (33.7%) and 14 (15.2%) stated that they have access facility to e-Books and e-Magazines/newspapers.

vii. Regarding use of search engines, out of 92, 76 have pointed out that they are used to search the search engines, in which 59 (77.6%) respondents mentioned that they used simple search and only 17 (22.4%) used advanced search.

viii. It is noted that more than half of the respondents stated that information overload was the problem on Internet and redundant information, slow speed, and lack of computer facilities were the problems in accessing Internet.

ix. More than half of the respondents were some extent satisfied with the information sources available on Internet and 35 (46.1%) stated large extent satisfied and only 3 (3.9%) were less satisfied and none of the respondents stated as not at all.

7. SUGGESTIONS

Based on the findings, following are the few suggestions as per the study.

i. From the findings, it is noted that usage of main library is low when compared with Bar Association library. Hence, necessary steps should be taken to attract the users to main library.

ii. Usage of journals, CD-ROM databases are very low among the legal professionals. Hence, necessary steps should be taken to use CD-ROM databases and journals.

iii. Hands on training should be provided to access the e-Resources effectively.

iv. More number of computers, increasing the bandwidth of the Internet, making availability of more e-Resources like e-Books, e-Journals, e-Databases are some other suggestions.

REFERENCES

[1] B.K.Vishala and M.K. Bhandi, "Information Management and Dissemination: An Innovative Practice in Libraries", Indian Journal of Library and Information Science, Vol. No.2, No.1, January-April, 2008, pp.37-42.

[2] Mohd Nazim, "Managing Digital Library Content: Issues and Challenges", SRELS Journal of Information Management, Vol.46, No.1, March 2009, pp.29-35.

[3] G.Thenmozhi and R. Malliga, "Awareness of Digital Libraries in Vellore Town, Vellorre District, Tamil Nadu: A Study", Indian Journal of Library and Information Science, Vol.2, No.1, July-December 2008, pp.17-19.

[4] Sambhaji G. Patil and Shamkant Deshmukh, "Usage of ICT Products and Services For Research at MET's Institute of Engineering, Bhujbal Knowledge city (MET-KKC-IOC) : A Case Study", Indian Journal of Interdisciplinary Research, Vol.1, No.2, July-December 2010, pp.46-50.

[5] Shaista Muqueem, "Role of Information Technology in Library", Indian Journal of Library and Information Science, Vol. 2, No.1, January-April 2008, pp.15-17.

"IIPM Knowledge Resource Center (KRC) Significance of Information Collection and Services in Plantation and Agribusiness Education and Research in India: A Case Study"

K. N. Madhu
Indian Institute of Plantation Management (IIPM), Jnana Bharthi Campus, Bangalore - 560 056, Karnataka
E-mail: library_iipm@vsnl.net / 6Madhu@gmail.com

Abstract

The present study has analyzed a collection of primary data from the library accession register, visitors entry register data and journals maintenance register of IIPM. The Indian Institute of Plantation Management [IIPM] is center of excellence in Asia to provide post graduate program in agribusiness & plantation management (PGDM –ABPM) in India. The knowledge resource center of the institute has rich collection of information sources to provide sector specific education on agribusiness and plantation management especially on tea, coffee, rubber and spices related agri-business information. KRC has used the IT for providing right information to right user in right time.

Keywords*: Agribusiness education,Coffee,IIPM, Information source,KRC, Plantation management, Spices and rubber etc, Tea.*

I. INTRODUCTION

India is primarily an agrarian society. Even today about 70% of population depends solely on agriculture for the food security, economic stability and the national growth. Initially the population was not very much keen and serious about the agriculture, but on calamities like crop diseases, floods, drought leading to famine like conditions, awakened the Government of India to take the initiative for agriculture education. In the present era of IT revolution, access to agri-plantation information has become vital for the overall development of agriculture and plantation community. In this regard, Indian Institute of Plantation Management (IIPM), State Agriculture Universities (SAUs), Plantation Research Institutes, Horticulture Research Institutes, National Agriculture Research Institutes have been playing vital role in creating awareness on research and extension, and supplement their activities for continuous educational improvement. Libraries and information centers have been acting as nerve centers in providing valuable information and cater to their needs.

1.1 Agri-plantation Education System

The Agri-plantation education system and management field is of very recent origin and gaining rapid popularity among student community. The ABPM of IIPM program is planned to develop management workforce to cater to agricultural and plantation industry which serves as a good option for the students willing to serve in corporate sector. The agribusiness management & plantation management is a two year course having semester pattern system. The course itself starts from fundamentals like introduction to management, managerial effectiveness, business economics, business communication, quantitative techniques, etc. The agribusiness and plantation management course also comprises of various technical subjects like management in agriculture and allied food processing industries, post harvest management technologies, agricultural economics, international agricultural commodity & business, labour management, marketing, etc. In addition, institute arranges industrial visits, international visits, organizes guest lecture, management games, personality development workshops. From these, students can opt for any single stream which helps them while choosing their career path.

Currently, Indian Institute of Plantation Management [IIPM] is the only Institute providing post graduate course in dual sector viz, agribusiness & plantation management (PGDM -ABPM). Other premier institutes providing post graduate courses in agribusiness management programs are: Institute of Development Studies, University of Mysore – Mysore, MANAGE – Hyderabad, NIAM – Jaipur and IRMA – Gujarat. Additionally, various private and government bodies offer entrepreneurship training programs to undergraduate students through agri-clinics and agri business training centers which are fruitful steps in encouraging young budding entrepreneur in India.

2. ABOUT IIPM

Realizing the potentialities and needs of modernization of the plantation sector through management education and training, Ministry of Commerce & Industry, Government of India constituted a core group in 1990 to set up a strategic institution of management education in the plantation sector. In November 1993, the Institute was registered as an autonomous educational institution of higher learning, under the Karnataka Society Registration Act. It is jointly sponsored by the plantation sector and the Commodity Boards viz. Coffee Board, Tea Board, Rubber Board, Spices Board and Plantation Associations, viz. United Planters Association of Southern India (UPASI) and Indian Tea Association (ITA).

Institute is actively supported by the Industry through its uniquely designed Faculty Finance Support Scheme. Commodity Boards and several leading Corporate have instituted chairs at the Institute.

The Institute is today a centre of excellence which acts as a think tank and an intellectual resource base for the plantation and associated agri-business sector. It is an exclusive sectoral school of management based on a new model of intensive institute-industry interaction.

3. LITERATURE REVIEW

Agriculture has been a part of human life for many thousands of years; the need for agricultural information is probably almost as old. Ancient Babylonian clay tablets that contain agricultural information have been found.

Knowledge is one of the most important resources in an organization, be it academic, research, business or industrial organization. Social and economic progress is achieved by many countries principally through the advancement and application of knowledge [1].

Information is a critical resource in the operation and management of organizations. Timely availability of relevant information is vital for effective performance of managerial functions such as planning, organizing, leading and controlling [2].

A well-established and well making information system to facilitate decision making in various agricultural development projects is critical to the success of any organization. To be successful, any project requires efficient management of human and material resources. This cannot be done unless accurate, timely and relevant information is available to decision makers [3].

In broad sense, anything that a library does is directed towards readers, service, for service to readers runs the entire gamut of library activities from selection of materials, to processing, to making materials accessible both to groups and to individuals. It is involved library organization, administration and supervision [4].

Blanchard **[5]** hypothesized that "the great library at Alex- andria undoubtedly had many treatises on agriculture inscribed on papyrus" (p**.** 219). Throughout history, in many civilizations, there have been libraries that have included agricultural information, and separate agricultural libraries were established in Europe in the mid-eighteenth century.

Blanchard [5] identified three categories of agricultural literature. The most important was the research literature that is available in scholarly journals, experiment station bulletins, and books. Farmers and agricultural extension service agents relied most on "extension type publications distributed by experiment stations and extension services" (p. 224). The third category was trade publications including journals for the farmer and the agricultural industry.

The use of agricultural information is different from that of other disciplines in science and technology. There is a significant volume of scholarly publication based on agricultural research conducted in universities and government agencies, but, unlike the applied disciplines of medicine and engineering, the practitioner of agriculture-the farmer-may not utilize the research or even be aware of its existence. Lancaster and Beecher [6] point out that: "The results of agricultural research must be presented in one form for the research community and in a completely different form for the farming community or for the extension agents who carry information to this community" (p. 199).

Lancaster and Beecher [7] observed that "agriculture is perhaps the most interdisciplinary of all the spheres of human activity, drawing, as it does, from biology, medicine, chemistry, soil science, various branches of engineering, climatology, food technology, the environ- mental sciences, economics, management, and a whole host of other fields" (p. 197). This was equally true in the eighteenth and nineteenth centuries, and early agricultural libraries included many works on chemistry, engineering, and the weather.

Based on the above literature review, this paper examines the present status of the Indian Institute of Plantation Management [IIPM] knowledge resource center.

4. OBJECTIVES OF THE STUDY

i. To examine the existing information resources at Knowledge Resource Centre (KRC).
ii. To know the IT infrastructure of the KRC.
iii. To assess research output (thesis / dissertation) of the IIPM.
iv. To know the different services of the KRC.

5. METHODOLOGY

Library Accession Register Data, Visitors Entry Register Data and Journals Maintenance Register Data, and Interview Methods were used to collect data for study. The data were subsequently analyzed to meet the objectives mentioned above.

6. IIPM KNOWLEDGE RESOURCE CENTER (KRC)

"Knowledge is the Window" as the Institute's motto says, and so the facilities are called the "Knowledge Resource Centre", comprising the Library, Computer Center, Technical Laboratory, Tea Tasting & Marketing center (TTM) and faculty wisdom.

A Knowledge Resource Center (KRC) has excellent and rich information collection. The main function of the resource center is collection, organizing and disseminating the right information to the right user in right time.

7. IT INFRASTRUCTURE OF KRC

The computer centre is part of the Institute's Knowledge Resource Centre that has more than 90 high speed processors. The centre has high speed internet facility with BSNL Broadband connection. Students are given hands-on training, supplementing with lectures to equip them with word processing, spreadsheet, analytical and presentation skills.

Knowledge Resource Centre has completely been automated by installation of New Gen Lib [NGL] Library automation software and with complete wi-fi network connectivity in the campus. Through these networks, students and staff obtain required information by pressing the key from the desktop computer or Laptop.

8. INFORMATION COLLECTION OF KRC

In any information system, the most important resources or input for services are its collections. Collection consists of relevant recorded knowledge in the form of books, journals, periodicals and project reports, CD ROM's, Video Films, etc. IIPM Library is currently subscribing to 140 journals both of national and international repute. It has 18,000 books on diversified subjects viz., history, culture, religion, ethics, management, law, besides and the sectoral collections of coffee, tea, rubber, spices, agri-business etc. The library has a variety of CDs and audio & video cassettes. Library is networked with other leading libraries in Bangalore. This wide exposure gives the students an opportunity to develop as well as gain rounded personalities with a perspective.
Table 1 shows the total collection of the KRC. 74.33% are books, 9.49% are company annual reports, 6.19% theses and dissertations, 6.19% Journal back bound volumes and 3.09% CD, 0.57% journals; 0.04% e-journals 0.04% and 0.05% news paper.

Table 1 Forms of Information Collection at KRC

Sl. No.	Forms of Information Collection	Nos.	%
1	Books	18000	74.33
2	Journals	140	0.57
3	CD	750	3.09
4	Thesis and Dissertations	1500	6.19
5	Company Annual Report	2300	9.49
6	News Papers	14	0.05
7	E-journals	10	0.04
8	Journals Back Bound Volumes	1500	6.19
	Total	24214	100

8.1 Subject-wise Book Collection

Table 2 shows the subject wise book collection at KRC. Out of 18000, 34.44% of the books are related to the general management and 13.85% of the books are relating to Marketing, 7.80%-political science, 5.53%-tea, 4.93%-agriculture, 4.16%-Human resource management, 3.89%-coffee, 3.62 %-law, 3.66%-history, 2.16%-rubber, 2.08%-spices, 2.35%-social science, 2.91%-strategic management, 1.71%-political science, 1.54%-philosophy and psychology, 1.44% leadership and literature and 1.43% communication.

Table 2 Subject-wise Book Collection

Sl. No.	Books Collection	No. of Books	%
1	Philosophy and Psychology	277	1.54
2	Religion	62	0.35
3	Social Science	423	2.35
4	Political Science	309	1.71
5	Economics	1404	7.80
6	Law	652	3.62
7	Agriculture	888	4.93
8	Tea	995	5.53
9	Coffee	700	3.89
10	Rubber	388	2.16
11	Spies	374	2.08
12	Horticulture	128	0.71
13	General Management	6199	34.44
14	Human Resource Management	749	4.16
15	Leadership	260	1.44
16	Communication	257	1.43
17	Strategic Management	523	2.91
18	Marketing	2493	13.85
19	Literature	260	1.44
20	History	659	3.66
Total		18000	100.00

8.2 Primary Information Resources

Table 3 shows the strength of primary information resources. KRC is subscribing to 140 journals. Among then 20% are economics related, 11.43 % is general management, 12.14% finance, 10.71% marketing,8.57% are agriculture and accounts respectively, 7.14 % such for Tea coffee, spices and rubber accounted respectively.

Table 3 Primary Information Resources

Sl. No.	Journal Subject	No. of Journal	%
1	Agriculture	12	8.57
2	General Management	16	11.43
3	Marketing	15	10.71
4	Accounts	12	8.57
5	Finance	17	12.14
6	Tea	10	7.14
7	Coffee	10	7.14
8	Rubber	10	7.14
9	Spices	10	7.14
10	Economics	28	20.00
Total		140	100

8. 3 Thesis and Dissertation

Table 4 shows the research reports of the IIPM. 1500 IIPM research reports are available at Knowledge Resource Center Library in different subject areas. Among the reports, 12.27% of the report relating to tea sector, 11.80 % logistics, 10.47% marketing, 10% rubber, 9.13% microfinance, 8.93 % agriculture commodity, 8.47% retail and banking respectively, 6.53% coffee, 5.13% contract farming, 4.93% Human resource management and 3.87% spices related.

8.4 Electronic Information Resources

Table 5, describing that total by 750 CD/DVD information resources are available at IIPM KRC. 34.27% of the CD/DVD are related agriculture and agribusiness. 28.40 % are general, 21.07% management related and 16.27% accounted to plantation.

Table 4 Subject-wise Collection of Thesis and Dissertation

Sl. No.	Thesis and Dissertation	No. of Thesis and Dissertation	%
1	Retail	127	8.47
2	Marketing	157	10.47
3	Human Resource Management	74	4.93
4	Microfinance	137	9.13
5	Tea	184	12.27
6	Coffee	98	6.53
7	Rubber	150	10.00
8	Spices	58	3.87
9	Contract Farming	77	5.13
10	Logistics	177	11.80
11	Banking	127	8.47
12	Commodity	134	8.93
Total		1500	100

Table 5 Electronic Information Resources

Sl. No.	CD/DVD	No. of CD/DVD	%
1	General	213	28.40
2	Management	158	21.07
3	Plantation	122	16.27
4	Agriculture	257	34.27
Total		750	100

8.5 Company Annual Reports

Table 6 shows that 2500 company annual reports are available. Among 26% of the annual reports are related to coffee companies, 20.32% are commodity related and 18.92% tea and Rubber respectively and rest of the 16.44% are spices related.

Table 6 Company Annual Reports Collection

Sl. No.	Company Annual Reports	No. of Reports	%
1	Coffee	650	26.00
2	Tea	473	18.92
3	Rubber	458	18.32
4	Spices	411	16.44
5	Commodity	508	20.32
Total		2500	100

9. SERVICES OF KRC

Different types of services to the students, teachers, scientists, extension workers, administrators and planters are available as this library follows open access system and provide usual library services like book lending services, reference services, news paper clipping services, photocopy services, SDS services, CAS services, Orientation Services and Internet Browsing facilities.

9.1 Interlibrary Loan Services

The knowledge resource center has the institutional annual library membership with other reputed library in and around Bangalore city. ISEC library, IIMB library, British Library Bangalore University library and Bangalore Agriculture University Library, Tea Research Association library in Assam etc..

9.2 Users of the KRC

There are two types of the users available at KRC. One is internal user and the second is external user. Internal Users are Faculty. Officers, Students and staff members of the IIPM. External Users are Scientists, Officers, staff members of the Tea Board, Coffee Board, Rubber Board, Spices Board, members of the Plantation Associations and PhD scholars of the various agriculture universities in India.

9.3 Human Resources of the KRC

Well qualified and experienced eight staff members are working in Knowledge Resource Center for providing exhaustive reliable information services to plantation and agribusiness clients. Staff work in two shifts. KRC functions from morning 09.00 AM to 09.30 PM. seven days in week, User can access the required information from the centre.

10. CONCLUSION

With the potentiality of the agribusiness and plantation education in India, Ministry of Commerce and Industry, Govt. of India, started the Indian Institute of Plantation Management and it is the only Institute of its kind providing Agribusiness and Plantation Management education at the level of master degree in India. The institute library has very rich information collection in the filed of Management, Agriculture and Plantation sectors. With the infrastructure available, the information resources of the library are fully equipped to obtain correct information at the right time. The institute encourages active involvement of faculty and students in collaborative programmes at national and international level in order to remain at the forefront of the scientific, managerial

and technological development and share its value with plantation sector.

REFERENCES

[1] "Constructing Knowledge Societies: New Challenges for Tertiary Education", Washington, DC: world Bank, 2001.

[2] A.R. Babu, Y P.Singh and R.K. Sachdeva, "Establishing a Management Information System", In B.E. Swanson, R.P. Bentz, and A.J. Sotranko, Eds., "Improving Agricultural Extension : A Reference Manual", Rome : Food and Agriculture Organization, 1997, pp.161-169.

[3] K A. Waheed, "Rural Development Through Communications", In Information Technology Development, Tokyo: Asian Productivity Organization, 1990, pp.73-89.

[4] Rockwood, Ruth and Louis Shores, "Research in Readers' Services", Library Trends. Vol.6, 1957-58, pp.160.

[5] J. R. Blanchard, "The History of Agricultural Libraries in the IJnited States", In A. Fusonie & L. Moran (Eds.), Agricultural lzterature: Proud heritage, Future Promise Washington, DC: Associates of the National Agricultural Library, Inc. and the Graduate School Press, LJ.S. Department of Agriculture, 1977, pp. 219-35.

[6] F. W. Lancaster and J. W. Beecher, "Agricultural Librarianship and Documentation as a Profession", In Agricultural Information to Hasten Development (proceedings of the 6th World Congress of the International Association of Agricultural Librarians and Documentalists) Los Banos: Agricultural Libraries Association of the Philippines, 1981, pp. 197-210.

Diabetes Research in India, China and Brazil: A Comparative Quantitative Study, 2000-09

Adarsh Bala[1] and B.M.Gupta[2]
[1]Government Medical College & Hospital, Sector 32, Chandigarh - 160 030, India
[2]National Institute of Science, Technology & Development Studies, New Delhi - 110 012, India
E-mail: adarshbindu@rediffmail.com, bmgupta1@gmail.com

Abstract

The study analyses the diabetic research output during 2000-2009 in global context on several parameters including most productive countries of the world in diabetic research, their rank, publication share, global burden of the disease on respective countries and diabetic research output in relation to their population. In depth, this study evaluates the diabetic research profile of India, China and Brazil including their total publications, citation impact, publications growth, international collaboration share, research priorities under various subjects, diabetic complications and type of diabetes. It also analyses the characteristics of most productive institutions of these three countries.

Keywords: *Diabetes research, Diabetic complications,Type of diabetes.*

1. INTRODUCTION

Diabetes is a chronic disease that occurs when the pancreas does not produce enough insulin or when the body cannot effectively use the insulin it produces. Diabetes is a life-threatening condition affecting millions of people. Diabetes is a major threat to global public health that is rapidly getting worse, and the biggest impact is on adults of working age in developing countries. Diabetes is a common condition and its frequency is dramatically rising all over the world. Although diabetes is sometimes considered a condition of developed nations, the loss of life from premature death among persons with diabetes is greatest in developing countries[1].

According to International Diabetic Federation (IDF), the low-and middle-income countries face the greatest burden of diabetes. It is one of the major causes of premature illness and death in most countries. It is estimated that around 330,000 deaths will be attributable to diabetes in 2010 and shows a 5.5% increase over the estimates for the year 2007[2]. Diabetes imposes a large economic burden on the individual, national healthcare system and economy. Healthcare expenditures on diabetes are expected to account for 11.6% of the total healthcare expenditure in the world in 2010. As per IDF estimates, healthcare expenditures to treat and prevent diabetes and its complications are expected to total at least US Dollar 376 billion in 2010. By 2030, this number is projected to exceed some USD490 billion[2].

In 1985, the best data available suggested that 30 million people had diabetes worldwide. Fast-forward 15 years and the numbers were revised to just over 150 million. Today, less than 10 years on, the new figures-launched at the 20th World Diabetes Congress in Montreal, Canada-put the number closer to 300 million, with more than half aged between 20 and 60. IDF predicts that if the current rate of growth continues unchecked, the total number will exceed 435 million in 2030-many more people than the current population of North America. Diabetes now affects seven percent of the world's adult population. The regions with the highest comparative prevalence rates are North America, where 10.2 % of the adult population have diabetes, followed by the Middle East and North Africa Region with 9.3%. The regions with the highest number of people living with diabetes are Western Pacific, where some 77 million people have diabetes and South East Asia with 59 million. India is the country with the most people with diabetes, with a current figure of 50.8 million, followed by China with 43.2 million. Behind them the United States (26.8 million); the Russian Federation (9.6 million); Brazil (7.6 million); Germany (7.5 million); Pakistan (7.1 million); Japan (7.1 million); Indonesia (7 million) and Mexico (6.8 million). When it comes to the percentage of adult population living with diabetes, the new data reveal the devastating impact of diabetes across the Gulf Region, where five of the Gulf States are among the top ten countries affected. The Pacific island nation of Nauru has the world's highest rate of diabetes, with almost a third of its adult population (30.9%) living with the disease. It is followed by the United Arab Emirates (18.7%); Saudi

Arabia (16.8%); Mauritius (16.2%); Bahrain (15.4%); Reunion (15.3%); Kuwait (14.6%); Oman (13.4%); Tonga (13.4%) and Malaysia (11.6%)[3].

2. LITERATURE REVIEW

A few studies have been conducted in measuring the progress of the research in diabetes worldwide and in Indian context in the past. Lewin[4] studied world diabetes mellitus publications during 1984-2005, using MEDLINE database and indicated that the publication growth of articles parallels the increase in diagnosed cases of diabetes mellitus (both type1 and type2 together) and the literature relating to type1 diabetes mellitus has saturated, while that of type 2 showed the increase over time. Apoor,. Montori, Wilczynski, and Haynes[5] studied author self-citation in the diabetes literature. Krishnamoorthy *et al*[6] studied world diabetes literature during 1995-2004, using MEDLINE database. Somogyl and Schubert[7] made an interesting correlation between national bibliometric and health indicators in diabetes.

3. AIMS & OBJECTIVES

The main objective of this study is to analyze the diabetes research in India, China and Brazil as reflected in its publications output during 2000-09. In particular, the study focuses on the following objectives: (i) To study the research output, publication share, rank and global burden of the diabetes of most productive countries of the world, (ii) To study the research output, growth and citation impact of research in India, China and Brazil, (iii) To study of patterns of international collaboration in of India, China and Brazil and (iv) To study research profile of leading institutions of India, China and Brazil.

4. METHODOLOGY AND SOURCE OF DATA

The Scopus Citation database has been used for retrieving the publication data in diabetes research for 10 years (2000-2009). For citations data, three years, two year and one year citations' window has been used for computing average citations per paper during 2000-2007, 2008 and 2009. The search strategy on diabetes literature was carried out using the following key words strategy suggested by Arunachalam and Gunasekaran[8], Ratnakar and Satynarayana[9] and Rosalind A. Maria[10] ((((TITLE-ABS-KEY**(diabete*** OR **niddm** OR **iddm** OR **mody** OR **mrdm** OR **fcpd))** OR (TITLE-ABS-KEY**(hyperglycem*** OR **hypoglycem*** OR **hyperglcaem*)** OR **(islet transport*** OR **islet encapsulation** OR **islet cryop*** OR **islet neogen*** OR **islet culture***)) OR (TITLE-ABS-KEY**(insulin resist*** OR **insulin signaling** OR **insulin senstivity** OR **insulin receptor**)) OR (TITLE-ABS-KEY(**glucose transport OR resistin** OR **pancreatic regeneration**)) AND (AFFIL**(china))** AND PUBYEAR AFT **1999** AND PUBYEAR BEF **2010**)))

For identifying literature on three types of diabetes and for different diabetes complications, different keywords strategies were developed. For calculating the international collaborative papers, a separate search strategy was prepared.

5. ANALYSIS

5.1 Research Output of Most Productive Countries

In overall, the global publications share of top 16 most productive countries in diabetes research vary from 1.29% to 29.25% during the ten years' period (2000-2009). Among these, 16 most productive countries are in diabetes research, USA scored the 1st rank with global publications share of 29.25%. U.K comes at 2nd rank with 8.50% global publications share, followed by Japan, Germany, Italy, France and China (with their global publications share ranging from 3.48% to 6.27%). Spain, Netherlands, Sweden and India rank at 8th to 11th positions with their global publications share varying from 2.13% to 2.96% during 2000-09. The countries that rank between 12th and 16th positions are Switzerland, S. Korea, Brazil, Turkey and Belgium with their global publications share less than 2% (varying from 1.29% to 1.45%). (Table 1).

On analyzing the shift in ranking of these 16 countries from 2000 to 2009, it was found that USA, U.K, Japan and Germany continued to rank 1st to 4th positions, in spite of decline in their publications share from the year 2000 to 2009. Among the developing countries China, India, South Korea and Brazil witnessed the major shift in their ranking from 13th to 5th, 11th to 9th, 14th to 12th and 16th to 13th respectively due to the increase in their global publications share from the year 2000 to 2009.

5.2 Research Productivity and Burden of Disease in Global Context

Based on the percentage of population suffering from diabetes, these 16 most productive countries have been categorized into Highest (with diabetic population from 8.1% to12.3%), Medium (with diabetic population from 5% to 8.0%) and Lowest (with diabetic population from less than 5%) affected countries. Similarly countries are

Table 1Global Publications Output, Publications Share and Rank of Top 16 Most Productive Countries in Diabetes Research During 2000-2009

Countries	No. of Papers			% Share of Papers			Rank		
	2000-09	2000	2009	2000-09	2000	2009	2000-09	2000	2009
USA	80094	4943	9977	29.25	29.52	27.15	1	1	1
UK	23281	1480	3040	8.50	8.84	8.27	2	2	2
Japan	17167	1385	2087	6.27	8.27	5.68	3	3	3
Germany	15223	1023	2023	5.56	6.11	5.51	4	4	4
Italy	12410	682	1821	4.53	4.07	4.96	5	6	6
France	10676	777	1389	3.90	4.64	3.78	6	5	7
China	9520	211	2017	3.48	1.26	5.49	7	13	5
Spain	8104	410	1213	2.96	2.45	3.3	8	8	8
Netherlands	6451	340	954	2.36	2.03	2.6	9	9	10
Sweden	6393	472	814	2.33	2.82	2.22	10	7	11
India	5839	229	1164	2.13	1.37	3.17	11	11	9
Switzerland	3974	238	565	1.45	1.42	1.54	12	10	15
South Korea	3942	155	734	1.44	0.93	2	13	14	12
Brazil	3907	125	729	1.43	0.75	1.98	15	16	13
Turkey	3928	129	595	1.43	0.77	1.62	14	15	14
Belgium	3521	219	469	1.29	1.31	1.28	16	12	16
World	273829	16745	36745	100.00	100.00	100.00	-	-	-

classified according to publications intensity as High (with papers per million populations varying from 460 to 966), Medium (with papers per million populations varying from 238 to 369) and Low (with papers per million population less than 200 (Table 2)

It is observed that the high publication intensity countries (namely Sweden, Netherlands, Switzerland, U.K. and Belgium) are found to have generally low to medium prevalence of diabetes (varying from 4.9% to 8.0%) in contrast to medium publications intensity countries (namely U.K., Germany, France, Italy and Spain) having high prevalence of diabetes (varying from 8.7% to 12.3%). As against these two groups of countries, low publication intensity countries (namely Japan, Turkey, India, Brazil and China) have low to medium prevalence of diabetes (varying from 4.5% to 7.4%).In this group, South Korea is the only exception with having high prevalence (9%) of diabetes (Table 2).

5.3 Research Profile of India, China and Brazil in Diabetes Research

On analyzing the diabetes research profile of India, China and Brazil, it was found that China witnessed the highest publications output with 9520 papers in diabetes research, in contrast to India and Brazil's publications output of 5843 papers and 3907 papers respectively during 2000-09. In terms of cumulative growth of diabetes research publications from 2000-04 to 2005-09, China achieved the highest growth rate of 244.24%, followed by Brazil (172.45%) and India (122.64%) (Table 3).

Considering the quality and impact of papers (measured in terms of the citations received per paper on a three year window), Brazil scored the highest impact of 6.64, followed by India (4.59) and China (3.82). Among these three countries, Brazil and India witnessed decline in its citation impact from 7.24 to 6.42 and 4.62 to 4.58 citations, respectively in contrast to increase in China from 3.73 to 3.85 citations from 2000-04 to 2005-09 (Table 4).

Table 2 Publication Output per Million Population and Percent Share of Diabetic Population of Most Productive Countries

Country	2010 Population (20-79) Years 000's[10]	DM Population and Percent Share of Diabetic Population of Productive Countries Prevalence 2010National (%) [10]	Total Papers	Papers per Million Population
USA	217335.3	12.3	80094	368.53
Germany	62654.4	12.0	15223	242.97
France	44091.3	9.4	10676	242.13
S.Korea	36602.9	9.0	3942	107.7
Italy	44509.9	8.8	12410	278.81
Spain	33943.8	8.7	8104	238.75
Belgium	7643.9	8.0	3521	460.63
Netherland	11943.4	7.7	6451	540.13
Turkey	49745.9	7.4	3928	78.96
Japan	96665.9	7.3	17167	177.59
Sweden	6618.6	7.3	6393	965.91
India	713498.4	7.1	5839	8.18
Brazil	126326	6.0	3907	30.93
Switzerland	5569.1	4.9	3974	713.58
UK	44056.1	4.9	23281	528.44
China	964301.6	4.5	9520	9.87

Table 3 Annual Growth of Papers in Diabetes Research During 2000-09

Year	Number of Papers		
	India	China	Brazil
2000	229	211	125
2001	281	222	156
2002	397	355	205
2003	430	526	266
2004	474	829	297
2005	547	1052	377
2006	653	1174	473
2007	792	1391	579
2008	873	1743	700
2009	1167	2017	729
Total	5843	9520	3907
H-Index	70	73	74

Considering the international collaboration publications output, China achieved the highest international collaborative publication share of 20.88% during 2000-09, followed by Brazil (20.86%) and India (12.54%). The international collaborative publications share of all the three countries has increased from 2000-04 to 2005-09: India (from 10.65% to 13.39%), China (from 18.21% to 21.90%) and Brazil (from 20.59% to 20.95%). The international collaborative research output of Brazil witnessed the highest citations impact per paper of 16.13, followed by India (9.65) and China (9.26). Among these three countries, the citation impact per paper of India increased from 8.83 to 9.94 from 2000-04 to 2005-09, as against decrease from 11.17 to 8.82 in China and 17.39 to 15.68 in Brazil (Table 5).

Table 4 Publication Output and Citation Impact of India, China and Brazil in Diabetes Research, 2000-2009

Period	India			China			Brazil		
	TP	TC	ACPP	TP	TC	ACPP	TP	TC	ACPP
2000-04	1811	8372	4.62	2143	7988	3.73	1049	7594	7.24
2005-09	4032	18447	4.58	7377	28418	3.85	2858	18344	6.42
2000-09	5843	26819	4.59	9520	36406	3.82	3907	25938	6.64
TP= Total Papers; TC=Total Citations; ICP=International Collaborative Papers									

Table 5 Citation Impact of International Collaborative Papers of India, China and Brazil in Diabetes Research During 2000-2009

Period	India			China			Brazil		
	ICP	TC	ACPP	ICP	TC	ACPP	ICP	TC	ACPP
2000-04	193	1705	8.83	372	4155	11.17	216	3757	17.39
2005-09	540	5370	9.94	1616	14254	8.82	599	9391	15.68
2000-09	733	7075	9.65	1988	18409	9.26	815	13148	16.13
ICP= International Collaborative Papers; TC=Total Citations; ICP=International Collaborative Papers									

5.4 Subject-wise Research Priorities of India, China and Brazil

In terms of research priorities, the largest emphasis (72.67%) has been given to medicine in world output in diabetes, followed by biochemistry, genetics & molecular biology (28.45%), pharmacology, toxicology & pharmaceutics (9.14%), neurosciences (3.72%), immunology & microbiology (3.66%), agricultural & biological sciences (3.12%) and chemistry (1.56%) (Table 6). On comparing research emphasis of the India, China and Brazil vis-a-vis the world, it was observed that pharmacology, toxicology & pharmaceutics, agricultural & biological sciences and chemistry have a higher share, compared to the lower share of medicine, biochemistry, genetics & molecular biology, neurosciences and immunology & microbiology in India during 2000-09. In China, comparatively more emphasis has been placed on pharmacology, toxicology & pharmaceutics and chemistry, compared to lower emphasis on medicine, biochemistry, genetics & molecular biology, agricultural & biological sciences, neurosciences and immunology & microbiology. In Brazil, more emphasis has been placed on pharmacology, toxicology & pharmaceutics, agricultural & biological sciences, neurosciences and immunology & microbiology compared to less emphasis on medicine, biochemistry, genetics & molecular biology and chemistry (Table 7).

Table 6 Subject-wise Break-up of Papers of India, China and Brazil in Diabetic Research During 2000-09

Subject	Number of Papers				% Share of Papers			
	India	China	Brazil	World	India	China	Brazil	World
Medicine	3422	6617	2870	198997	58.57	69.51	73.46	72.67
Biochemistry, Genet. & Mol. Biology	1674	2720	992	77903	28.65	28.57	25.39	28.45
Pharmacology, Toxicology & Pharmaceutics	1460	1123	403	25030	24.99	11.80	10.31	9.14
Agricultural & Biological Sciences	432	258	265	8555	7.39	2.71	6.78	3.12
Chemistry	337	440	58	4273	5.77	4.62	1.48	1.56
Neurosciences	161	309	231	10189	2.76	3.25	5.91	3.72
Immunology & Microbiology	144	272	171	10031	2.46	2.86	4.38	3.6
Total	5843	9520	3907	273829	-	-	-	-

Table 7 Relative Index of Publication Output in Diabetes Research under Different Subjects, 2000-2009

Subject	Number of Papers				Relative Index		
	India	China	Brazil	World	India	China	Brazil
Medicine	3422	6617	2870	198997	0.75	0.95	0.97
Biochemistry	1674	2720	992	77903	0.94	1.00	0.85
Pharmacology	1460	1123	403	25030	2.56	1.28	1.08
Agriculture	432	258	265	8555	2.22	0.86	2.08
Chemistry	337	440	58	4273	3.46	2.94	0.91
Neurosciences	161	309	231	10189	0.69	0.87	1.52
Immunology	144	272	171	10031	0.63	0.77	1.14

Considering the citation impact of these three countries under different subjects during 2000-09, it was observed that : (i) in medicine, Brazil made the highest citation impact per paper of 6.85, followed by India (4.48) and China (3.18); (ii) in biochemistry, genetics & molecular biology, Brazil made the highest citation impact per paper of 7.22, followed by China (5.45) and India (5.28); (iii) in pharmacology, toxicology & pharmaceutics, Brazil made the highest citation impact per paper of 4.9, followed by India (4.55) and China (4.31); (iv) in agricultural & biological sciences, China made the highest citation impact per paper of 6.31, followed by Brazil (4.68) and India (4.30); (v) in chemistry, Brazil made the highest citation impact per paper of 7.12, followed by China (5.89) and India (5.8zil7); (vi) in neurosciences, China made the highest citation impact per paper of 5.81, followed by India (5.55) and Brazil (5.06) and (vii) in immunology & biology, Brazil made the highest citation impact per paper of 7.65, followed by India (5.04) and China (4.77) (Table 8).

Table 8 Publication Output and Impact in Diabetes Research under Different Subjects During 2000-09

Subject	India			China			Brazil		
	TP	TC	ACPP	TP	TC	ACPP	TP	TC	ACPP
Medicine	3422	15325	4.48	6617	21028	3.18	2870	19646	6.85
Biochemistry	1674	8832	5.28	2720	14831	5.45	992	7167	7.22
Pharmacology	1460	6647	4.55	1123	4841	4.31	403	2006	4.98
Agriculture	432	1858	4.30	258	1627	6.31	265	1240	4.68
Chemistry	337	1978	5.87	440	2590	5.89	58	413	7.12
Neuro	161	894	5.55	309	1795	5.81	231	1169	5.06
Immunology	144	726	5.04	272	1297	4.77	171	1308	7.65
TP=Total Papers; TC=Total Citations; ACPP=Average Citations per Paper									

5.5 Research Output of India, China and Brazil Under Types of Diabetes

Diabetes research output on different types of diabetes shows that the maximum research output in these counties comes from Type 2 diabetes with publications share varying from 16.18% to 21.09%, followed by Type 1 diabetes with publications share varying from 4.84% to 9.54% and gestational diabetes with publications share varying from 0.97% to 2.48% during 2000-09. In type 2 diabetes, India contributes the highest share of 21.09%, followed by China (20.66%) and Brazil (16.18%).

In Type 1 diabetes, Brazil contributes highest share of 9.34%, followed by India (5.51%) and China (4.84%). In gestational diabetes, Brazil contributes the highest share of 2.48%, followed by India (1.92%) and China (0.97%) (Table 9).

The Brazil achieved the highest citation impact per paper of 5.22 and 8.84 in Type 1 diabetes and Type 2 diabetes, followed by India (4.73 and 5.61) and China (3.74 and 3.76) during 2000-09. In gestational diabetes, India achieved the highest citation impact per paper of 3.61, followed by Brazil (3.09) and China (2.30) during 2000-09.

Table 9 Publication Share of Different Types of Diabetes During 2000-09

Type	Number of Papers				% Share of Papers			
	India	China	Brazil	World	India	China	Brazil	World
Type 1	322	461	365	30406	19.33	18.29	33.36	30.37
Type 2	1232	1967	632	64069	73.95	78.06	57.77	64.00
Gestational	112	92	97	5630	6.72	3.65	8.87	5.62
	1666	2520	1094	100105	100.00	100.00	100.00	100.00

Table 10 Publication Output and Impact in Diabetes Research Under Different Types of Diabetes During 2000-2009

Type of Diabetes	India			China			Brazil		
	TP	TC	ACPP	TP	TC	ACPP	TP	TC	ACPP
Type 1	322	1523	4.73	461	1722	3.74	365	1904	5.22
Type 2	1232	6916	5.61	1967	7395	3.76	632	5588	8.84
Gestational	112	404	3.61	92	212	2.30	97	300	3.09
TP=Total Papers; TC=Total Citations; ACPP=Average Citations per Paper									

5.6 Diabetic Complications and Research Output of India, China and Brazil

In terms of diabetic complications in research as reflected in world output, the largest emphasis has on heart with publications share of 38.99% during 2000-09, followed by kidney (25.56%), eye (11.13% share), nervous system (9.94% share), brain (8.52% share), foot (5.61% share) and tooth (0.25% share).

In China, the maximum complications because of diabetes are on kidney with publications share of 34.44% during 2000-09, followed by heart (29.74% share), eye (24.07% share), nervous system (8.94% share), brain (1.87% share), foot (1.31% share) and tooth (0.83% share). Compared to China, the maximum complications because of diabetes in India and Brazil are on heart with publications share of 34.11% and 42.68%, followed by kidney (30.70% and 29.78% share), eye (17.83% and 13.12% share), nervous system (13.63% and 10.89% share), brain (2.19% and 1.66% share), foot (1.31% and 1.30% share) and tooth (0.23 and 0.58% share) (Table 11).

On analyzing the diabetic complications in research among India, China and Brazil research output in terms of their publications relative index, it was found that eye, neuropathy and kidney complications with activity index of 1.60, 1.37 and 1.20 showed above world average in India, eye and kidney complications with activity index of 2.16 and 1.20 in China and tooth, eye, kidney, neuropathy and heart complications with activity index of 2.31, 1.18, 1.16, 1.10 and 1.09 in Brazil (Table 12).

Table 11 Share of Publication Output in Diabetic Complications During 2000-2009

Organ	Number of Papers				% Share of Papers			
	India	China	Brazil	World	India	China	Brazil	World
Kidney	658	1033	413	30753	30.70	34.44	29.78	25.56
Eye	382	722	182	13389	17.83	24.07	13.12	11.13
Heart	731	892	592	46910	34.11	29.74	42.68	38.99
Neuropathy	292	268	151	11955	13.63	8.94	10.89	9.94
Brain	47	56	23	10245	2.19	1.87	1.66	8.52
Tooth	5	3	8	300	0.23	0.10	0.58	0.25
Foot	28	25	18	6754	1.31	0.83	1.30	5.61
Total of India	2143	2999	1387	120306	100.00	100.00	100.00	100.00

Table 12 Relative Index of Publication Output in Diabetic Complications During 2000-2009

Organ	Number of Papers				Relative Index		
	India	China	Brazil	World	India	China	Brazil
Kidney	658	1033	413	30753	1.20	1.35	1.16
Eye	382	722	182	13389	1.60	2.16	1.18
Heart	731	892	592	46910	0.87	0.76	1.09
Neuropathy	292	268	151	11955	1.37	0.90	1.10
Brain	47	56	23	10245	0.26	0.22	0.19
Tooth	5	3	8	300	0.94	0.40	2.31
Foot	28	25	18	6754	0.23	0.15	0.23
Total of India	2143	2999	1387	120306	1.00	1.00	1.00

Considering the impact of these three countries on diabetic complications, (i) Brazil witnessed the highest citations impact per paper of 9.54 on heart, followed by India (4.81) and China (4.23), (ii) Brazil witnessed the highest citations impact per paper of 8.95 on eye, followed by India (4.25) and China (1.62), (iii) Brazil witnessed the highest citations impact per paper of 7.69 on kidney, followed by India (4.81) and China (4.23), (iv) Brazil witnessed the highest citations impact per paper of 6.26 on neuropathy, followed by India (4.10) and China (2.35), (v) China witnessed the highest citations impact per paper of 3.67 on tooth, followed by Brazil (1.00) and India (0.40) and (vi) India witnessed the highest citations impact per paper of 1.75 on foot, followed by Brazil (10.61) and China (0.56)(Table 13).

Table 13 Publication Output and Impact in Diabetic Complications Research During 2000-2009

Organ	India			China			Brazil		
	TP	TC	ACPP	TP	TC	ACPP	TP	TC	ACPP
Kidney	658	3168	4.81	1033	4365	4.23	413	3175	7.69
Eye	382	1622	4.25	722	1171	1.62	182	1628	8.95
Heart	731	5230	7.15	892	5941	6.66	592	5647	9.54
Neuropathy	292	1197	4.10	268	630	2.35	151	945	6.26
Brain	47	66	1.40	56	90	1.61	23	92	4.00
Tooth	5	2	0.40	3	11	3.67	8	8	1.00
Foot	28	49	1.75	25	14	0.56	18	11	0.61
TP=Total Papers; TC=Total Citations; ACPP=Average Citations per Paper									

5.7 Research Profile of Prolific Institutions of India, China and Brazil

The research profile of 10 most productive institutions in diabetic research of India, China and Brazil is presented in Tables 14-16. Of these, Brazil's institutions contribute the highest publication share of 76.4% in the country's cumulative research output, followed by China (29.64 %) and India (27.16%) during 2000-09. The highest impact of 6.59 citations per paper is achieved by India's productive institutions, followed by Brazil (6.28 citations per paper) and China (4.40 citations per paper) during 2000-2009. Among these countries, Brazil's productive institutions have scored the highest average h-index of 24.3, followed by India (20.7) and China (18.2) during 2000-09.

Table 14 Publication Output, Impact and H-Index of Productive Institutions of India in Diabetic Research During 2000-2009

Sl. No.	Name of Institution	TP	TC	ACPP	h-index
1	All India Institute of Medical Sciences, New Delhi	368	2840	7.72	37
2	Annamalai University, Annamalai Nagar	224	1271	5.67	25
3	Postgraduate Institute of Medical Education and Research, Chandigarh	205	591	2.88	15
4	Madras Diabetes Research Foundation, Chennai	191	1707	8.94	29
5	Christian Medical College, Vellore	108	302	2.8	12
6	University of Madras, Chennai	105	559	5.32	17
7	National Institute of Pharmaceutical Education and Research, Mohali	103	962	9.34	20
8	King Edward Memorial Hospital, Mumbai	95	881	9.27	17
9	Sanjay Gandhi Postgraduate Institute Of Medical Sciences Lucknow	95	462	4.86	14
10	Diabetes Research Centre, Chennai	93	880	9.46	21
TP=Total Papers; TC=Total Citations; ACPP=Average Citations per Paper					

Table 15 Publication Output, Impact and H-Index of Productive Institutions of China in Diabetic Research During 2000-2009

Sl. No.	Name of Institution	TP	TC	ACPP	h-index
1	Peking University	463	2313	5	27
2	Shanghai Jiao tong University	431	2141	4.97	24
3	Huazhong University of Science and Technology	323	1174	3.63	20
4	Zhejiang University	261	756	2.9	17
5	Sichuan University	253	570	2.25	12
6	Fudan University	247	1345	5.45	20
7	Sun Yat-Sen University	234	1205	5.15	19
8	China Medical University Hospital Taichung	225	1961	8.72	18
9	General Hospital of People's Liberation Army	218	550	2.52	14
10	Capital Medical University China	167	407	2.44	11
TP=Total Papers; TC=Total Citations; ACPP=Average Citations per Paper					

Table 16 Publication Output, Impact and H-Index of Productive Institutions of Brazil in Diabetic Research During 2000-2009

Sl. No.	Name of Institution	TP	TC	ACPP	h-index
1	Universidad de Sao Paulo	1019	6495	6.37	46
2	Universidade Federal de Sao Paulo	401	1629	4.06	27
3	Universidad Estadual de Campinas	364	2775	7.62	29
4	Universidade Federal do Rio Grande do Sul	226	2131	9.43	31
5	UNESP-Universidade Estadual Paulista	211	729	3.45	19
6	Universidade Federal do Rio de Janeiro	176	1657	9.41	20
7	Hospital de Clinicas de Porto Alegre	168	924	5.5	19
8	Hospital das Clinicas da FMUSP	164	1000	6.1	20
9	Universidade Federal de Minas Gerais	144	887	6.16	18
10	Universidade do Estado do Rio de Janeiro	112	527	4.71	14
TP=Total Papers; TC=Total Citations; ACPP=Average Citations per Paper					

6. CONCLUSION

There is an urgent need for governments to face the challenge of diabetes epidemic. At the same time, investments must be made in diabetes R&D, care and management, including diabetes education, to enable the millions of people with diabetes to lead full and productive lives. There is a need to develop new training courses and developed sufficient trained manpower, besides increasing the international collaboration efforts in this area. Diagnosis, treatment, management and prevention of diabetes require integrated health systems, delivery of care down to primary care level, and supportive policies outside the health sector. System-level changes and improvement in political and organizational environment is required within which diabetes care is provided.

REFERENCES

[1] http://www.who.int/diabetes/facts/en/
[2] http://www.diabetesatlas.org/content
[3] http://www.diabetesatlas.org/content/regional-data
[4] Heather S.Lewin, "Diabetes mellitus publication pattern", 1984-2005. Journal of Medical Library Association, Vol.96, No.2, April 2008, pp.1555-58.
[5] S.G. Apoor, V.M. Montori, N.L.Wilczynski, and R.B.Haynes, "Author Self-citations In The Diabetes Literature", Canadian Medical Association Journal Vol.170, No.13, 22 June 2004, pp.1925-27.
[6] G. Krishnamoorthy, J. Ramakrishnan and S. Devi, "Bibliometric Analysis of Diabetes (1995-2004)", Annals of Library and Information Studies, Vol. 56, No.3, September 2009, pp.150-55.

[7] A. Somogyl and A. Schubert, “Correlation Between National Bibliometric And Health Indicators: The Case of Diabetes”, Scientometrics, Vol.62, No.2, January 2005, pp.285-92.
[8] S. Arunachalam and S.Gunasekaran, “Diabetes Research in India and China Today: From Literature-based Mapping to Health-care Policy”, Current Science, Vol.82, No.9, 2002, pp.1086-97.
[9] A. Ratnakar and K. Satyanarayana, “Diabetes Research in India- A Citation Analysis”, Indian Journal of Medical Research, Vol.125, March 2007, pp.483-87.
[10] A. Rosalind Maria, “Diabetes Research in India”, Current Science, Vol.83, No.4, 25 August 2002, pp. 355-58.

Impact of Scholarly Journals Access through UGC-Infonet by the Faculty Members in Alagappa University

C.Baskaran[1] and S.Kishore Kumar[2]
[1&2]Alagappa University, Karaikudi-630 003, Tamil Nadu
E-mail: baskaranc@gmail.com

Abstract

The article examines that most of the Associate Professors are highly aware of the availability of scholarly journals how to access through UGC-Infonet. The study reveals the Professors and Associate Professors largely use them for teaching purpose and Assistant professors use the resources for studying purpose. The faculty members from Science and Humanities acquire the experience for accessing the scholarly journals Professors and Associate professor obtain the guidance from the Library staff and Assistant Professors get guidance from the senior faculty members to seek the experience of scholarly journals. It is, however, found that lack of training for accessing is the obstacle and full utilization of scholarly journals. The paper will help other institutes understand the need for library electronic resources and motivate them to update the electronic resources in the focal interest of the faculty members in Alagappa University. The paper also indicates how a suitably designed survey can show the publishers to provide the full text articles based on this preference given to JCCC gate way of scholarly journals providers and it is followed by springer link articles highly used by the team of the faculty members.

Keywords: *Faculty members, Scholarly journals, UGC-Infonet.*

1. INTRODUCTION

In the early 1990s, publishers and universities explored ways of creating electronic journals that could be retrieved on the users' desktop. There was a significant growth in the number of electronic journals in these days. The 7th edition (1997) of the ARL Directory of Electronic Journals Newsletters and Academic Discussion Lists shows that the number increased from 110 in 1991 to 675 in 1995 and to a further 3,414 in 1997 [1]. It is estimated that there are about 250,000 periodicals available in all, including 25,000 in science technology and medicine today. Of these, 14,246 are refereed scholarly journals and above 1,200 of them are available online[2]. Owing to a rapid expansion of networked information and the addition of electronic resources in academic libraries, it has become necessary to study the usage of electronic information resources and to know what impact has been seen in the academic libraries.

2. REVIEW OF LITERATURE

The study conducted by Liew[3] indicates significantly high acceptance of electronic journals by graduate students. There was strong acceptance, high expectation and enthusiasm for future electronic journals, although certain reservations remained. A survey was done at the Maryland University College to examine trends in distant students' use of library resources, services, usage patterns, needs and preferences. The results show that part time students usage pattern has changed and they favour the use of electronic resources like internet[4]. There are disciplinary differences in the use of paper and electronic formats. Many title of the journals in print were also available in electronic format. Bar-Ilan[5] conducted an extensive survey of the senior academic staff of the Israeli Universities on their use of electronic journals and databases. The major findings were that the use of electronic sources is already widespread among the respondents and more than 50% found the electronic services indispensable. Disparities were, however, found between the usage patterns in the different disciplines. The study reports on a survey of users at the IIT, Delhi as to their awareness and use of electronic resources, notably e-journals. It has been found that awareness among the users motivates them to use e-resources and services of the library. The main users of library e-resources are postgraduates, research scholars and faculty. Heneefa[6] studied the use of e-journals by doctoral students of Calicut University and found that 93.40% of them had access to e-journals from the INFONET and they spent two to four hours per day

searching and accessing e-journals. Features like easy and speedy access to back volumes and hyperlinks attracted the researchers towards accessing e-journals as well as access to full text browsing e-journals. Brady *et al*.[7] examined journal use in three scientific disciplines. A previous study found that print use increased after electronic access was added. This paper used the same method to determine if the increase in the use of the paper has continued and in fact a cultural shift happened between the two studies. Although the use of paper journals increased with the advent of e-journals, a shift in use patterns occurred with patrons now favoring electronic formats. Natarajan *et al*.[8] examined the survey of 117 faculty members and research scholars on use and use perception of electronic resources in Annamalai University reveals that despite the availability of wide range of e-resources, the frequency of their use was low. The reasons identified for this are lack of time, lack of awareness, lack of subject coverage and slow downloading.

3. UGC INFONET DIGITAL LIBRARY CONSORTIUM

This consortium was formally launched in December 2003, which is a national initiative for providing access to scholarly electronic resources including more than 5000 core and peer-reviewed full-text journals and bibliographic databases in all subject disciplines from different publishers/aggregators for the benefit of academic community of selected universities in India. The access to e-resources was given to 50 universities in the first phase in 2004 and at present, it has been extended to 157 universities in the country. INFLIBNET Centre is the driving force behind the UGC-Infonet Digital Library Consortium. The UGC-Infonet has brought a revolution in the service provision of university libraries in the country LIS professionals have naturally been attracted to know the use of the consortium's e-resources by the teachers, researchers and students.

4. ABOUT ALAGAPPA UNIVERSITY

Alagappa University was brought into existence by a Special Act of the Government of Tamilnadu in May 1985 with the objective of fostering research, development and dissemination of knowledge in various branches of learning. Alagappa University is recognized by the University Grants Commission (UGC) of India. The University has 18 Departments, 5 Centres and 2 Constituent Colleges on its campus. 28 Affiliated Colleges located in the districts of Sivaganga and Ramanathapuram are part of the University. The University offers education through Regular, Week-end, Distance and Collaborative modes.

5. OBJECTIVES OF THE STUDY

The following objectives have been practiced for this study to find out the access of scholarly Electronic journals from UGC-Infonet:

i. To know the awareness of scholarly electronic journals among the faculty members of Alagappa University from UGC-Infonet
ii. To study the momentum of utilization of e-journals by the faculty members from the UGC-Infonet
iii. To determine the level satisfaction of users of the faculty members on electronic journals and
iv. To observe the methods learning are adopt for accessing the electronic journals and
v. To examine the effectiveness of electronic journals for upgrading in their academic performance in obtaining the scholarly information from UGC-Infonet.

6. METHODOLOGY

The present study brings to know through a systematic way of approach to collect the relevant data by opinion survey. It has been analyzed that the faculty members make use of the scholarly journals and other resources from the UGC-Infonet at Alagappa University. The researcher has found that users may have been influenced by scholarly journals form UGC-Infonet. It is a prime consortium to make a convergence of sources in Science and Technology. The study has analyzed a descriptive survey method under a questionnaire pattern to design as the data collection. The questionnaire is categorized into three parts: the first one is colleted data on demographic information on gender, age and designation; the second section emphasized on the awareness of scholarly journals and purpose of use of teaching activities and also the method of learning to make use of scholarly journals from UGC-Infonet. The third section explained the faculty members' opinions about awareness, method of learning and effectiveness use of accessing the full text articles in scholarly journals from UGC-Infonet.

7. ANALYSIS

The data collected from the faculty members in the Science and Humanities of Alagappa University, are taken and analyzed in this study. The paper will help other

institutes understand the need for scholarly journals access from UGC-Infonet. The study focused on preference of scholarly journals, awareness, method of learning, purpose of access and effectiveness scholarly access the journals by the faculty members would be presented here.

7.1 Demographic Characteristics of Respondents

The data presented in Table 1 indicates the demographic characteristics of respondents. It shows that distributed questionnaire to male faculty members 108 (89.25%) and female faculty members 15 (12.39%) were selected faculty members from the Science and Humanities for getting the scholarly information through UGC-Infonet. It has been analyzed that 42.97% of the respondents take part in the age group 36-45 years. Some 28.92% of respondents are in the age group between 25-35 years and 28.09% of respondents are in the age group 25-36. Moreover from the Table 1 reveals more number of respondents belongs to Assistant Professor i.e. 76 (62.80%) comparatively greater than 40.49% Associate Professor. The respondents belong to the category of professor only i.e. 14.87 %.

Table 1 Demographic Characteristic of Respondents

Sl. No.	Demography of Respondents (n=121)		Nos.	%
1	Gender	Male	108	89.25
		Female	15	12.39
2	Age	25-35	34	28.09
		36-45	52	42.97
		>46	35	28.92
3	Designation	Assistant Professor	76	62.80
		Associate Professor	27	22.31
		Professor	18	14.87

7.2 Discipline-wise Respondents

The users are more interested for accessing the scholarly journals from UGC-Infonet among the faculties from Science and Humanities background and how they involved for accessing the scholarly journals among the teaching community to their academic activities. Table 2 indicates that faculty members from science discipline are about 54 (44.62 %). There are nine departmental faculty members have responded to this study in this context are from Industrial Chemistry-7 (5.78%), Physics-6 (4.95%), Mathematics-8 (6.61%), Computer Science-9 (7.43%), Biotechnology-9 (7.43%), Nano Science and Technology 6 (4.95%), Oceanography-2 (1.65%), Bioinformatics-4 (3.30%) and Animal Health Management-3 (2.47%). It has been brought that the data received from the faculty members from Humanities are about 67 (55.37 %), the response of the department of Library and Information Science-3 (2.47%), Management-3 (2.47%), English-18 (14.87%), Education-2 (1.65%), Physical Education-16 (13.22%), Tamil-12 (9.91%), Rural Development-2 (1.65%) and Commerce-12 (9.91%)

Table 2 Discipline-wise Respondents

Faculty	Department	Nos.	%
Science	Industrial Chemistry	7	5.78
	Physics	6	4.95
	Mathematics	8	6.61
	Computer Science	9	7.43
	Bio technology	9	7.43
	Nano Science&Tech.	6	4.95
	Oceanography	2	1.65
	Bio Informatics	4	3.30
	Animal Health &Mgt.	3	2.47
Humanities	Library& Information Science	3	2.47
	Management	3	2.47
	English	18	14.87
	Education	2	1.65
	Physical Education	16	13.22
	Tamil	12	9.91
	Rural Development	2	1.65
	Commerce	12	9.91

7.3 Awareness of Scholarly Journals Access

Table 3 shows the awareness of Scholarly Journals access among the faculty members. It is clear from the table that 45(55.26%) Assistant professors are aware of electronic sources of information as indicated very good, whereas they are aware: Good-13 (27.63%) and Poor-13 (17.10%) , with respondents-19 (70.10%) Associate professors are more aware comparatively next two stages such as Good and Poor responded 6 (2.22%) and 2 (7.40%) respectively. Moreover, out of 10 professors who are more aware of scholarly journals through UGC-Infonet are with 11(6.11%). However, Professors are slightly aware about scholarly information on UGC-Infonet with 6 (33.33) and do not know about the resources only-1(5.55%).

Table 3 Awareness of Scholarly Journals in UGC-Infonet

Sl. No.	Designation	Very Good	Good	Poor
1	Assistant Professor	42 (55.26)	21 (27.63)	13 (17.10)
2	Associate Professor	19 (70.37)	6 (2.22)	2 (7.40)
3	Professor	11 (61.11)	6(33.33)	1 (5.55)

7.4 Purpose of Use of Scholarly Journals

The table 4 shows five reasons were categorized listed where respondents were allowed to choose reason for using electronic sources. The interest of purpose to get the scholarly information from UGC-Infonet by the respondents. The major reasons for respondents of Assistant Professors are more accessing for study purpose are 27 (35.52%), where they want to access the scholarly information for teaching 21 (27.63%), Research 19 (25%), Paper Publication 18 (23.68%) and Knowledge update 21 (27.63%) of the respondents. Out of 27 respondents of Associate Professors the purpose of accessing scholarly information for teaching with are: 12 (44.44). However, other purposes of Paper publication 11(40.74%), Research 7 (25.92%), study 4 (14.81%) and knowledge update 8 (29.62%) of the respondents whereas number of respondents who are Professors 9 (50%) they highly prefer the scholarly information for teaching purpose. Moreover, they are in need of for getting the information from UGC- Infonet paper publish (38.88%), Research and Knowledge update 6 (33.33%), rest of the professors are interested for accessing the scholarly information only 4 (22.22%).

Table 4 Purpose of Use of UGC-Infonet Journals

Sl. No.	Designation	Teaching	Study	Research	Paper Publish	Knowledge Update
1	Assistant Professor	21 (27.63)	27 (35.52)	19 (25)	18 (23.68)	21 (27.63)
2	Associate professor	12 (44.44)	4 (14.81)	7 (25.92)	11 (40.74)	8 (29.62)
3	Professor	9 (50)	4 (22.22)	6 (33.33)	7 (38.88)	6 (33.33)

7.5 Methods of Learning About Scholarly Journals

The data is presented in Table 5 and shows the respondents who have been asked to indicate the skills used for making use of scholarly information about UGC-Infonet. It is evident that 31.4% of respondents have learnt by guidance from library staff, while 27.27% have learnt by the guidance from the teachers. Methods of learning to make use of scholarly information from different subjects are according to availability of resources form UGC-infonet. A total of 19.83% of total respondents and 12.39% of the three categories have learnt it by the advice from friends and trial and error method. Out of 121 teaching faculty members responded to this study are 9.91% of Assistant Professor, 2.47% of Associate Professor and 1.65% of Professors reported to method of access for scholarly information by attending Course/ training offered by the University.

Table 5 Methods of Learning about Scholarly Access

Sl. No.	Learning Skills	Assistant Professor	Associate Professor	Professor
1	Guidance From Library Staff	18(23.68)	13 (48.14)	7 (38.88)
2	Guidance from the Senior Faculty	21 (27.63)	8 (29.62)	4 (22.22)
3	By the Advice of Friends	17 (22.36)	5 (18.51)	2 (11.11)
4	By Trial and Error	8 (10.52)	4 (14.81)	3 (16.66)
5	Attending Course/ Training Offered by the University	12(15.78)	3(11.11)	2(11.11)

7.6 Searching of Full-text Articles from UGC-Infonet Journals

The scholarly journals are available in Science, Management, Social Science and Education disciplines of journals published by Emerald, Taylor and Francis, Wiley and Blackwell and Springer and other popular publishers and aggregator. The number of faculty members who search for the full-text journals published by these publishers is presented in Table 6. It is noted that the JCCC is a leading aggregator which initiated by the Informatics India as 33% (27.27) of faculty members who responded in the study. It is followed by Springer Link 21%(17.35), Emerald 18% (14.87), Cambridge University Press 16% (13.22), Annual reviews 8% (6.61), Institute of Physics 7% (5.78), aylor and Francis 6% (4.95), Wiley Blackwell 4% (3.30), Economic & Political Weekly and Oxford University Press. Both publishers equally access 3% (2.47) and very small number of faculty members access JSTOR publication journals showing 2% (1.65) in Table 6.

Table 6 Searching of Full Text Articles

Sl. No.	Publisher	No. of Faculty Members
1	Annual Reviews	8 (6.61)
2	Cambridge University Press	16 (13.22)
3	Economic & Political Weekly	3 (2.47)
4	Institute of Physics	7(5.78)
5	Emerald	18 (14.87)
6	JCCC	33(27.27)
7	JSTOR	2(1.65)
8	Oxford University Press	3(2.47)
9	Springer Link	21 (17.35)
10	Taylor and Francis	6(4.95)
11	Wiley and Blackwell	4(3.30)

7.7 Effectiveness on E-journals of UGC-Infonet

Table 7 shows the impact of e-journals on academic efficiency and research work. The information available in e-journals from UGC-Infonet has proved to be a great tool to many of the faculty members in Alagappa University. 42.10% of Assistant Professors, 70.37% of Associate Professors and 44.44% of professors have revealed that they have been able to expedite their research process with the e-journals from UGC-Infonet. 36.84% of Assistant Professors, 44.44% of Associate Professors and 38.88% of Professors have replied that e-journals from UGC- Infonet enhances their professional competence. The faculties of 35.52% of Assistant Professors, 59.25% of Associate Professors and 38.88% of Professors exhibited that faculty members have agreed upon given current information. About 22.36% of Assistant Professors, 40.74% of Associate Professors and 33.33% of Professors have replied that the e-journals from UGC-Infonet have provided faster access of information.

8. CONCLUSION

The scholarly journals from UGC-Infonet are accessed frequently by the faculty members. There are nine departments whose faculty members have responded to this study. Out of seventy six the more number 55.26% of Assistant Professor are aware of scholarly journals from UGC-Infonet. As indicated in the study, the Associate Professors have the purpose of accessing scholarly information for teaching with 44.44% and Assistant Professors for study purpose i.e. 35.52%. Out of 121 teaching faculty memebrs many have responded to this study. Among these 9.91% of Assistant Professor, 2.47% of Associate Professor and 1.65% of Professor who are reported to method of access for scholarly journals through attending Course/training offered by the University. It has been observed that journals accessed

Table 7 Effectiveness on E- journals of UGC-Infonet

Sl. No.	Effectiveness	Assistant Professor	Associate Professor	Professor
1	Fast research Process	32 (42.10)	19 (70.37)	8 (44.44)
2	Enhance Professional Competence	28 (36.84)	12 (44.44)	7(38.88)
3	Access Current Information	27 (35.52)	16 (59.25)	7(38.88)
4	Fast Access of Information	17(22.36)	11(40.74)	6 (33.33)

from JCCC have shown majority reported as 27.27% of faculty members; It is followed more number journals accessed from Springer Link i.e. 17.35%. It has been found from the study that 42.10% of Assistant Professors, 70.37% of Associate professors and 44.44% of professors have been able to expedite their research process under the Infonet journals. Moreover, the satisfaction level of the faculty members in the science and humanities in Alagappa University has been analyzed with regard to use of scholarly journals at large extent. The study also shows that most of the faculty members who are in age group between 36-45 reportedly 43%. The faculty members out of 121 respondent, majority of people are Assistant Professors totally 62.80% responded to this study in Alagappa University. The scholarly journals will help prov challenge and it brings quality of research information and innovation techniques on modern inventions of faculty members from academic and research institutions. The UGC- Infonet highly supports to provide highly refereed journals from the JCCC, Springer Link, Emerald and Taylor and Francis and other useful journals in Alagappa University. They have been able to keep themselves abreast with latest information and improve their research and professional competences at global context.

REFERENCES

[1] D. Mogge, "ARL Directory Tracks Growth in E-publishing", ARL Newsletter, Vol.196, 1998, pp.1-2.

[2] J. Manalan, S.A. Senthamil and S.R.J. Lisa, "E-journal Consortia; A Boon to Indian Libraries", University News, Vol.45, No.5, 2007, pp.29.

[3] C. Liew, F. Schubert and K.R. Chenupati, "A Study of Graduate Student End-users: Use and Perception of Electronic Journals", Online Information Review, Vol.24, No.4, 2000, pp.302-15.

[4] K B. Kelly and G J.Orr, "Trends In Distant Student Use Of Electronic Resources: A Survey", College & Research Libraries, Vol.12, No.2, 2003, pp.176-90.

[5] J. Bar-Ilan, "A Survey On The Use Of Electronic Databases And Electronic Journals Accessed Through The Web By The Academic Staff Of Israeli Universities", Journal of Academic Librarianship, Vol.29, No.6, 2003, pp.346-61.

[6] KM. Heneefa and L. Sreelatha , "Use of E-journals by Doctoral Students of Calicut University", Proceedings of the National Convention on Knowledge, Library and Information Networking (NACLIN 2006), 27-30 September, DELNET, Jammu, 2006, pp.255-66.

[7] EE. Brady, S.K. McCord and B. Galbraith, "Print Versus Electronic Journal Use In Three Sci/Tech Disciplines: The Cultural Shift In Process", College & Research Libraries, Vol.67, No.4, 2006, pp.354-63.

[8] K. Natarajan, B. Suresh, P.Sivaraman and R. Sevugan, "Use and User Perception of Electronic Resources in Annamalai University: A Case Study", Annals of Library and Information Studies, Vol.57, No.1, 2010, pp.59-64.

Literature Growth and Development of Scholarly Research of "Tourism in India"

A. Thirumagal[1] and S. Niruba Sethu Kumari[2]
[1]Manonmaniam Sundaranar University, Tirunelveli - 627 012, Tamil Nadu
[2]Kerala Institute of Tourism and Travel Studies,Thiruvananthapuram- 695 014, Kerala
E-mail: athirumagala@yahoo.co.in, nirubasathish@gmail.com

Abstract

This paper examines the status of research in the topic "Tourism in India from 1999 to 2011 in terms of quantity of research output. The quality of output is assessed through the number of articles published in various documentary types covered by Web of Knowledge. This paper seeks to analyze publications in tourism indexed in Web of Knowledge database to understand the international perspective of aspects of research publications. Data covering the period 1999 - 2011 have been analyzed and the databases include Science Citation index, Social Science citation index, Arts and humanities Citation index.

Keyword: *Arts and humanities, Citation index.Literature, Growth, Social science citation index, Tourism in India*

1. INTRODUCTION

Internet has become a global publishing platform and electronic journals covering a wide range of subject areas are now available. There has been a continuous increase in the volume of scholarly resources in electronic form like e-Books, e-journals, e-databases, e-prints of research papers, etc. These resources have provided a scope for researchers and authors in various subject fields and it increases the research productivity. Bibliometrics is the application of quantitative analysis of the literature of subject domain as represented by bibliographic entities such as authors, Institutions, document types, year and subject wise distribution of research.

2. SCOPE OF THE STUDY

The study is based on the references aiming to analyse quantitatively in connection with the growth and development of the topic "Tourism in India" in terms of output publications as reflected in Web of Knowledge database during 1999-2011, which is a largest abstract and citation database in literature research. Tourism is one of the largest income generating industries which demands in depth research in its various operational areas for the development and implementation of the same. Bibliometrics or the statistical analysis of research contribution in tourism is a process that requires not only for research evaluation but also for the development of policies in the related fields. It is witnessed that the quantitative and qualitative research output in Tourism in India is comparatively less. In this backdrop, there is a scope for identifying the quantum of research contribution in "Tourism in India" in the available scholarly literature of Web of Knowledge.

3. OBJECTIVES

The purpose of this study is to explore the main research output in order to measure the extent of research development in Tourism in India. Specific objectives of the paper include:

i. To trace the growth of scholarly publications in Tourism in India during 1999-2011 along with author productivity.
ii. To make an assessment on the trend of scholarly research in country wise distribution focusing on subject-wise distribution of scholarly publications
iii. To find out individual authors contributions
iv. To explore the types of publications in which authors preferred to publish their work.
v. To observe the language of publications
vi. To examine the most productive institutions in which authors are actively involved in the production of scholarly literature.
vii. To identify the source of publications of research output.
viii. To get the highly cited paper

4. METHODOLOGY

The data presented in this paper have been accessed from Web of Knowledge (formerly known as ISI Web of Knowledge) published by Thomson Reuters. It is a premier research platform that helps to find, analyze and

share information in the sciences, social sciences, arts and humanities. The basic data relating to the topic Tourism in India during 1999 -2011 have been collected using general search option of Web of Knowledge. For the purpose of the present study, bibliometric technique has been used.

5. DATA ANALYSIS AND INTERPRETATION

5.1 Year-wise Distribution of Literature

It is inferred from the above table that even though the study was conducted between 1999-2011, contributions in "Tourism in India" emerged in 2000 only. There was a gradual increase in research productivity from the year 2006 to 2011 evidenced the maximum number of contributions.

Table 1 Year-wise Distribution of Tourism in India

Year	Total Number of Records	%
1999	2	1.16
2000	10	5.79
2001	3	1.73
2002	8	4.62
2003	3	1.73
2004	4	2.31
2005	6	3.47
2006	13	7.51
2007	14	8.09
2008	16	9.26
2009	21	12.14
2010	34	19.65
2011	39	22.54
	173	100

5.2 Citation of Tourism in India

The total Number of Publications in Tourism in India as topic the result is 173. The sum of the times cited is 1149. The sum of times cited without self-citations is 1055. The citing articles are 81. The average citation per item is 6.64. The h-index is 18. The h-index is based on a list of publications ranked in the descending order. This descending order should be based on the times cited. The value of 'h' is equal to the number of papers (N) in the list that have more citations. There are 18 articles with 18 or more citations got. The below figure 1 explains the number of citations in each year.

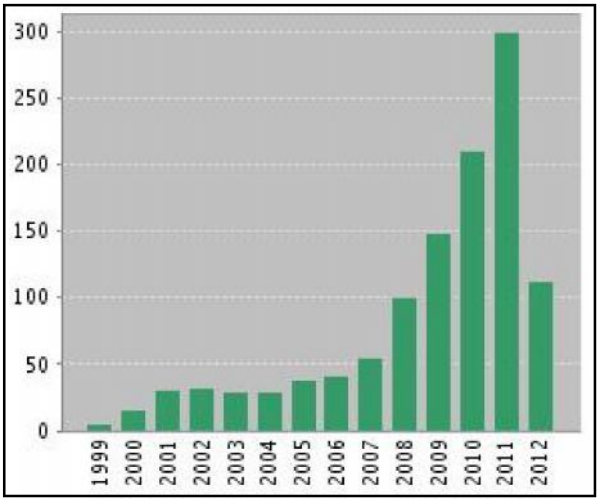

Fig. 1 Citations in each year

5.3 Distribution of Scholarly Literature by Individual Author

It is found that Mr. Sharma E and Snyder J rank first, contributing 5 items and are the top ranked authors. Next in the order are Chettri N, Crooks V A and Turner L with 4 items. This is followed by Bandyopadhyay R and Nautiyal S with 3 items very close to the first two ranked authors.

Table 2 Individual Authors Contribution

Name of the Author	Total Number of Records
Sharma E	5
Snyder J	5
Chettri N	4
Crooks V A	4
Turner L	4
Bandyopadhyay R	3
Nautiyal S	3
Alvarez Mm	2
Chanda R	2
Chang Tc	2
Cohen Cb	2
Cohen Pj	2
Deb Dc	2
Defries R	2
Huberman J	2
Aranth Kk	2
Noronha L	2
Patil V	2
Rai Sc	2
Rhodes R	2
Routledge P	2
Sinclair Aj	2
Singh M	2
Maskey Rk	1

Otaki M	1
Ramankutty R	1
Matas A	1
Padilla Bs	1
Ramful D	1
Matete N	1
Pafford B	1
Rao Gs	1
Matos-Wasem R	1
Palattiyil G	1
Rao Jv	1
Mazumdar R	1
Pande A	1
Rao Ks	1
Mazzoleni S	1
Pandey Rk	1
Rao Tg	1
Mcbride V	1
Parayil G	1
Rawat Ps	1
Mccullough Lb	1
Pareeth S	1
Reddy Mv	1
Mcnaughton D	1
Patel P	1
Reddy Nc	1
Meena Rm	1
Patterson Tl	1
Reddy Pk	1
Meghani Z	1
Peng C	1
Reisinger Hs	1
Melis T	1
Pennings G	1
Robin S	1
Mendes Ac	1
Phua Kh	1
Rodrigues V	1
Merion Rm	1
Piazolo M	1
Rohrschneider K	1
Milner Je	1
Pocock Ns	1
Rose C	1
Mishra P	1
Polcari Aj	1
Rosenberg Me	1
Mislankar Pg	1
Port Fk	1
Ross Sa	1
Mohanty Uc	1
Prema D	1
Routh J	1
Morais D	1
Pu Yf	1
Roy Ps	1
Morais Db	1
Puri S	1
Rubens J	1
Moreo Ap	1
Qureshy L	1
Saha M	1
Moulin Ch	1
Rajagopalan P	1
Sahoo R	1
Murali Rm	1
Rajendran C	1
Sai Lp	1
Martin R	1
Naditz A	1
Ramaiah N	1
Sajjad I	1
Marwah V	1
Ortiz-Rios E	1
Raman M	1
Salazar J	1

5.4 Distribution of Scholarly Literature by Country-wise

It is found that the contribution of India is maximum 56 when compared with other countries. With 47 collaborations USA is observed with reference to Tourism in India research publications followed by 14 contributions from Canada and 11 contributions from England.

Table 3 Some Countries Contributions Regarding Tourism in India

Name of Countries	Total Number of Records
India	56
USA	47
Canada	14
England	11
Australia	10
Germany	5
Singapore	5
Nepal	4
Sweden	4
South Africa	3
Thailand	3
France	3
Japan	3
Netherlands	3
Scotland	3

Finland	2
Israel	2
Italy	2
Malaysia	2
Norway	2
Pakistan	2
Peoples R China	2
Philippines	2

5.5 Document Type

It is inferred from the above table that maximum count for Journal Articles 144 (83.24%) followed by 9 Reviews (5.2%), 9 Paper Proceedings (5.2%) and 7 Editorial Materials(4.05%). Majority of the research workhave been published in the Journal Article.

Table 4 Distribution of Literature by Document Types

Document Type	Number of Records	%
Journal Article	144	83.24
Review	9	5.2
News Item	2	1.15
Book Review	1	0.58
Proceedings Paper	9	5.2
Editorial Material	7	4.05
Book Chapter	1	0.58
Total	173	100

5.6 Prolific Institutions of Literary Production

The institution wise productivity analysis showed that University of Minnesota, USA ranked first in order by contributing 7 of the total Tourism in India research output, followed by G B Pant Institute of Himalayan Environment and Development with 6 contributions.

Table 5 Distribution of Literature by Different Institutions

Name of the Institutes	Total Number of Records
Univ Minnesota	7
G B Pant Inst Himalayan Environm Dev	6
Indian Inst Technol	5
Simon Fraser Univ	5
Jawaharlal Nehru Univ	4
Natl Univ Singapore	4
Natl Univ Singapore	4
London Sch Hyg Trop Med	3
Natl Inst Oceanog	3
Columbia Univ	2
Ctr Wildlife Studies	2
Dist Columbia Med Soc	2
Florida Int Univ	2
Georgetown Univ	2
Goa Univ	2
Griffith Univ	2
Hebrew Univ Jerusalem	2
Hong Kong Univ Sci Technol	2
Int Ctr Integrated Mt Dev	2
Monash Univ	2
Mt Sinai Sch Med	2
Penn State Univ	2
San Jose State Univ	2
Univ British Columbia	2
Univ Calcutta	2
Univ Chicago	2
Univ Heidelberg	2
Univ Iowa	2
Univ Manitoba	2
Univ Oregon	2
Natl Yang Ming Univ	1
Texas A M Univ	1
Nepali Acad Sci Technol	1
Univ Ghent	1
Noaa	1
Univ Glasgow	1
Northeastern Univ	1
Univ Huddersfield	1
Norwegian Univ Life Sci	1
Univ Incarnate Word	1
Nrsc Isro	1
Univ Joensuu	1
Ochanomizu Univ	1
Univ Kebangsaan Malaysia	1
Pgimer	1
Univ Kwazulu Natal	1
Pinstech	1
Univ Lisbon	1
Prince Songkla Univ	1
Univ Michigan	1
Publ Hlth Fdn India	1

Univ Missouri	1
Resource Management Associates Madison	1
Univ Mumbai	1
Richard Stockton Coll New Jersey	1
Univ N Bengal	1
Robert Koch Inst	1
Univ Naples Federico 2	1
Rogaland Res	1
Univ New England	1
Salim Ali Ctr Ornithol Nat Hist	1
Univ Queensland	1
Sama Resource Grp Women Hlth	1
Univ Reunion	1
Sarcorp	1
Univ Rhode Isl Philosophy	1
Sci Registry Transplant Recipients	1
Univ Southampton	1
Space Applicat Ctr Isro	1
Univ St Andrews	1
St Marie	1
Univ St Denis	1
St Martin De Porres Hosp	1
Univ Stellenbosch	1
Staffordshire Univ	1
Univ Wisconsin	1
Stockholm Univ	1
Univ York	1
Suleyman Demirel Univ	1
Univ Zurich	1
Suny Downstate Med Ctr	1
Us Dept Hlth Human Serv	1
Surveyor Gen Off	1
Usn Acad	1
Swedish Inst Infect Dis Control	1
Vaxjo Univ	1
Taipei Vet Gen Hosp	1
Wildlife Conservat Soc	1
Natl Inst Oceanog Csir	1
Tata Energy Res Inst	1
Wildlife Inst India	1
Natl Inst Publ Hlth Environm	1
Tata Inst Fundamental Res	1
World Bank	1
Natl Kidney Transplant Inst	1
Temple Univ	1
Temple Univ	1
York Univ	1
Natl Renewable Energy Lab	1
Teri	1
Zalf	1
Natl Taiwan Univ	1

5.7 Language-wise Distribution of Scholarly Research

It is inferred from the above table that 98.27% of the articles are published in English the remaining 1.15% articles are contributed in the French and 0.58% of research work published in Korean Language.

Table 6 Language-wise Distribution of Tourism in India

Languages	Total Number of Records	%
English	170	98.27
French	2	1.15
Korean	1	0.58
Total	173	100

5.8 Funding Agencies

For developing Tourism in India, there are many agencies providing funds for development purpose. Here Canadian Institute of Health Research provides funds for 2 activities.

Table 7 Few Funding Agencies for Tourism in India

Canadian Institutes of Health Research	2
Department of Learning Northern Ireland	1
Italian Ministry of Foreign Affairs Dgcs	1
Rockefeller Foundation	1
Alberta Heritage Foundation for Medical Research	1
Department of Science And Technology Government of India	1
Jamshedji Tata Trust	1
Scottish Government	1
Atlantic Philanthropies	1
Department of Veterans Affairs Veterans Health Administration Health Services Research and Development Service	1
LPPS	1
SHELL	1
BAE	1

Economic and Social Research Council	1
Ministry of Earth Sciences	1
Sikkim Biodiversity And Ecotourism Project	1
BP	1
Europe CPER FEDER GRII	1
Ministryof Environment and Forests Government of India Provided Funding Through Cismhe Delhi University	1
Swedish Research Link Asia Program	1
Canadian Health Services Research Foundation	1
Fco British Council	1
National Center for Environmental Prediction Ncep Us	1
Task Force	1
Chan Foundation	1
Forest Department of The State of Kamataka	1
National Fisheries Development BoardNFDB Hyderabad Andhra Pradesh	1
Uk India Education and Research Initiative	1
China Medical Board	1
Forest Department of The State of Madhya Pradesh	1
National Tiger Conservation Authority	1
University College London Hospitals	1
CIHR	1
Forest Department of The State OfRajasthan	1
NCRR at the NIH	1
University of LA REUNION	1
CIMFR	1
French Ministry of Health	1
NHLBI AT THE NIH	1
University of rhode island s council for research	1
Clfin distinguished scholar award	1
French overseas ministry MOM	1
NSF	1
USAID	1
Crvoi Centre De Recherche Et De Veille De L Ocean Indien	1
Glaxosmithkline	1
Pinstech A Research And Development Institute of Pakistan Atomic Energy Commission Pakistan	1
Welsh Assembly	1
CSIR	1
GSK	1
Regional Council of La Reunion	1
Wild Life Trust of India	1
Department For Innovation Universities and Skills DIUS	1
HPD	1
Robert Wood Johnson Physician Faculty Scholars Program	1
Wildlife Institute of India	1
Department of Biotechnology Ministry of Science and Technology Govt of India	1
ISRO Bangalore	1

5.9 Prolific Subject of Research

It is found that the highest number of publications were shared by Environmental Sciences Ecology 35 followed by Social Sciences and other topics 34 and Business Economics 14.

Table 8 Vital Subject Coverage of Tourism in India

Environmental Sciences Ecology	35
Social Sciences Other Topics	34
Business Economics	14
Sociology	12
Public Environmental Occupational Health	10
Engineering	9
General Internal Medicine	9
Transplantation	9
Surgery	8
Biodiversity Conservation	7
Biomedical Social Sciences	7
Geography	7
Health Care Sciences Services	7
Marine Freshwater Biology	6
Social Issues	6
Public Administration	5
Anthropology	4
Asian Studies	4
Medical Ethics	4
Physical Geography	4
Water Resources	4
Urology Nephrology	3
Government Law	3
Meteorology Atmospheric Sciences	3
Obstetrics Gynecology	3
Arts Humanities Other Topics	2
Ethnic Studies	2
Forestry	2
Genetics Heredity	2
Geology	2
History Philosophy Of Science	2
Immunology	2
Oceanography	2
Philosophy	2

Psychology	2
Reproductive Biology	2
Science Technology Other Topics	2
Social Work	2
Transportation	2
Urban Studies	2
Veterinary Sciences	2
Computer Science	1
Demography	1
Energy Fuels	1
Fisheries	1
Gastroenterology Hepatology	1
Geriatrics Gerontology	1
Hematology	1
History	1
Imaging Science Photographic Technology	1
International Relations	1
Life Sciences Biomedicine Other Topics	1
Mathematics	1
Neurosciences Neurology	1
Nuclear Science Technology	1
Ophthalmology	1
Psychiatry	1
Radiology Nuclear Medicine Medical Imaging	1
Archaeology	1
Remote Sensing	1
Area Studies	1
Substance Abuse	1
Art	1
Telecommunications	1
Astronomy Astrophysics	1
Theater	1
Biotechnology Applied Microbiology	1
Toxicology	1
Cardiovascular System Cardiology	1
Women S Studies	1
Communication	1
Zoology	1

5.10 Highly Cited Paper

The research work published in March 1999 on "Ecological and Socioeconomic Impacts of 1998 Coral Mortality in the Indian Ocean: An ENSO impact and a Warning of Future Change?" Author(s): Wilkinson, C (Wilkinson, C); Linden, O (Linden, O); Cesar, H (Cesar, H); Hodgson, G (Hodgson, G); Rubens, J (Rubens, J); Strong, AE (Strong, AE) Source: AMBIO Volume: 28 Issue: 2 Pages: 188-196,Published: MAR 1999 was cited 163 times shows in figure 2.

6. FINDINGS

i. For the year 2010 (20.23%) and 2011(10.04%) evidenced the maximum number of contributions.
ii. For the Tourism in India, our country's contribution is 55 (32.7%) and U.S.A's contribution is 48 (28.6%)
iii. 173 research papers were cited 1149 times, and 1055 without self-citations. The citing articles are 81. The average citation per item is 6.64. The h-index is 18.
iv. For the authors' contribution SHARMA E and SNYDER J contributed 5 research work
v. Out of 173 publications in **"Tourism of India",** 144 (83.24%) documents have been published as articles.
vi. For the **"Tourism of India"** the Institution of University of Minnesota, USA ranked first in order by contributing 7, G B Pant Inst Himalayan Environm Dev 6 and Indian Inst Technol 5.
vii. English dominates all the publications. For this article, English language contribution is 170.
viii. For developing Tourism in India, "Canadian Institute of Health Research" provides funds for 2 articles.
ix. For the subject coverage, Environmental Sciences, Ecology, Social Sciences Other Topics and Business Economics engaged in the First, Second and Third rank.
x. AMBIO 28 (2), 1999. 188-196 was cited 163 times.

7. CONCLUSION

This paper has highlighted quantitatively as the contributions made in "Tourism in India" during 1999-2011 and reflected in the database called Web of Knowledge. During the period of study the publications in the topic "Tourism in India" is comparatively low when compared with other international tourism topics. Among the available tourism literature, publications on tourist destinations in India is more when compared with research contribution which is helpful for the policy making. It is suggested for tracking citations' records of paper so that the impact of publications in "Tourism in India" may be visible.

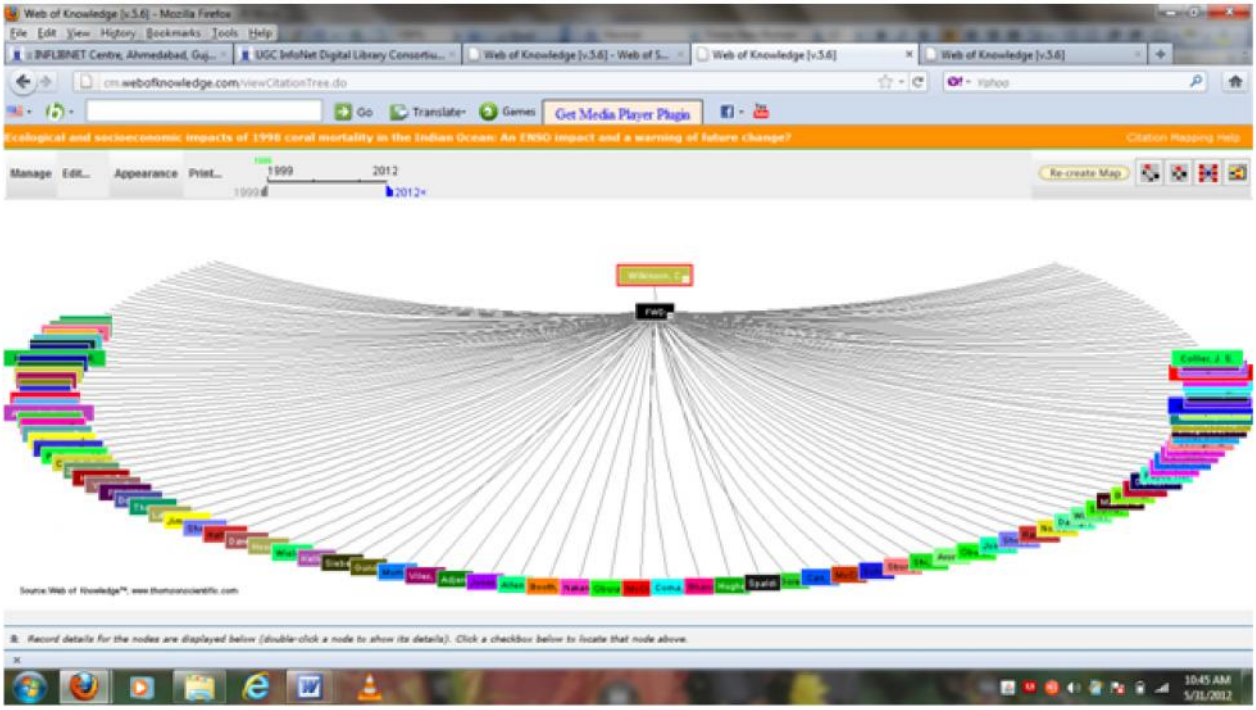

Fig. 2 163 Times cited article

REFERENCES

[1] Amudha, "Indian Journal of Marketing: A Bibliometric Study 2001-2005", IASLIC Bulletin, Vol.54, No.1, 2009.

[2] Paul Bourke, "Bibliometric Analysis of Biological Sciences Research In Australia", Commonwealth of Australia 1999.

[3] K C. Garg, B. Dutt, "Bibliometrics of Agricultural Research in India", IAALD Quarterly bulletin XXXVII, 3, 1992.

[4] Mee Jean Kim, " A Bibliometric Analysis of Physics Publications in Korea", 1994-1998. Scientometrics, Vol.50, No.3, 2001, pp.503-521.

[5] Bulu Maharana, Kalpana Nayak, "Scholarly Use Of Web Resources In Lis Research: A Citation Analysis", Library Review, Vol.55, No.9, 2006.

[6] Bhaskar Mukherjee, "Trend of India's Scholarly Research During 2000-2007: A Bibliometric Analysis based on Web of Science", IASLIC Bulletin, Vol.54, No.1, 2009, pp.37-46.

[7] N. Sarojam, "Bibliometric Analysis of Indian Forest Entomology Literature", Lib Sc, Vol.26, 1989.

[8] K. Vinitha, "Scientometric Portrait of Water Resource Management Research Productivity: The Indian Perspective", Kelpro Bulletin,Vol.14, No.1, 2010.

[9] Peter Willett, "Bibliometric Analysis Of The Literature Of Chemo Informatics", Aslib Proceddings New Information Perspectives, Vol. 60, No.1, Emerald Group Publishing, 2008.

[10] J. Velvizhi, M.Murugesapandian and M. Surulinathi, "Scientometric Profile of Solar Energy in India", Recent Research in Science and Technology, Vol.3, No.1, 2011.

Librarians' Attitude toward Monetary and Non-monetary Incentives in University Libraries: Case of Selected University Libraries in Nigeria

K.A. Owolabi, B.A. Ajiboye, T.O. Bello, N.A.Deribigbe and A.O. Omotoso
Nimbe Adedipe Library, Federal University of Agriculture, Abeokuta, Ogun State, Nigeria
E-mail: bimpesanmi@yahoo.com

Abstract

The paper examined the attitude of librarians toward monetary and non-monetary incentives in Nigeria University Librarians. A survey research design using questionnaires was used for the study. Questionnaires were distributed to 45 librarians in the selected university libraries in the country through the use of simple random sampling technique.

The findings have revealed that librarians are aware of both monetary and non-monetary incentives and that majority of the librarians are benefited from monetary incentives.Also, motivation, job satisfaction and increase in organization commitment are some of the attitude of librarians toward monetary and non-monetary incentives.Recommendations arising from the study are proffered which include: Linking of reward directly to performance and the need to pay reasonable salary and wages to librarians in order to motivate them to perform better.

Keywords*: Attitude, Incentives, Librarians, Monetary and non-monetary, Nigeria, Universities.*

1. INTRODUCTION

Good working environment is required for the performance of individuals or group of people working in an organization in order to achieve the organizational goals and objectives. As a result, it is necessary for the manager to know the attitude of employees under him in the overall interest of the organization. It has been observed that there are a lot of incentives that could influence employees, librarians inclusive and some of these incentives could be monetary or non-monetary.

The need for librarians to be highly motivated cannot be over emphasized because libraries are well positioned in the quest for solutions to economic problems in Nigeria because they are the agents of change, self-enlightenment and self-improvement of the people. Upon critical examinations of various services in libraries, it is understandable that these services illuminate life. Libraries influence the individual to have reflection on life experiences and at the same time, they provide guidance and documents to improve adverse social conditions (Achebe 2004).

Hayden (2003) has maintained that the library is the only democratic institution that allows people of all background and abilities to have access to information and a place of enjoyment for all categories of people. The library is a cornerstone of social adjustment exemplified in bibliography control and access advocacy to vital policy documents at all levels of government for decision making and implementation as well as making relevant materials available to various scholars and researchers.

It is observed that if university libraries are to make the maximum utilization of their workforce, there is a need to motivate it, especially when one considers the high level of services expected from such academic libraries. Onwubiko (2004) supporting the above submission posits that "unless conditions are created that will permit the release of libraries employees' potentials, the goals of the library will not be attained," librarians require relevant motivational both monetary and non monetary incentives to serve their users effectively and to perform their job effectively. Attama (2000) has observed that the competence of a librarian in this regard is not advantageous but is also job enriching and enhances the profession and the librarian.

The paper has examined the attitude of librarians towards monetary and non-monetary incentives in the university environments in Nigeria.

2. STATEMENT OF THE PROBLEM

There are different views on librarians' attitude towards monetary and non-monetary incentives and the

impact of fringe benefits on librarians' performance. In the past, university library managements submitted that librarians performed their work efficiently when they were newly employed but with time, their efficiency and productivity decreased. However, various university librarians have attributed decrease in efficiency and productivity to the fact that librarians do not receive adequate incentives and motivation to enable them to put in their best (Achebe, 2004).

It is to this end that this study sets out to investigate the attitude of librarians toward monetary and non-monetary incentives given by their various institutions.

3. OBJECTIVES OF THE STUDY

i. To identify the types of incentives available in Nigerian University Libraries
ii. To ascertain librarians' attitude towards monetary and non-monetary incentives in the course of their works
iii. To identify the incentives, librarians like best in their work place;
iv. To examine the adequacy of incentive available and received by librarians;
v. To identify the ways of increasing productivity among librarians.

3. LITERATURE REVIEW

Librarian's attitude refers to a persistent tendency to feel and behave in a particular way towards some objects. Attitude provides people with a basis for expressing their values. Luthan (2003) has maintained that attitude has three components which are emotional, informational and behavioural. The emotional component involves personal feeling or affects positive or negative feeling about an object. The informational component consists of the beliefs and information the individual has about the object. The behavioural component consists of a person's tendency to behave in a particular way towards an object. Rewards and incentives in the workplace have benefits for both employees and employers. When recognized for stellar performance and productivity, employees have increased morale, job satisfaction and involvement in organizational functions. As a result, employers experience greater efficiency and an increase in sales and productivity. Through workplace rewards and incentives, employers and workers enjoy a positive and productive work environment.

Incentive is an act or promise for greater action. It is also called a stimulus to initiate a greater action. Incentives are given in addition to salaries. It means additional remuneration or benefit to an employee in recognition of achievement or better performance. Incentives provide a spur or zeal in the employees for better performance. It is a natural thing that nobody acts without a purpose. Therefore, a hope for a reward is a powerful incentive to motivate employees. Hence, there are two major types of incentives that librarians can benefit from their Institutions; namely, monetary and non-monetary incentives.

Monetary incentives are those incentives which satisfy by providing rewards in terms of money. Ikpefan and Adewoye (2007) have described monetary incentives as remuneration in the form of money to employee for work performed Otokiti (2002) has gone further to say that monetary incentives will motivate librarians to put their best in order to attain the organizational goals. While non-monetary incentives are non-financial in nature, but they can satisfy the ego and self-actualization needs of employees. These are some other stimuli which can drive a person to do better. This include job satisfaction, job security, promotion, social factors, condition for self–expression, independence and recognition in order to realize one's potentials. (Ikepefan and Adewoye, 2002).

Motivation has been defined in various ways by various scholars Atkinson (1964), Zedek and Blood (1974) and Goodman (1971) defined motivations as the level of effort an individual is willing to expend toward the achievement of a certain goal. Abifarin (1997) has simply described motivation as the provision of inducement. However, motivation can be described as a technique used by the managers in order to bring the best in people. Daresh (2001) has observed that in rewarding people the following questions must be answered:

i. What makes some people work hard, while other people hardly work at all?
ii. How can certain people-university librarians, for example-positively influence the performance of the people who work for them?
iii. Why do some people leave organizations, show up late for work, and refuse to be committed while others do not?

Yalokwu (1999) has maintained that without reward, there would be no purposeful organized behaviour by the individual either at work or elsewhere. Goodman cited by Odunewu (2005) has opined that librarian's aspiration may be achieved or challenged when he is adequately rewarded, but where he is frustrated however, aggression,

hostility and apathy may set in. Ikepefan and Adewoye (2007) have classified the theories of reward into two which are content theories and the process theories. The content theory deals with the factors that arouse employee to action in the work place; this theory is concerned with issues that make employee to work for a job. The theories are better explained in the hierarchy of needs theory of Abraham Maslow and Fredrick Herzberg's theory.

The process theories deal with the choice aspect of individual. Ikepefan (2003) has described the theory that has a path goal orientation. The theories are of the view that people in their bid to realize their goals are exposed to different alternatives and that a person will choose the path that will enable him to realize his goals.

A critical examination of Maslow's theory has revealed the following assumptions:
(1) Human beings have sets of needs (2) These needs are arranged in order of importance from basic to complex (3) Human beings move from one level of needs to the other level of needs only when lower needs are satisfied.

Ubeku (1975) has maintained that people work in order to satisfy their needs and these needs can be met through monetary incentives, repayment in cash and in money from the work done by the employees in the organization. Monetary incentives in the modern societies are the most transferable satisfying basic needs. Ikepefan and Adewoye (2007) highlighted various forms of monetary incentive which include wages, salary, allowances, and bonus. Cole (2000) has maintained that a salary system can be best considered as mechanism which an organization plans how to attract, retain, reward and motivate its salaried employees to provide a fair reward to those performing specified roles, to provide an incentive for employee and to keep pace with inflation. Pitified (1980) has explained that bonus provides greater rewards for output above a certain agreed level which may be based on individual output or on the output of a group.

He has gone further to describe non-monetary incentives as a fringe benefits made available to librarians and are regarded as an addition to wages which has a direct and indirect benefits. The direct benefits may include profit sharing, sick pay, and pension schemes, the indirect benefit include welfare amenities, social and recreational facilities. Kepner *et al* (2001) has explained that the purpose of monetary incentives is to reward associates for excellent job performance through opportunities, while non-monetary incentives include flexible hours, training, pleasant work environment and sabbaticals. The importance of monetary and non-monetary incentives among librarians has been supported by various studies and mentioned in writings of many authors. Kovach (1999) has conducted a survey of 1000 employees; he compared the associates' rankings of what they wanted from their jobs, according to the findings the employee revealed that they want job security and good wages. Ikepefan and Adewoye (2007) has conducted a research on the employee attitude towards monetary and non-monetary incentives in Nigeria; the findings have revealed that salary plays a significant role in workers' attitude towards their work and fringe benefits motivate workers to perform better. Owolabi and Salaam (2010) have stated in their research on Job Satisfaction and Organizational commitment of academic librarians in Nigeria that the major finding revealed that attractive salary and wages are major determinant of job satisfaction among librarians in Nigeria.

4. METHODOLOGY

The study has used a descriptive survey design and questionnaire used for the collection of data. The target population of the study is seventy (70) librarians in six selected university libraries in Nigeria. The universities are: University of Ibadan (UI), Lagos State University (LASU), University of Lagos (UNILAG), Olabisi Onabanjo University (OOU), Ago –Iwoye, Federal University of Agriculture, Abeokuta (FUNAAB) and Tai-Solarin University (TASUED), Ijebu-Ode. The universities selected for the purpose of this study are state and federal government owned universities. A simple random sampling technique is used to select the 70 librarians from the selected university libraries and copies of questionnaires are administered on them out of which 45 useable copies are retrieved, giving a response rate of 64.3%.

5. DATA PRESENTATION AND ANALYSIS

Table 1Questionnaire Distribution and Return Rate

Institution	No Distributed	No Retrieved	%
UI	15	8	53.3
LASU	12	7	58.3
UNILAG	15	9	60
OOU	7	5	71.4
FUNAAB	15	12	80
TASUED	6	4	66.7
Total	70	45	64.3

Table 1 above reflects the number of questionnaire distributed and retrieved.

Table 2 Available Incentives in Various Libraries

Incentives	Available	%
Monetary Incentives	45	100
Non-Monetary Incentive	45	100

Table 2 indicates that both monetary and non-monetary incentives are available to the respondents in their various institutions. The monetary incentives stated by the respondents include the following; salary, bonuses, salary advance, and loans while non-monetary that stated are: good working condition, promotion, staff welfare scheme, commendation letters, pension scheme, medical facilities, recreational facilities, training, conferences, workshops, festive parties, scholarships and awards.

Table 3 Beneficiary of Incentives

Incentives	Rate	%
Monetary	45	100%
Non-Monetary	36	80%

Table 3 has sought to identify the incentives in which librarians has benefited from. It reveals that all the librarians (45)100% admit that they are beneficiaries of monetary incentives, while 36(44.4%) are beneficiaries of non-monetary incentives.

Table 4 Attitudes of Librarians to Incentives (Monetary And Non-monetary) Received

Attitude of Librarians	Response	%
Increases Job Performance	42	15.9
Motivates the Staff	45	17.1
Increases Staff Productivity	43	16.4
Leads to Job Satisfaction	45	17.1
Increases Organizational Commitment	43	16.4
Enhances Smooth Organizational Management	45	17.1
Total	263	100

Note: Total; 263>N because respondents were allowed to pick more than one option.

Librarians' attitude to incentives is reported on Table 3 above. The result indicates that incentives increase job performance, promote job satisfaction and enhance smooth organizational management with 45 (17.1%) respectively.

Table 5 Most Preferred Incentives

Incentives	Response	%
Monetary Incentive	35	77.8
Non-monetary Incentive	10	22.2
Total	45	100

Table 5 has sought to identify the most preferred form of incentive it reveals that majority of librarians prefer monetary incentive, this is represented by 43(95.6%) while 11(24.4%) preferred non- monetary incentive. During the interview those that picked non-monetary incentive state that they are usually non-taxable.

Table 6 Ways of Increasing Productivity of the Librarians

Items	Response	%
Regular Promotions	33	24.8
Good Working Environments	25	18.8
Attractive Salaries and Wages	45	33.8
Good Welfare Packages	30	22.6
Total	133	100

Table 6 has Sought to identified the ways of increasing productivity among librarian. It reveals that attractive salary and wages are identified as a major way of increasing productivity among librarians 25(33.8%), this is closely followed by regular promotion 33(24.8%).

6. DISCUSSION OF MAJOR FINDINGS

The major findings of the study reveal that monetary and non-monetary incentives are available in all the university libraries used for the study and monetary incentive is the most preferred incentive. This corroborates the findings of Ikepefen and Adewoye (2009) that there is a need for adequate incentives for workers. Majority of the librarians reveal that they benefit from monetary incentive while only few maintain they are not benefited from non-monetary incentive. Motivation, job satisfaction and increases in organizational commitment are some of the attitude of librarians toward incentives .This supports the findings of Otikiti (2010). In addition, another finding reveals that salary and wages are two incentives that can increase productivity among

the librarians. This is in line with the earlier study of Owolabi and Salaam (2010).

7. CONCLUSION AND RECOMMENDATIONS

This study has shown that there is need for monetary and non-monetary incentives for librarians which will make them to be more effective in their work. The findings of the study reveal that monetary and non-monetary incentives are available, majority of the librarians benefited from monetary incentive. In-addition, motivations, job satisfactions and increase in organizational commitments are some of the attitude of librarians toward monetary and non-monetary incentives among librarians. It is also revealed that attractive salary and wages are the basic incentives that can make librarians to be more productive.

Librarians to be more effectives on their jobs, the following recommendations are made:

i. There is a need to link reward directly to performance. Universities library managements should provide incentives to deserving librarians always;
ii. Library management should strive to introduce a satisfactory incentives package to the librarians. This is because librarians satisfaction can motivate high performance;
iii. Non –monetary incentives should be tailored in line with monetary incentives in order to motivate the librarians to put in their best;
iv. Reasonable salary and wages should be paid to librarians in order for them to be more commitment to their jobs.

REFERENCE

[1] N.E. Achebe, "An Empirical Study of Professional Development Factors and Strategies for Job Enrichment And Enhancement of Librarians In Nigeria*:* Coal City Libraries, Vol.1, No.1, 2004, pp.1-16.

[2] A. Abifarin, "Motivating staff in Nigeria University Libraries", Library Management, Vol.18, No.3, pp.121-128.

[3] Attama & Ezema, "Library and Information Services: A Practical Approach", Mikon, Enugu, 2001.

[4] J.W.Atkinson, "An Introduction to Motivation", Van Nostrand, New York, 1964.

[5] G.A.Cole, "Personal Management", Letts Educational Aldine Palace, London, 2000.

[6] J.C.Daresh, "Supervision as Proactive Leadership", Waveland Press, Illinois

[7] B.E.Edoka, "Introduction to Library Science", Palma Publishing, Nigeria, 2000.

[8] C.H.Goodman, "Employees Motivation", Library Trends, Vol.20, 1, 1971, pp.42-50.

[9] P.T. Hayden, "The Library as an Institution of Knowledge: American Libraries"**,** Vol.16, No.6, 2003, pp.18-23.

[10] O.A.Ikepefan and T.O.Adewoye, "Banking Distress: Concepts Causes and Magistrate Role of Trade Version and Bank Management", Journal of Chartered Institute of Bankers, Lagos, 2003.

[11] O. A.Ikepefan & Adewoye, "An Exploration Study of Employee Attitude Towards Monetary and Non-monetary Incentives in the Banking Industry: A Case Study of Selected Unionized Bank", Journal of Banking, Vol.2, No.1, 2007, pp.1-30

[12] K. Kepner, *et al* "The Role of Monetary and Non-monetary Incentives in the Work Place as Influence By Career Stage, Institute of Food and Agricultural Sciences, University of Florida Gainisville, 2003.

[13] K. Kovach, "Employee Motivation: Addressing a Crucial Factor In Your Organization's Performance", Human Resource Development, Ann Arbor, MI: University of Michigan Press, 1999.

[14] F. Luthans, "Organizational Behavior", McGraw-Hill, 2000.

[15] Irwin, S.O. Boston Otokiti, "Theoretical Concepts of Scope Of Management", Vantage Publication Company, Lagos, 2003.

[16] A.O. Odunewu, "Academic Libraries' Employee Motivation: A Case Study", OlabisOnabanjo University Library Nigerian Library Link, Vol. 3, No.1&2, 2005, pp.30-40.

[17] C.P.C.Onwubiko, "Staff Motivation and Productivity at the Abia State University", Nigerian Library Link, Vol.11, No.1, 2004, pp.23-29.

[18] K.A. Owolabi and M.O. Salaam, "Job Satisfaction And Organizational Commitment Library Herald, Vol.48, No.2, 2010, pp.162-170.

[19] R.R. Pitfield, "Business Organization", Macdonald and Evans London, 1980.

[20] A.K.Ubeku, "Personal Management in Nigeria", Ethiope Publishing, Benin, 1975.

[21] P.O.Yalokwu, "Management: Concepts and Techniques", Peak Publishing, Lagos, 1999.

[22] S. Zedec and M. Blood, "Foundations of Behavior Social Research in Organizations", Wards worth publishing company Belmont, 1974.

A New Dimension in LIS Education for E-Learning

R. Santha Kumar
S K R Engineering College, Chennai - 600 123, Tamil Nadu
E mail: santham74@yahoo.co.in

Abstract

The increased involvement of technology in all aspects of our lives places educational institutions under pressure to include these aspects at the heart of their learning. This ensures that they continue to be competitive in a constantly changing market with international and cultural links. The recent advancements in IT have changed the world scenario. This IT revolution has affected each and every aspect of human society and has opened new opportunities and challenges for all and particularly a new dimension in e-learning. The e-learning is an advanced system for learning through Information Communication Technologies (ICTs). The ICTs serve as a source of innovative knowledge indicators on education including the field of library and information science. The ICTs are becoming popular in library and information system and services in the present knowledge based society for learning and teaching in academic and R&D carrier development. The ICTs enable the IT professionals including the library and information science for IT based information handling product and services towards organizational development. In view of this, the present paper presents e-learning and new dimensions in LIS education. The concepts of the theme of the papers are analysed and discussed.

Keywords: *E-learning, Information communication technologies, LIS education, New dimension*

1. INTRODUCTION

E-learning now-a-days becomes essential and it is implemented in every field from Space to Government. There is a need for capacity building, which can help the users in utilizing e-resources. The librarians have the ability and skills to act as an information intermediaries as they are trained specially to know the resources available offline and online and how to make efficiently use of them [1].

Network based modern technologies such as the internet and World Wide Web are dramatically changing education, learning and teaching style as they enable people to access and use of information more conveniently. It offers high-quality learning resources, exchanging information and makes learning groups virtually [2]. As the use of internet is rapidly increasing day-by-day and people take it as part of life, internet based learning form of education and training becomes easily accessible and increasingly important. The term 'e-learning' is used in a variety of ways that is often used interchangeably with terms such as online learning, Computer-based Learning, Web-based Training, Online Resource-based Learning, Network Collaborative Learning and others. Probably, library and information science is the most effective knowledge field that is collaboratively retrieving, disseminating and educating people through e-learning system. Today even the most affluent countries are convinced that they will not be able to provide adequate education to people as long as they exclusively depend on the formal education stream.

Basically, e-learning is the online delivery of information, communication, education and training. E-learning can also be in offline form also like CD, DVD, etc. E-Learning provides new set of tools that can add value to all the traditional learning modes-classroom experiences, textbook study, CD-ROM and traditional computer based training[3]. It is characterized by speed, technological transformation, and mediated human interaction. The most recent influence of the ICT in the field of education is recognized as e-learning. E-learning has many other nomenclatures such as computer assisted instruction, computer-based training, online education, distance education, web-based training, etc. E - learning has brought new opportunities to education in all subjects, including library and information science (LIS). This paper describes e-learning, its suitability to LIS education and on-going initiatives in applying e-learning in LIS education.

2 LITERATURE REVIEW

This paper addresses the need for a conceptual approach to researching, e-learning instructional design and the technologies employed as a basis for e-learning. Moreover, a new curriculum that puts emphasis on the use of ICT will have powerful inducements to educate

students with certain level of knowledge and skills. Three issues that are critically important for the success of these initiatives relate to the design of learning tasks, support and resources in the learning environment, and reorganization of methods of communication.

3. METHODOLOGY

Data in relation to this study has been gathered through the web of the university departments that offer library and information science courses. E-learning on LIS education is also found in the form of articles in the professional, national, international journals and books that have been used as secondary source. Literature search was also predominantly done by different notable websites, library portal and other virtual sources.

4. OBJECTIVES OF THE STUDY

The objectives of the study are focused on the following issues:

i. To know the concept, forms of e-learning and facilities offered by e-learning in LIS education and services
ii. To know the distance learning education system and existing LIS education system
iii. To identify the problems of e-learning in LIS education and make a proposal for the introducing e-learning LIS education system
iv. To recommend a number of activities to implement the proposal plan and future development of e-learning education

5. CONCEPT OF E-LEARNING

The term e-learning has a variety of meanings and is often used interchangeably in literature with learning technology, educational technology or machine-assisted learning. In simple e-learning is:

i. Learning facilitated and supported through the use of information and communication technologies
ii. Education offered using electronic delivering methods such as CD-ROMS, Video Conferencing, websites and e-mail and often used in distance learning program
iii. Learning that is accomplished over the Internet, a computer network, via CD-ROM, interactive TV or Satellite broadcast.

However, generally three types of e-learning are available. These are namely: web-based training, supported online training and informal e-learning. The following table summarizes the key characteristics of these approaches:

Table 1Types of E-learning

Web-based Training	Informal E-Learning	Supported Online Training
Content-focused	Group-focused	Learner-focused
Delivery-driven	Practice-driven	Activity-driven
Individual learning	Organizational learning	Small group learning

6. ADVANTAGES OF E-LEARNING

E-learning is beneficial to education, corporations and to all types of learners. It is affordable, saves time and produces measurable results. E-learning is more cost effective than traditional learning because less time and money is spent traveling. Since e-learning can be done in any geographic location and there are no travel expenses, this type of learning is much less costly than doing learning at a traditional institute.

Flexibility is a major benefit of e-learning which has the advantage of taking class anytime anywhere. Education is available when and where it is needed. E-learning can be done at the office, at home, on the road, 24 hours a day and seven days a week. E-learning has also measurable assessments which can be created so both the instructors and students will know what the students have learned, when they've completed courses, and how they have performed [4].

E-learning encourages students to peruse through information by using hyperlinks and sites on the WorldWide Web. Students are able to find information relevant to their personal situations and interest [5]. E-learning allows students to select learning materials that meet their level of knowledge, interest and what they need to know to perform more effectively in an activity.

E-learning can also save trees by saving paper. Many e-learning courses are entirely self-contained, presenting all learning content online or providing alternatives to paper-based forms of communication through such tools as email, PDF manuals, synchronous classrooms, and other web-based tools.

E-learning helps students develop knowledge of the Internet. This knowledge will help learners throughout their careers. E-learning encourages students to take personal responsibility for their own learning. When

learners succeed, it builds self-knowledge and self-confidence in them. E-leaning helps to center learning on the student instead of the classroom [6]. E-learning also can focus on the strengths and needs of individual learners, which is sometime not possible in a crowded class room within the stipulated time period. E-learning accommodates automated, continuous assessment of student progress. E-learning permits to develop materials using the web resources and it offers links to useful learning materials.

E-learning allows instructors to communicate information in a more engaging fashion than in text-based distance education programmes and also offers a wide-range of text, diagrams and images with video and sound, including virtual reality technology that in the future will improve the effectiveness of the approach even further[7]. E-learning provides immediate feedback and positive reinforcement. It enhances computer and Internet skills of faculty members as well as students and also they become more competent with keyboard and other ICT components.

7. IMPLICATIONS OF E-LEARNING IN LIS EDUCATION, SERVICES AND LIBRARY PROFESSIONALS

In the present age of information highway, e-learning opens a new hope and aspiration in LIS education, services and professions. Library and information services are currently involved in rapid changes to result in:

i. Opportunities offered by e-learning
ii. Demand for new services
iii. Pressure for increased productivity and accountability
iv. Increased demand for 24 hour/seven-days-a-week services
v. Changing Learning Trends
vi. Job-Specific Needs
vii. More Content and Short Duration

7.1 New Opportunities

E-learning offers new opportunities for library and information professionals to develop their knowledge and skills in a wide range of areas.

7.2 Acquiring Information Skills

Sometimes E-learning activities involve traditional information knowledge and skills, and gets involved in working in a new way with new groups of people. E-learning makes the information workers more confident and competent in the use of ICT.

7.3 Roles and Responsibilities

Information professionals are developing new roles and responsibilities within library and information unit through e-learning. In addition, many library and information workers have moved out of the information unit and are now managing learning centers, educational development centers or learning materials units.

7.4 Time Reduction

The nature of e-learning with its visual and auditory reinforcement of information and individualized feedback systems, the time taken to learn the information is significantly reduced. E-learning also can be delivered as 'just in time" training, reducing the period between the learning and application of the knowledge which enhances the learning process[8].

7.5 Anywhere Learning

E-learning provides remote access to learning facilities through the Information communication Technologies. The e-learner can learn from the place of his convenience, even from home, office, while traveling or literally from anywhere. In the globalized world, the work style is changing. People are expected to work from anywhere and anytime.

8. E-LEARNING EDUCATION TOWARDS PROFESSIONAL SKILL DEVELOPMENT

Library and Information Science (LIS), a skill-oriented professional discipline requires adequate skill development amongst the learners, which changes over time depending upon the development of methods and techniques of the professional discipline concerned and requirement of professional competency in the market place [9]. The impact of information in all spheres of society coupled with the utilization of IT development for access and utilization of information is dramatically changing the face of the libraries and information institutions. In this changing scenario, the custodian roles of library and information professionals are changing the role of facilitators and distributors.

The development of ICT and its application has changed its traditional methods acquisition, organization and access of information. The purpose of LIS education

is to provide skills for developing professionals who link people and information. Basic skills required are the intellectual organization of information and processing, management, retrieval and provision of information to its users [10]. All the skills are centered on users of information.

9. MAJOR CHALLENGES

The rapid growth of e-learning courses at academic institutions has brought out a big change for students and tutors with various levels of academic experience [11]. Instructors and students must possess specific skills to successfully use various e-learning tools. Students may demonstrate their learning efforts via different types of technology such as text, video or audio devices. Instructors often need to restructure their courses to successfully incorporate learning [12]. These activities represent challenges that all groups must overcome to succeed in e-learning.

The increasing demand of LIS education with the changing global scenario of job market requires to face the challenges with regard to survive in the competitive climate and to provide quality of LIS educational programme is important. Limited Internet connectivity, inadequate computer and communication infrastructure make it difficult for universities and institutions to access and download full text databases and other key resources. The major challenges and issues of introducing e-learning LIS education are discussed below.

9.1 Lack of Finance

The major challenge in improving e-learning LIS education is the lack of finance. It is not possible to make any resource available without appropriate financial support.

9.2 Lack of Knowledge and Training

One of the main constraints of e-learning systems is that students do not know how to use the particular information technology. Much more attention will be required in the future web based training that will be delivered over the internet using the non propriety www server and client technology.

9.3 Insufficient Contact Classes

Being a practical oriented course, LIS education required computer training and practical classes for classification and cataloguing with personal contact between teacher and student, but the number of days for contact classes are very limited.

9.4 Lack of IT Proficiency

In a developing country like India, library and information science professionals are facing severe shortage of ICT facilities and mentor for LIS education. There are certain specific problems that act as deterrents to the library education to adopting modernization i.e., low computer literacy among students of LIS; lack of basic knowledge of hardware and software among working professionals; and inadequate funds for purchase, installation and working with computers in schools, colleges, public libraries and universities.

9.5 Lack of Evaluation

There is no mechanism of assessing teaching effectiveness and quality of study materials of distance learning program courses. Students' evaluations of teaching will help provide instructors and course designers with feedback about the quality of their efforts.

10. IMPLEMENTATION PLAN FOR FORMATION OF E-LEARNING IN LIS EDUCATION

As in the perspective phase of e-learning system is not possible to introduce all LIS education institutions. Therefore it will be wise to introduce LIS education through distance learning method in less ICT facilitated institutions in different phases [13]. There are some elementary differences between online courses with that of distance learning courses.

Extensive preplanning of an online course is essential. Knowledge of the capabilities and limitations of the e-learning system is an important prerequisite to design an online course. Faculty members should have a solid understanding of the major principles of online course design before they attempt to put a course together.

Mobile based learning should be encouraged in LIS education. The success of the mobile phone and subsequently short message service in remote areas has demonstrated the functionality of portable communication devices with the access to internet resources using LAN or long range wireless communication services.

11. CONCLUSION

At present, information needs are changing and demands of this profession are also varying. This is the time to think intensely about the new syllabus for library and information science. Simultaneously, e-learning is now the global scenario and it should not avoid. As a developing country like India, it is hard to design a new courses and new e-learning LIS education system but not impossible. Lots of issues and challenges are involved with this task but as soon as it puts forward, it will overcome all those problems. Hope the proposed plan among LIS education institutions will make a new opportunity and make the LIS education competent for the world. In the 21st century, learning mode is increasingly relying on various forms of electronic delivery and communications.

REFERENCES

[1] Jyoti Bhabal, "E-Learning in LIS Education: Case Study of SHPT School of Library Science", CALIBER, 2008, pp.631-638.

[2] S. R.Hatua, "Design for Library and Information Science Program in E-Learning Environment", DRTC-ICT Conference on Digital Learning Environment Bangalore, 11-13 January, 2006.

[3] R. Mason, "Review of E-learning For Education and Training. in Networked Learning 2002: Proceedings of the third International Conference on Networked Learning 2002", Sheffield, UK. 26-28 March, 2002, pp.19-26.

[4] J. Mason, "From E-learning to e-knowledge; in Madanmohan Rao (ed.)Knowledge Management Tools and Techniques", Elsevier, London, 2005, pp.320-328.

[5] T. Nabeth, A. Angehrn and R. Balakrishnan, "Integrating 'Context' in E-Learning Systems Design", Proceedings of the IEEE International Conference on Advanced Learning Technologies (ICALT 2004), Joensuu, Finland, pp.355-359.

[6] D. Helic, H. Maurer and N. Scerbakov, "Discussion Forums as Learning Resources in Web-Based Education, Advanced Technology for Learning, Vol.1, No.1, 2004, pp.8-15, 2004.

[7] M. Bhattacharya, (Ed.). "Special Issue on E-Learning Prospective in Asia Pacific.International Journal on Elearning", Vol.1, No.3, 2002, pp.23-70.

[8] R. Mason, "Review of E-learning for Education and Training. In Networked Learning 2002: Proceedings of the third International Conference on Networked Learning 2002", Sheffield, UK. 26-28 March, 2002, pp.19-26.

[9] E. L.Meyen, R. Aust and J.M. Gauch, "E-Learning: A Programmatic Research Construct for the Future", Journal of Special Education Technology, Vol.17, No.3, 26-28 March 2002, pp.37-46.

[10] Ove David, Mazleena Salleh and Noorminshah Iahad, The impact of E-learning in workplace: Focus on organization and healthcare environments, International Arab Journal of e-technology, Vol.2, No.4, June, 2012.

[11] Educause, "Impacting and Challenges of E-learning", [Online]. Available at http://net.educause.edu/ir/library/pdf/ers0303/rs/ers03036.pdf., 2003.

[12] P. Arabasz, J. Pirani and D. Fawcett, "Supporting E-learning in Higher Education", [Online]. Available at http://net.educause.edu/ir/library/pdf/ers0303/rs/ers0303w.pdf., 2003.

[13] K.S. Deepak and B. Naval, "E-learning: A New Way of Education", University News, Vol.43, No.26, 2005, pp.12-15.

Assessing Information Literacy Skills among Management Science Post Graduates: A Study of Sankara Institute of Management

M.A. Deepamala[1], S.Nirmala[2] and K. Adhinarayanan[3]
[1]Phd Research Scholar, Anna University, Coimbatore - 641 047, Tamil Nadu
[2]Bannari Amman Institute of Technology, Sathyamnagalam - 638 401, Erode Distrcit, Tamil Nadu
[3]Vellore Institute of Technology, VIT University, Vellore - 632 014, Tamil Nadu
E-mail:deepamala77@gmail.com,nirmalasdevi2010@gmail.com, adhikovai@gmail.com

Abstract

This study analyzes and assesses Information Literacy skills of the MBA students of Sankara Institute of Management affiliated to Bharathiar University. It is focused on the information seeking behaviour with application of information technology on information retrieval. This study is conducted to determine the information literacy skills of particular institutions in order to provide and extend the service of the Information resource center. Based on these findings, recommendations are proposed to help develop information literacy.

Keywords: *Information literacy, Information respurce*

1. INTRODUCTION

In the current Information Age, the speed at which we work makes us increasingly dependent on high-quality and accurate information. However, the information is becoming more voluminous, fragmented into different formats and media and duplicated in multiple physical locations. In order to access and use these myriad sources effectively, people must be information literate. Users should know the available resources and identify right location of the information which they needed. Information literacy is defined by the American Library Association **(ALA)** as "the ability to seek and effectively utilize information resources, including knowledge of how to use technologies and the forms in which information is stored". Association of College and Research Libraries Information **(ACRLI)** defined as Information Literacy is a set of abilities requiring individuals to recognize when information is needed and has the ability to locate, evaluate and use effectively the needed information. From this study, it is analyzed & assessed as information literacy skills of the students of Postgraduate of Sankara Institute of Management.

2. REVIEW OF LITERATURE

[1]Wickens & Sandlin (2007) This article explores literacy education, especially the kinds practiced and promoted by organizations such as the World Bank and the United Nations educational, Scientific and cultural Organization (UNESCO) as form of neocolonialism. [2]Crawford and Irving (2007) the study reviews a research project which, inter alia, is constructing an information literacy framework liking secondary and tertiary education and arises out of research conducted in both the secondary and tertiary sectors. [3]Emde, Hydutg Emmett, Ada (2007) the purpose of this study is to obtain preliminary evidence over a three-year period on the efficacy of curriculum designed to foster information literacy skills in graduate students in a chemistry bibliography course. In this paper, researchers have examined the application and results of an assessment tool and its connectivity to instructional strategies for improving literacy outcomes. [4]Jackson and Rebecca(2007) the article discusses research which has examined cognitive development as well as its consequent implications for teaching Information literacy skills to college students. [5]Kearns, Jodi (2007) the article reviews the website TRAILS: Tool for Real-time Assessment of Information literacy skills. [6]Dorner and Gorman (2006) ILE (Information literacy education) to be meaningfully embedded in the educational fabric of a developing country, it is important to take account of a range of contextual variables that affect how and why individuals learn.

3. PURPOSE OF THE STUDY

i. To examine that how the users select the concepts in their search strategy
ii. To identify the users ability in the area of synonyms to indicate their needs
iii. To assess the users' knowledge about Boolean Operators

iv. To assess the users' understanding of the search indices in library catalogue
v. To determine the users' familiarity with the concept of controlled vocabulary tool
vi. To assess the users to have the knowledge about the library sources of information
vii. To find out the users ability to understand the characteristics of various documents type such as books, journals etc.
viii. To determine the utilization of the information resources
ix. To determine and verify the knowledge about the information technology based search tools
x. To find out the users' skills in the area of Internet information search
xi. To find out the knowledge of using electronic resources available in the Learning centre

4. OBJECTIVES OF THE STUDY

i. Assessing and analyze the MBA Students information Literacy skills
ii. Assessing information technology skills & internet searching skills of the users
iii. Creating awareness among the students about information literacy skills based on the analysis
iv. Extend the sources & services of the Learning centre

5. HYPOTHESIS FORMATION

Based on the study, the following hypothesis is formulated.

i. Students belonging to various group of UG study have the same level of computer Proficiency
ii. Respondents with different UG Degree have the same level of satisfaction on sources
iii. Students belonging to various residential area have the same level of satisfaction on sources
iv. Students belonging to various residential area have the same level of computer Proficiency
v. Both computer & non computer based graduates have the same level of computer proficiency
vi. Both male and female have the same level of satisfaction on library sources
vii. Bothe computer and non computer based graduates have same level of satisfaction on the library sources
viii. All the options are equally preferred by the respondents in order to become familiar with a particular subject.
ix. All the way of search are equally preferred by the respondents to search availability of Thesis/Projects in the library
x. All Boolean operator keys are equally preferred by the respondents
xi. All the resources are equally preferred by the respondents on finding most recent information about a topic
xii. All the information could not be retrieved from search engine
xiii. All the items available in the library can be found in the Library catalogue
xiv. Gender has no association with the opinion of respondents regarding the need of any program to build up information literacy skills
xv. Residential area has no association with the opinion of respondents regarding the need of any program to build information literacy skills
xvi. Computer & non computer groups have no association with the opinion of respondents regarding the need of any program.

6. METHODOLOGY

The study is mainly based on the primary data collected from the PG students of management of Sankara Institute of Management Science through a well-designed questionnaire. Besides, the secondary data have been collected from sources like text book, reference book, National and International online journals. Data base has tabulated & formulated hypothesis verified with the mathematical application of Z Test, Chi Square, ANOVA and T – Test.

7. SCOPE OF THE STUDY

This study is conducted to determine the information literacy skills of the Sankara Institute of Management Science in order to provide and extend the service of the Information resource centre. This study is focused on the information literacy development program such as regular orientation class or workshop to the students on the basis of the analysis.

It is also to determine the most attention on the part of the library facility and services of Sankara Institute of Management Science.

8. LIMITATION OF THE STUDY

The study is restricted to only students of Sankara Institute of Management Science which the campus

consists of Sankara College of Science & Commerce Lecturers, Undergraduate and Postgraduate students.

9. PROFILE OF THE STUDY INSTITUTION: SANKARA EDUCATIONAL INSTITUTION

The strength of a developed nation depends primarily on the literacy of the nation with this vision as a beacon **Kavichemmal Sri. T.K. Pattabhiraman** set out on a mission to provide quality education and the fruit of that endeavour is the founding of the Coimbatore Educational and Cultural Foundation Trust. Under the sponsorship of this Trust, Sankara Educational Institution was established in the year 1991 under the affiliated to the Bharathiar University, Coimbatore with the sole aim of making a modest contribution to the society. The institution was named after the great saint. **AdhiSankar** in pursuit of knowledge is the prohetic Mission Statement of the college. Sankara educational Institution is ceaseless in its pursuit of excellence, to provide quality education to all who are in the quest of knowledge. The student community and the society today have recognized this inspired effort that Sankara is now one among the most sought after places of learning.

10. SANKARA INSTITUTE OF MANAGEMENT SCIENCE

With a great effect and achievement, the Management of Sankara College successfully commenced the MBA Programme with the initial intake of 40 students in the academic year 2000-2001. This programme offers dual specialization in Marketing, Finance, Human Resource and Sxystems.

With the help of well equipped Lab, Library and prevarication of other infrastructure facilities the department is improving a lot in all spheres and also performing to upgrade the level of students by way of doing extraordinary extracurricular activities. The department aims to make every student not only knowledgeable in the field of management and but also to make fully employable on graduation, with this vision the college has achieved satisfactory placement so far.

11. SANKARA INSTITUTE OF MANAGEMENT SCIENCE LIBRARY

The library is housed in a separate block and caters to the information needs of the institute faculty, students & staff. It has around 7000 books covering all disciplines of Management, Technology, Humanities and Social Science. The collection comprises printed documents such as books, reports, theses, atlases and journal Back volumes. The non-book collections include material like audio/video cassettes and CDROM discs especially for the management students. College Library subscribes about 53 National Journals, Magazines and 12 International professional Journals and 6 Newspapers. The library provides online search facilities for the student. A system has maintained for the purpose of providing OPAC facility. The collection in the library is increased by e-form of materials such as floppy, CD, Audio & Video cassettes above 500. About 800 thesis and projects on various titles are maintained in the library.

12. DATA ANALYSIS

Table 1 Proficiency on Computer Usage and Internet Search

Key Object	Proficiency Response Value		
	Average	Good	Very Good
Using Computer	38	54	8
Internet Search	36	56	8

Table 2 Satisfaction on Library Resources

Key Object	Satisfaction Response Value			
	Dis-satisfied	Moderate	Satisfied	Highly satisfied
Library Search	11	20	56	13
Internet Search	9	29	46	16

Table 3 Search Ability

Key Object	Search Ability Response Value				
	Strongly Disagree	Disagree	Moderate Agree	Agree	Strongly Agree
Keyword Selection	-	1	28	54	17
Adaption Information Technology	1	12	13	57	17

Table 4 Need of Information Literacy Program

Key Object	Need of Information Literacy Program	
Yes	84	84%
No	16	16%
	100	100%

13. STATISTICAL ANALYSIS

13.1 Garrett's Ranking Method

To search rare titles, students follow different sources to find out their needs. Under selection of given priority to the sources is being analyzed by Garrett's Ranking Method.

$$P = \frac{100(R-0.5)}{N}$$

P= Percentile Position, R= Rank, N=No. of Items

From the above application it is found that **"Internet"** & **"Search Subject"** wise has given first priority by the respondents.

14. FINDINGS FROM THE PERCENTILE ANALYSIS AND STATISTICAL APPLICATIONS

i. 68% of the respondents were male
ii. 46 % of the respondents belonged to Science Group
iii. 71 % of the respondents were non-computer based graduates
iv. The respondents were scattered all over the area in respect of rural urban and semi urban
v. 54% of the respondents have good proficiency in using computer
vi. 56% of the respondents have good proficiency in using Internet/Search Engine
vii. 58% of the respondents were referring to related books to become familiar with a particular subject
viii. 44% of the respondents were used to check the availability of thesis/project through direct search
ix. 59% of the respondents were referring Internet to know the most recent information.
x. 39% of the respondents were used AND operator and 33% are used +(plus) operator
xi. 57% of the respondents were books available in the library cannot retrieve by search engine search.
xii. 84 % of the respondents were in need of awareness program to build up their information literacy skill.
xiii. Internet was given higher priority by the respondents to search on rare title.
xiv. Female had higher level of proficiency on computer
xv. Search by subject was the first Priority by the respondents
xvi. Computer and Non computer based graduates had same level of satisfaction on the library sources.
xvii. Female had higher satisfaction on the library source.
xviii. Computer based graduates had higher level computer proficiency.
xix. Residential Area does not influence the computer proficiency of the students.
xx. Management and commerce students have higher level of satisfaction than science students.
xxi. UG study does not influence the proficiency of the students.
xxii. Residential area of the respondents had no association with the opinion of respondents regarding the need of any program to build up their information literacy
xxiii. Computer and Non computer group had no association with the opinion of respondents regarding the need of any program to build up their information literacy.

15. SUGGESTION

i. Students enrich their knowledge by liberating themselves through som regular courses which is based on the development of their information skills.
ii. Librarians are responsible persons to create regular information literacy development program.
iii. Regular annual and biannual assessment and analyze might be implement.
iv. On the basis of case study, it is obvious that the research scholars need online reservation and renewal facilities for quick process for students.
v. It is recommended that it would be more useful and convenient if computer systems along with the printout are accommodated in the library for preparing assignments/Theses/Projects
vi. This study can be extending to analysis the undergraduate students' information skill of the same Institution. It can be evaluated by providing pre and post test of information literacy development program.
vii. This study can be extending to the faculty of the same & other institution.
viii. This study can be focused on the information sources and its standards.

16. CONCLUSIONS

The inclusion of information competencies as a graduation requirement is the key that will fully integrate information literacy in the curricula of academic institutions. From this research, it is concluded that internet is used by the students to enrich their knowledge. This enables the students to enrich their literacy skills. Computer knowledge is not a barrier to utilize library resources a minimum amount of computer knowledge is sufficient. Especially management and commerce students have higher level of satisfaction than science students.

Information literacy instruction in higher education can take a variety of forms: Stand-alone courses or classes, online tutorials, workbooks, course related instruction or course integrated instructions.

State-wide university systems and individual colleges and Universities are undertaking strategic planning to determine information competencies, to incorporate instruction in information competence throughout the curriculum and to add information competence as a graduation requirement for students for students. Librarians often are required to teach the concepts of information literacy during "one shot" classroom lectures. There are also credit courses offered by academic librarians to prepare college students to prepare college students to become information literate.

UNESCO-SALIS e-learning portal on information literacy for South Asia launched by the Indian Society for the advanced of Library and Information Science (SALIS) in collaboration with UNESCO, Launched the e-Learning portal for Awareness Raising on Information Literacy. Same should have to implement the higher education institution.

REFERENCES

[1] M. Wickens Corrine, A. Sandlin Jennifer, "Adult Education quarterly", American Association for Adult and Continuing Education, Vol.57 No.4, 2007, pp.275-292.

[2] Paiki Muswazi Dickenson Yumba, "IFLA Journal Modernization of Library and information Services in Higher education in Swaziland: Strategic Interventions", Vol.33 No. 2, 2007, pp.124-135.

[3] Christine Irving, "Journal of Librarianship and Information Science", Sage publications, Vol.39 No.1, 2007, pp.17-26.

[4] Emde, Judity Emmett and Ada, "Reference Services Review", Vol.35, No.2, 2007, pp.210-229.

[5] Jackson and Rebecca, "Reference & User Services Quarterly", Summer, Vol.46, No.4, 2007, pp.28-32.

[6] Kearns and Jodi, "Library Media Connection", Vol.25, No.7, April 2007, pp.94.

[7] G. Dorner Daniel , G.E. Gorman, IFLA Journal, Vol.32, No. 4, 2006, pp.281-293.

[8] Sheila Webber, "Journal of Information Science", Vol.29 No.4, 2003, pp.311-330.

[9] Annemaree Lloyd, "Journal of Librarianship and Information Science", Sage Publication, Vol.35, No.2, 2003, pp.87-92.

[10] Mark Hepth, "A Study of Undergraduate Information Literacy And Skills", IFLA 65th Council of General Conference 1999.

Information Needs and Seeking Behaviour of Allopathic Medical Practitioners in the Rural Area of Erode District, Tamilnadu: A Study

BO. Sathivel Murugan[1] and S. Ally Sornam[2]
[1]IRT Perundurai Medical College, Perundurai - 638 053, Erode District, Tamil Nadu
[2]Department of Library and Information Science, Bishop Heber College, Tiruchirappali - 620 017, Tamil Nadu
E-mail:irtsathivel@yahoo.co.in

Abstract

This study focuses on information needs and seeking behaviour of the study samples that are availabe in the rural areas of the Erode district, Tamilnadu. Survey method has been adopted for collection of primary data and the tool of the study is simple structured questionnaire. Rural medical practitioners' need for clinical information is in descending order of their choices viz., drug-therapy, etiology/diagnosis, disease-prognosis and follow-up. They have used formal information sources namely, textbooks, reference books and printed IMA journals. Among the informal sources, they have used discussion with colleague(s). Google search engine is more frequently accessed. While seeking the information, the important barriers are lack of time, training to access on-line medical journals / databases and information professional assistants. Most of the rural practitioners are interested to up-date their professional knowledge and personal competencies in the medical field. Governments and professional associations may take necessary steps to train them in the use of online and digital sources.

Keywords: *Information needs, Information seeking behaviour, Medical practitioners' needs*

1. INTRODUCTION

In recent decades, scientific knowledge has changed dramatically, once-settled scientific principles have been replaced by more sophisticated concepts and entirely new disciplines, and parallel changes have occurred in medical education, practice and health care delivery system (Jules, 2008) [(1)]. By the nature of service, medical profession is considered as a '**Noble Profession'.** These professionals render their services to the suffering humanity. They have served the society reasonably well that the profession has been rightly called '**Noble Profession**'. They are motivated by humanitarian consideration with a strong desire to help others and relieve their suffering (Fimate,2008) [(2)].

Medical service being the most humane of the services to humanity which needs constant improvement, enrichment and application of mind. A qualified medical practitioner, who is entrusted with the physical and mental well-being of their patient, must realize his/her obligations to their patient. They must also be aware of his/her responsibility to the society (Apurba, 2005)[(3)]. These noble professionals cannot practice high quality of medicine without constantly updating their clinical skills to help them and manage patients. Practitioner encounters more than 500 clinical topics every year, so the information need is much broader than that of other specialities, which may, in turn, lead to specific problems for these clinicians searching many resources for answers. Experienced physicians use about 2 million pieces of information to manage their patients. Most of the information, physicians' use their memory and unfortunately, some is out-date or wrong (Ane I Gonzatez-Gonzalezm, 2007) [(4)].

As an information-intensive specialty without patient limits of age, gender or medical profession, family physicians require number of different resources to cover the broad scope of practice. A critical skill for family physicians is to timely access the wide variety of clinical information sources that contribute to patient care decisions. Specific questions about patient management arise in daily practice with drug prescribing-questions being the most common type of question (Ely, 1999) [(5)].

The great strides of progress in modern medicine, diagnostic techniques, surgery and health care system have raised many problems with respect to standard of patient care, extent of human right protection and adequacy of systems and accountability. Physicians frequently rely on their personal knowledge accumulated over years of clinical practice for patient care. They also need to update professional knowledge periodically. It is true; they expected to manage a wide range of medical problem for broad patient populations (Margaret, 1997)[(6)].

2. MEDICAL INFORMATION SOURCES

Medical practitioners are frequently using text/ reference books, medical journals, freebies (translated journals/articles) newsletters from professional bodies, pharmaceutical product sheets etc. These sources are used for their ongoing learning and the purpose of POEMs (Patient-Oriented Evidence that Matters). They have used their colleagues/professional friends/subject experts to evaluate and validate the medical developments about which they read. They have met in the medical Association meetings, conferences, workshops, CME programmes organized by the professional bodies for up-dating their clinical knowledge.

In the end of 20th century, information technology has changed and transferred information available in conventional text formats to digitized formats like floppies, CDs and DVDs. It is also available in on-line medical and allied health science bibliographic databases. United National Library of Medicine (NLM) and National Institute of Health (NIH) are providing bibliographical database service free to all.

3. INFORMATION SEEKING BEHAVIOUR (ISB)

Information seeking behaviour is a broad term. It is a way to gathering information for the purpose of personal use, knowledge-up-dating and development of personal & professional caliber. It is used for individual development or group of persons. It describes the way of individual/groups to seek, evaluate and use of right information in the right time. In information seeking situation, the individual/group may use different sources and use different searching tools (Wilson, 2000) [7]. It involves many access points to express the information needs, seeking, selection, evaluation and finally utilize the information to satisfy the needs. Various factors may determine the ISB of an individual or group of people. It describes which information is required and when on which circumstance it will be used and also, channels and sources are used for acquiring the information and barriers to access information.

4. ISB OF THE MEDICAL PRACTITIONERS

A need for problem-oriented information related to the care of patient is the predominant factor of the medical professionals. It provides the behaviour of medical practitioners to seek information. Practicing physicians seeks the information for the following main reasons:

i. To study & know the clinical care of individual
ii. To acquire pharmacological information
iii. To fill specific gaps in knowledge on "new" diagnostics and therapies
iv. To obtain answers to patients-specific questions that cannot be answered throughout their personal knowledge alone
v. To study developments in clinical medicines and
vi. To satisfy curiosity, personal interest and inclination.

The exponential growth of medical literature, volume of unpursued clinical question, and increasing time constraints faced by the clinicians provide a disconcerting picture of knowledge-related issues in current clinical practice (Rebella, 2001)[8]. Self-reporting study by Williamson *et al* reveals that two thirds of respondents have noted that the current volume of scientific literature is unmanageable (Williamson, 1989)[9]. Similarly, in a survey with physicians reading medical journals behaviour by Hunt and Newman reports that 'when asked about time available for reading medical journals as compared with five years ago, a significant majority in each group of the respondents said less time was available for this activity (Hunt & Newman,, 1997) [10].

5. SIGNIFICANCE OF THE STUDY

Medical practitioners' information needs and seeking behaviour research studies are mostly taken-up in the developed countries. Josehine's study about the information needs of rural primary care physicians have suggested that removing the barriers, lack of health information professionals, substantial financial and human supports from the academic centers, public agencies, and private organizations for better service (Josehine, 2000) [11]. Computer anf internet are now ubiquitous for academic/practitioners of an academic health science community in the developed countries (Sandra & Josephine, 2003) [12]. These types of studies in the medical fields are very less in the developing countries. Endemic and epidemic diseases are easily spreading throughout the world. In this circumstance, how the rural practitioners who are searching and finding the solutions of recent problems are vital areas of research.

6. REVIEW OF LITERATURE

Bryant reported that the family practitioners are prompted to seek information by needs arising, professional responsibility and personal characteristics. Care of every patients, was the predominant factor to seek information (Bryant, 2004) [13]. Personal collections

has ranked first in the information source and second was preference goes to electronic / digital sources Bryant,2004) [(14)] Physicians used Internet as a source of information for several years. Bennett, study results shows that the practitioners most frequently used internet for latest research topics, new information in disease and specific patient problems (Bennett, 2005) [(15)].

In the developed countries, medical practitioners have more knowledge of handling the computer and access of information either off-line or on-line. Boissin's study also reflected the use of internet among the general practitioners (Boissin, 2005)[(16)]. Callen (1998) classified the medical information sources in Mongolia as local and foreign textbooks, local & foreign journals, computer-aided literature searches (used search engines or medalr), colleagues, Mongolian clinical practice guidelines, brief updates and health policies developed by the Mongolian government. Among these sources, discussion with colleagues was the most frequent and often used source along with foreign medical textbooks. [(17)]

Rural and non-rural physicians' information needs and seeking strategies are same. However, rural physicians have reported less access to some information sources than the urban physicians due to their location of practice. Both rural and non-rural physicians have reported frequently used drug compodia; consult with colleagues, textbooks and little use of the personal library or computer-based sources. They are equally likely to have moist text sources in their office. 34% of the respondents have reported that they don't have any bound volumes and 80% don't have medical librarians/information professionals available to them anywhere else in the town (Gorman, 2001) [(18)]. Teratogen Information Service finds out the use of the following sources 1. The CPS (Physicians Drug Reference like CIMS, DDR, IDR), 2.Textbooks, 3. Journals and 4. Colleagues used by the practitioners used sources. Only 4% of the respondents used the medline for gathering information (Einaeson, Park, & Koren, 2004)[(19)]. Some of the rural physicians used the informal consultants with colleagues, nearby specialist, outside specialists for seeking the information, if it is not possible they transfer the patients to another physician with proper reference letter (Gruppen, 1987) [(20)].

7. OBJECTIVES OF THE STUDY

The following main objectives are framed to conduct this study. The objectives are:

i. To identify the clinical information needs of the medical practitioners
ii. To find out the most frequently used sources
iii. To identify the barriers in seeking health information.

8. STUDY SAMPLE AND METHODOLOGY

Allopathic medical practitioners in rural area only are used as study samples. Other medical systems like Siddha, Homeopathy, Naturopathy, Ayurvedic, Dental practitioners are excluded from this study. Study samples are taken from Gobichettipalayam, Sathyamangalam and Perundurai taluk rural allopathic medical practitioners in Erode District, Tamilnadu. Government Primary Health Centers (PHC) doctors and Indian Medical Association (IMA) members' lists are used for sample selection sources. After the compilation of doctors' list, random sampling method was adopted. Interviewer personally contacted every doctor, explained the project and then collected the data.

For data collection, survey method is used and a questionnaire is applied as tool. Structured, preplanned, easily understandable questionnaires are prepared in simple English. Statistical tools, simple average, rank and chi-square test are used for analysing the data.

9. FINDINGS

9.1 Distribution of Samples and Experience

Table 1expressed the respondents' educational qualification, gender and experience. Out of 80 respondents, 20(25%) of the respondents have UG (MBBS) qualification, 36(45%) of the samples are PGD (MBBS with Diploma) qualification and 24(30%) of the practitioners have PG (MBBS with MD/MS). Among the total respondents, 64(80%) [16(25%) of UG, 24(37.5%) of PGD and 24(37.5%) of PG] of the respondents are male and 16(20%) [4(25%) of UG, 12(75%) of PGD and 0 PG] of the respondents are female. Among the total respondents, 24 (30%) doctors have less than 5 years, 28(35%) of them have 5–10 years and 28 (35%) of the practitioners have more than 10 years of allopathic practicing experience in the rural area.

Table 1 Details of the Study Participants Based on the Sex, Educational Qualification and Experience

Educational Qualification	EXPERIENCE								Total Samples			
	Gender											
	Male				Female							
	Less than 5 yrs	5-10 yrs	above 10 yrs	Total Male	Less than 5 yrs	5-10 yrs	above 10 yrs	Total Female	Less than 5 yrs	5-10 yrs	above 10 yrs	Total Sample
UG(20)	0	8	8	16 (25)	4	0	0	4(25)	4	8	8	20(25)
PGD(36)	4	6	14	24 (37.5)	4	6	2	12(75)	8	12	16	36(45)
PG(24)	12	8	4	24 (37.5)	0	0	0	0	12	8	4	24(30)
Total (80)	16 (25)	22 (34.38)	26 (40.63)	64 (100)	8 (50)	6 (37.5)	2 (12.5)	16(100)	24 (30)	28 (35)	28 (35)	80(100)
	64(80)				16(20)			80(100)	80(100)			80(100)

Figures in parenthesis considered as percentage value

9.2 Needed Clinical Information

Based on the review of literature the following clinical information, treatment drug therapy, etiology/diagnosis, disease-prognosis, disease-descriptions, patient education, treatment adverse effect, differential diagnosis, treatment efficacy, diagnosis procedures and clinical epidemiology are needed for the general medical practitioners for their regular practice.

Table 2 Medical Practitioners Needed Clinical Information Based on Educational Qualification

Sl. No.	Clinical Information	Educational Qualification				Rank	P Value
		UG(20)	PGD(36)	PG(24)	Total(80)		
1	Treatment Drug Therapy	20(100)	32(88.87)	20(83.33)	72(90)	1	3.444 NS
2	Diagnosis/ Etiology	20(100)	32(88.89)	16(66.67)	68(85)	2	10.462 HS
3	Disease Prognosis	16(80)	28(77.78)	20(83.33)	64(80)	3	0.277 NS
4	Follow-up	16(80)	28(77.78)	20(83.33)	64(80)	3	0.277 NS
5	Disease Complications	12(60)	32(88.87)	16(66.67)	60(75)	4	7.026 HS
6	Patient Education	16(80)	28(77.78)	16(66.67)	60(75)	4	1.326 NS
7	Treatment Adverse Effect	8(40)	28(77.78)	20(83.33)	56(70)	5	13.440 HS
8	Differential Diagnosis	12(60)	24(66.67)	16(66.67)	52(65)	6	0.299 NS
9	Diagnosis / Procedures	8(40)	20(55.56)	20(83.33)	48(60)	7	9.140 HS
10	Disease Description	12(60)	20(55.56)	16(66.67)	48(60)	7	0.732 NS
11	Treatment Efficacy	12(60)	20(55.56)	16(66.67)	48(60)	7	0.732 NS
12	Clinical Epidemiology	8(40)	24(66.67)	12(50)	44(55)	8	4.202 NS

Figures in parenthesis considered as percentage value $\chi 2$ (df2, 0.05level of significance) NS = Not significant ; HS = Highly Significant

Table 2 data shows the rural medical practitioners educational qualification and needed clinical information. Among the total samples, 90% of the samples needed treatment-drug-therapy information, 85% of the respondents need diagnosis/etiology information, 80% of them needed disease-prognosis, follow-up and 75% of the respondents need disease complications & patient education information.

Among the UG qualified doctors the following top five-needed clinical information is presented in descending order: treatment-drug-therapy (100%), diagnosis-etiology (100%), disease-prognosis (80%), follow-up (80%),

patient-education (80%) disease-complication (60%) and differential diagnosis (60%).

Out of the total of (36) PGD doctors' choices of the needed clinical information is treatment-drug-therapy (88.89%), diagnosis-etiology (88.89%), disease-complication (88.89), disease-prognosis (77.78%), follow-up (77.78%), patient-education (77.78%) and treatment adverse effect (77.78%).

PG qualified respondents choice of needed clinical information is treatment-drug-therapy (83.33%), diagnosis-prognosis (83.33%), follow-up (83.33%), treatment-adverse-effect (83.33%), diagnosis-procedures (83.33%), etiology/diagnosis (66.67%), disease-complications (66.67%), differential-diagnosis (66.67%), disease-description (66.67%) and treatment-efficacy (66.67%). This table also shows the significance.

Analysis of the data by chi-square test,

i. H_0: There is no significant association between the educational qualification of the respondents and their needed clinical information.

ii. H_1: There is a significant association between the educational qualification of the respondents and their needed clinical information.

Calculated value of the chi-square is less than the table value @0.05 level of significance. Therefore, educational qualification of the medical practitioners and their needed clinical information, treatment-drug-therapy, disease-prognosis, follow-up, patients-education, differential- diagnosis, disease-description, treatment-efficacy and clinical-epidemiology do not have any significant association among them. Null hypothesis (H_0) is accepted.

H_0 is rejected the following needed clinical information, diagnosis/etiology, disease-complications and treatment adverse-effect. Hence, it is inferred that educational qualification is highly and significantly associated with clinical information needs of the respondents.

Table 3 Medical Practitioners Needed Clinical Information Vs Experience

Sl. No.	Needed Clinical Information	Experience				Rank	P value
		Less Than 5 years (24)	5-10 yrs (28)	10 yrs and Above (28)	Total		
1	Treatment Drug therapy	22 (91.67)	26(92.86)	24(85.71)	72(90)	1	0.901 NS
2	Diagnosis/ Etiology	20(83.33)	24(85.71)	24(85.71)	68(85)	2	0.075 NS
3	Disease prognosis	20(83.33)	22(78.57)	22(78.57)	64(80)	3	0.238 NS
4	Follow-up	16(66.67)	28(100)	20(71.43)	64(80)	4	10.81 HS
5	Disease Description	16(66.67)	20(71.43)	12(42.86)	60(75)	5	5.83 NS
6	Disease Complications	20(83.33)	20(71.43)	20(71.43)	60(75)	5	1.252 NS
7	Patient Education	12(50)	28(100)	20(71.43)	60(75)	5	17.943 HS
8	Treatment adverse effect	16(66.67)	20(71.43)	20(71.43)	56(70)	6	0.183 NS
9	Differential diagnosis	18(75)	14(50)	20(71.43)	52(65)	7	4.558 NS
10	Treatment efficacy	18(75)	18(64.29)	14(50)	50(62.5)	8	3.579 NS
11	Diagnosis / Procedures	22(91.67)	12(42.86)	14(50)	48(60)	9	3.879 NS
12	Clinical Epidemiology	14(58.33)	14(50)	16(57.14)	34(42.5)	10	0.452 NS

Figures in parenthesis considered as percentage value $\chi 2$ (df2, 0.05level of significance) NS = Not significant; HS = Highly Significant

Table 3 shows the experience of the practitioners and their needed clinical information. It is obvious to see that the practitioners experience and needed clinical information are differing from each other. Information needs of the doctors with less than 5 years of experience shows in decreasing order i.e., treatment-drug-therapy (91.67%), etiology / diagnosis (83.33%), diagnostic-procedures (83.33%), diagnosis-prognosis (83.33%) and disease complications (83.33%).

Among the 5-10 years of experienced practitioners needed clinical information were follow-up (100%), patients' education (100%), treatment adverse effect (92.86%), etiology / diagnosis (85.71%).

Practitioners have more than 10 years of experience needs on treatment drug therapy (85.71%), etiology/ diagnosis (85.71%), disease prognosis (78.57%) and differential diagnosis (71.43%), treatment-adverse-effect (71.43%), follow-up (71.43%) and patient education (71.43%).

To analyse the data by chi-square test,

i. H_0: There is no significant association between the experience of the rural medical practitioners and their needed clinical information.
ii. H_1: There is a significant association between the experience of the rural medical practitioners and their needed clinical information.

Based on the chi-square results, experience of the rural medical practitioners is not significantly associated with the following needed clinical information; treatment drug therapy, etiology/diagnosis, disease-prognosis, disease-descriptions, patient education, treatment adverse effect, differential diagnosis, treatment efficacy, diagnosis procedures and clinical epidemiology. Null hypothesis (H_0) is accepted. However, the following needed clinical information, follow-up and patient-education are calculated and the value of the chi-square is more than the table value @ 0.05 level of significance. Therefore, we conclud that experience of the rural practitioners is highly significantly associated with the following needed clinical information. Null hypothesis (H_0) is rejected.

9.3 Use of Formal Sources

Medical practitioners are using the following listed formal sources such as textbooks, reference books, printed journals/IMA journals, review articles, association magazines, conference/CME proceedings, drug information sheet, newspaper, CIMS/DDR/IDR and information bulletins for seeking information. Medical Practitioners are using various formal, informal and nonbook source digital and on-line sources for their needs (Callen, Buyankhishg, & McIntosh, 2008) [21].

Table 4 Use of Formal Information Sources Based on Educational Qualification

Sl. No.	Formal Sources	Educational Qualification			Total (80)	Rank	P Value
		UG (20)	PGD (36)	PG (24)			
1	Textbooks	20(100)	32(88.87)	24 (100)	76(95)	1	5.1501 NS
2	Reference Books	12(60)	32(88.87)	20(83.33)	64(80)	2	7.241 S
3	Printed Journals / IMA Journals	12(60)	24(66.67)	20(83.33)	56(70)	3	3.128 NS
4	Review articles	12(60)	16(44.44)	20(83.33)	48(60)	4	8.972 HS
5	Association Magazines	12(60)	20(55.56)	16(66.67	48(60)	4	0741 NS
6	Conference / CME Proceedings	4(20)	28(77.78)	12(50.00)	44(60)	5	24.998 HS
7	Drug Information Sheet	4(20)	12(33.33)	16(66.67)	32(40)	6	11.484 HS
8	Newspapers	4(20)	12(33.33)	12(50.00)	28(35)	7	4.899 NS
9	CIMS/ IDR / DDR	12(60)	8(22.22)	4(16.67)	24(30)	8	10.0321 HS
10	Information Bulletins	8(40)	4(11.11)	8(33.33)	20(25)	9	9.623 HS

Figures in parenthesis considered as percentage value $\chi 2$ (df2, 0.05level of significance) NS = Not significant ; HS = Highly Significant

Table 4 expressed the details of practitioners' educational qualification and use of formal sources. The formal sources are ranked based on their choices. Among the total samples and listed formal sources, choice of the Indian and foreign textbook (95%) takes first choice, second choice is reference book (80%), third choice is printed journal/IMA publication (70%). Pharmaceutical companies are providing review articles to doctors about the disease, drugs, mechanism and efficiency of the drug, experimental results its components, compositions and properties. It was also one of the most useful sources of information. It takes sixth place (40%) in the table. Similarly, Continuing Medical Education (CME)/ workshops/conference-proceedings and professional medical association publications like journals, conference volume also comes under the fifth place of choices.

Analysis of the data by chi-square test,

i. H_0: There is no significant association between the rural medical practitioners' educational qualification of the respondents and their needed formal sources.
ii. H_1: There is a significant association between the rural medical practitioners' educational qualification of the respondents and their needed formal sources.

It is obviously shown that the utilization of the formal sources is different from the practitioners' educational qualification. Null hypothesis is (H_0) accepted for the following textbooks, printed journals/IMA journals, association magazine and magazine. Hence, we confer that rural medical practitioners educational qualification is not significantly associated with the textbooks, printed journals/IMA journals, association magazine and magazine.

H_0 is rejected for the following sources such as reference books, review articles, conference/CME proceedings, drug information, CIMS/IDR/ DDR and information bulletins that are significantly associated with educational qualification of the respondents.

Table 5 Practitioners Use of Formal Sources Based on the Practitioners Experiences

Sl. No.	Formal Sources	Experience			Total	Rank	P Value
		>5 years (24)	5-10 years (28)	10 years & > (28)			
1	Textbooks	24(100)	26(92.86)	26(92.86)	76	1	1.802 NS
2	Reference Books	16(66.67)	14(85.71)	24(85.71)	64	2	8.303 S
3	Printed / IMA Journals	6(25)	26(92.86)	24(85.71)	56	3	45.203 HS
4	Conference / CME Proceedings	10(41.67)	18(64.29)	18(64.29)	46	4	3.868 NS
5	Association Magazines	8(33.33)	20(71.43)	18(64.29)	46	4	10.046 HS
6	Information Bulletins	6(25)	18(64.29)	20(71.43)	44	5	17.089 HS
7	Review articles	6(25)	16(57.14)	20(71.43)	42	6	14.830 HS
8	Newspapers	14(58.33)	14(50)	6(21.43)	34	7	10.631 HS
9	Drug Information Sheet	12(50)	12(42.86)	8(28.57)	32	8	2.8610 NS
10	CIMS/ IDR / DDR	12(50)	6(21.43)	6(21.43)	24	9	5.779 NS

Figures in parenthesis considered as percentage value $\chi 2$ (df2, 0.05level of significance) S= Significant ; NS = Not significant ; HS = Highly Significant

From the table 5, it is observed that the practitioners experience and the use of formal sources. Medical practitioners commonly use the standard Indian and Foreign textbooks. It is their first choice of formal sources. However, remaining usage sources differ based on their experiences.

Less than 5 years of experienced practitioners' second choice is reference book (66.67%), third choice is medical information from newspaper (58.33%). Journals, review articles, information bulletins and conference bulletins are used but the percentage ratio is less than 50%.

Similarly, experienced practitioners' first choice between 5-10 years is textbook (92.86%) and journals/ IMA-journals (92.86%), second choice is reference book (85.71%) and third choice is association magazine (71.43%)

Practitioners with more than 10 years experience make second choice for reference book (85.71%) and printed journals/IMA-journals (85.71%), third choice is information bulletins and review articles (71.43%).

Analysis of the data by chi-square test,

i. H_0: There is no significant association between the rural medical practitioners experience and their used formal source.
ii. H_1: There is a significant association between the rural medical practitioners experience and their used formal source.

Results of the chi-square test, rural medical practitioners' experience is not significantly associated with their utilization of the formal sources like textbooks, review articles, association-magazines, drugs information sheets, newspapers and information bulletins. Ho is accepted for the above listed formal sources and the

practitioners' experiences. However, Ho is rejected for the practitioners' experiences and the following formal sources like reference books, printed journals, and CIMS/ IDR/DDR. These sources are significantly associated with the rural medical practitioners' experience.

9.4 Use of Informal Sources

Table 6 Use of Informal Sources among the Medical Practitioners

Educational Qualification / Informal Sources	UG (20)	PGD (36)	PG (24)	Total (80)	Rank	P Value
Discussion with Colleagues	16(80)	24(66.67)	16(66.67)	56(70)	1	1.239 NS
Discussion with Subject Experts	16(80)	20(55.56)	16(66.67)	52(65)	2	3.373 NS
Discussion in CME / IMA Meetings	12(60)	20(55.56)	20(83.33)	52(65)	2	4.994 NS
Discussion in Conferences / Workshops	8(40)	16(44.46)	16(66.67)	40(50)	3	3.706 NS
Discuss in Medical Representatives	4(20)	14(38.87)	12(50.00)	30(37.50)	4	4.422 NS

Circular bracket numbers are considering as percentage. $\chi 2$(df2, 0.05level of significance)
NS = Not significant ;

Medical practitioners have more chances to meet the informal sources in many ways. Some of the ways are discussed by professional friends, colleagues, specialists, subject experts in CME, conferences, workshops (Gruppen, 1987) [22] etc. Here, the informal sources, utilized by practitioners are tabulated and their choices are ranked based on their educational qualification in the table 6. 70% of the practitioners choose discussion with colleagues/near by practitioners/ professional friends as first choice of informal sources. They have also used subject experts (65%) and IMA/CME(65%) as the second choice of the informal sources. Conferences/ workshops (50%) is their third choice of the informal source. Less than 50% of practitioners used medical representatives as one of the informal sources. To analyse the data by chi-square, there is no significant association between the use of the informal sources and practitioners educational qualification.

9.5 Use of Non-book and Digital Sources

Information technological environment medical information are available in different formats like digital, off-line (floppies, CDs, DVDs), on-line free e-journals, e-books, medical databases, television, radio etc. Whether the practitioners used these sources for their need is questionable?

Table 7 Use of Non-book and Digital Information Sources

Sl. No.	Non-Book and Digital Information Sources	Educational Qualification						
		UG (20)	PGD (36)	PG (24)	Total (80)	%	Rank	P Value
1	CD / Digital Video Disks	12(60)	32(88.89)	24(100)	68	85	1	14.981 HS
2	Search Engines	10(50)	16(44.44)	20(100)	46	57.5	2	9.005 S
3	Video Cassettes	8(40)	20(55.56)	12(50)	40	50	3	1.322 NS
4	E-Journals	4(20)	8(22.22)	12(50)	24	30	4	5.868 NS
5	Television	8(40)	8(22.22)	8(33.33)	24	30	4	2.195 NS
6	Medical Databases	4(20)	16(44.44)	16(66.67)	28	35	4	12.266 HS
7	E-Books	0	8(22.22)	12(50)	20	25	5	12.266 HS
8	Audio Cassettes	0	8(22.22)	4(16.67)	12	15	6	4.643 NS
9	Floppies	0	8(22.22)	4(16.67)	12	15	6	4.643 NS
10	Radio	0	4(11.11)	4(16.67)	8	10	7	3.026 NS

Circular bracket numbers are considering as percentage. $\chi 2$(df2, 0.05level of significance) NS = Not significant

Table 7 gives the details of the practitioners' educational qualification and the use of digital sources and non-book source. Among the respondents, first choice was CDs/DVDs (85%), followed by the on-line search engine (Google only). Video-cassettes are one of the useful sources of non-book materials (50%). Remaining listed sources utilization is below 50% only. It is further analysed by the chi-square test.

i. H_0: There is no significant association between the educational qualification of the respondents and their use of nonbook sources & digital sources.
ii. H_1: There is a significant association between the educational qualification of the respondents and their use of nonbook sources & digital sources.

There is no significant association between the educational qualification of the study participants and their use of video-cassettes, television, audio-cassettes, floppies and radio. H_0 is accepted. However, educational qualification is highly significant with the use of CD/DVDs, search engines, access of medical-databases, e-books and significant with search engines. H_0 is rejected.

9.6 Barriers

Table 8 Barriers Faced in Information Search

Barriers	Yes	%	Rank
Lack of Time	70	87.5	1
Work Place is Remote	64	80	2
High Cost of Books	64	80	2
Information is Overload	62	77.5	3
Lack of Medical Database Access Knowledge	62	77.5	3
Lack of Information Providers	60	75	4
High Cost of Journals	56	70	5
Information Scattered	56	70	5
Lack of Library Facility-Workplace	56	70	5
Lack of Internet Facility	56	70	5
Lack of Computer Facility	54	67.5	6
Lack of Personal Library Facility	52	65	7
Lack of Interest	24	30	8

Rural medical practitioners have faced many barriers to access of medical information for the purpose of patient care and development of personal caliber. In their busy practice, it is not easy to search or collect or filter and use proper information in time. Table 8 data shows that the medical practitioners have faced problems while accessing the information. The top five barriers are lack of time (87.50%), remote workplace (80%), high cost of books (80%), information overload (77.5%) & lack of accessing skill of medical database (77.5%) and lack of information providers(75%). However, 70% of respondents are interested to learn the recent trends in their profession and update their professional caliber & personal competencies in the information technology environment.

10. MAJOR FINDINGS

i. Rural medical practitioners needed the following types of clinical information in descending order, treatment drug therapy, etiology/diagnosis and disease-prognosis & follow-up. Based on the chi-square test, practitioners' educational qualifications are significantly associated with the following reasons, diagnosis/etiology, patient education, differential diagnosis and diagnosis/procedures. Remaining needed clinical information does not have any significant association.
ii. Experience of the medical practitioners is statistically associated with the following needed clinical information like follow-up and patient education.
iii. The top three formal sources used by rural practitioners are textbooks, reference books and printed journals published by the professional associations (national/ state/district-IMA journals).
iv. Use of the reference books, review articles, conference /CME proceedings, drug information sheets, CIMS/IDR/DDR and information bulletins is significantly associated with practitioners educational qualification. Reference books, printed /IMA journals and CIMS/IDR/DDR sources are significantly associated with experience of the medical practitioners.
v. Colleagues/professional friends and nearby practitioners have the commonly used the informal source of the medical practitioners. Medical practitioners' educational qualification is not significantly associated with educational qualification.
vi. Educational qualification is statistically associated with CDs/DVDs, general search engines, access to online medical databases and e-books.
vii. Most of the practitioners are interested to learn and up-date knowledge in their professional fields.
viii. Lack of time, Workplace in remote area, high cost of books and journals are the top barriers of the rural practitioners.

11. CONCLUSION

The result of this study has revealed that most of the rural practitioners are interested to develop their professional knowledge. They have accessed many sources like textbooks, reference books, journal, CD/ DVDs and colleagues for their various clinical skills developments and professional competencies. Rural practitioners needs handson training in the access of on-line medical database, on-line journals for better diagnosis and treat the patients with fullest confidence. Government, NGOs and medical association should come forward to arrange handson training in the access of online journal, medical database, e-journals, e-books. This type of study may be conducted with semi-urban, urban and city practitioners for identification of the medical practitioners information needs and information seeking behaviours.

REFERENCES

[1] L. D. Jules, "Relevance and Rigor in Premedical Education", N Engl J Med., Vol.359,No.3, 2008, pp.221

[2] L. Fimate, "Doctors-Patient Relationship", JMC, Vol.22,No.3, 2008, pp.107-8.

[3] N.Apurba, "Principles of Forensic Medicine", New Central Book Agency(P) Ltd, Kalkatta, 2005.

[4] Ane I Gonzatez-Gonzalezm, "Information Needs and Seeking Behaviour of Primary Care Physicians", Annals of Family Medicine, Vol.5, No.4, 2007, pp.345-52.

[5] J. W. Ely, *et al.*, "Analysis of Questions asked by Family Doctors Regarding Patient Care", BMJ, 319, pp.358-61.

[6] L. T. Margaret, "Characteristics of Information Resources Preferred by Primary Care Physicians", Bull Med Libr Assoc, Vol.85,No.2, 1997, pp.187-91.

[7] T. D. Wilson, "Human Information Behaviour, Information Science", Vol. 3,No.2, 2000, pp.49-45.

[8] N. J.Rebella, "Information Needs of Clinical Teams: Analysis of Questions Received By Clinical Information Consult Service" Bull Med Libr Assoc., Vol.89, No.2, 2001, pp.177-84.

[9] J. W. Williamson, *et al.*, "Health Science Information Management and Continuing Education of Physicians: A Survey of US Primary Care Practitioners and their Opinion Leaders", Ann Itern Med., Vol.110, No.2, 1989, pp.151-60.

[10] R. E.Hunt, & R.G. Newman, "Medical Knowledge overload. A distributing trend for physicians" Health care Manage Rev., Vol.22, No.1, 1997, pp.70-5.

[11] L.D. Josehine, "Study about the Information Needs of Rural Health Professionals: A Review of the Literature", Bull Med Libr Assoc., Vol.88, No.4, 2000, pp.346-53.

[12] Sandra L De Groote., & L. D. Josephine, "Measuring Use Pattern of Online Journals and Databases", J med Libr Assoc, Vol.91,No.2, 2003, pp.231-40.

[13] S. L. Bryant, "The Information Needs and Information Seeking Behavior of Family Doctors", Health Information & Libraries Journal, Vol.21, No.2, 2004, pp.84-93.

[14] Op Cit. S. L. Bryant and N. L. Bennett, *et al.* "Physicians' Internet Information Seeking Behaviors, Journal of Continuing Education in the Health Professionals, Vol.24, No.1, 2005, pp.31-38.

[16] F.G. Boissin, "Information-seeking Behavior and Use of the Internet By French General Practitioners: A Qualitative Study", Health Information Libraries Journal, Vol.22, No.3, 2005, 173-81.

[17] J.L. Callen, B.Buyankhishg and J. H. McIntosh, "Clinical Information Sources Used by Hospital Doctors in Mongolia", Int. J. med. Inform., Vol.77, No.4, 2008.

[18] P. Gorman, "Information Needs in Primary Care: A Survey of Rural and Non-rural Primary Care Physicians". Medinfo, 10(Pt 1), 2001, pp.338-42.

[19] A. Einaeson, A.Park and G. Koren, "How Physicians Perceive and Utilize Information from Teratogen Information Service: The Montherisk Program", BMC Med Edu, Vol.5, No.4, 2004, pp.6.

[20] L. D. Gruppen, *et al.* "Information Seeking Strategies and Different Among Primary Care Physicians", Mobiu. Vol.7, No.3, 1987, pp.18-26.

[21] Op Cit Callen(JL)

[22] Op Cit Gruppen(LD)

Use of Internet and E-Resources by the Users of Engineering College Libraries in Mysore City (Karnataka): A Study

A. Selvaraja, P. Asha, Y. Venkatesha and H. Adithya Kumari
DOS in Library and Information Science, University of Mysore, Manasagangothri, Mysore - 570 006, Karnataka
E-mail: selvarajalisc@gmail.com, mliscasha@gmail.com

Abstract

Today libraries become more deeply engaged in the creation and dissemination of knowledge in electronic form. In this connection, an attempt has been made to identify how the uses of engineering college library are making use of Internet resources. The study has found that the engineering databases are most frequently used as electronic resources by the engineering community. Among the resources the most regularly consulted resources among the e-resources are IEEE journals followed by technical reports. Further, the study has also found that getting the full text articles is the major difficulty faced by the users while accessing E- resources. The study has also provided suggestions to overcome the problems and improve the usage of E- resources.

Keywords: *E-resources, Engineering college libraries, E-journals, Internet, Mysore city, Users*

1. INTRODUCTION

The advancement of information and communication technology has brought out revolutionary changes in availability of various forms of electronic information resources as they have acquired major portion of library collections. The value and the use of information resources, particularly e-resources, have increased recently. As a result of which e-resources are satisfying the varied needs of students, teachers and researchers with minimum risk and time. The value and the use of e-resources have increased abundantly. Today, Engineering colleges are playing an important role in imparting technical education. The engineers, who are the outcomes of these colleges, require the latest and subtle information in their respective fields.

2. REVIEW OF LITERATURE

The literature shows that there are a number of relevant studies that have been carried out on the use of e-resources by faculty, research scholars and students worldwide. Arya and Talukdar (2010) conducted a study on the use and effectiveness of Internet services and resources in the Delhi College of Engineering Library in India. The study shows that 73% of users use the Web Online Public Access Catalogue (Web OPAC) and 71% use search engines. Respondents also use the library's e-mail facilities, online databases, e-journals and search engines. The main purposes of using Internet services are for study/research work, finding relevant information, updating subject knowledge, obtaining career advancement and communication.

Satpathy and Rout (2010) evaluated the use of e-resources by the faculty members of C.V. Raman College of Engineering (CVRCE), Bhubaneswar, with a view to examine the exposure of faculty members to e-resources. Besides, it aims to highlight the problems encountered by the users and suggests some remedial measures for its improvement. The survey is based on a structured questionnaire. Various statistical methods have been used for data analysis. The study has confirmed that faculty members are aware of various types of e-resources i.e. e-databases and e-journals. They have suggested for the improvement in the access facilities with high Internet speed and subscription to more e-resources by the Central Library of CVRCE.

Sharma and Khera (2009) conducted a study regarding the use of Internet among teachers and students in engineering colleges of Kurukshetra District, Haryana, India. They demonstrated and elaborated various aspects of Internet use such as their frequency of use, purpose of Internet browsing and knowledge about INFONET/ INDEST. Meanwhile, it highlights the suggestions made by teachers and students of the respective engineering colleges.

In a study conducted by B T Sampath (2008) regarding use of e-resources and internet by the students and the faculty memebers of engineering, medical & management in India, Kumar found that students and faculty members who participated in that survey were aware of electronic information sources and also the internet. Most of them used those sources in support of

their study and teaching and they were adept at using these sources.

Lohar and Kumbar (2008) described a survey conducted at the library of Jawaharlal Nehru National College of Engineering, Shimoga (Karnataka) to find out the use of CD-ROMS and Internet resources and services. The survey was conducted among 110 undergraduate and post-graduate students of different disciplines through questionnaire. The study also covered the impact of these resources on the students' academic work/study. It also described the problems faced while using the electronic resources. Finally, it was concluded that the main intention using CDs and Internet resources and services had been the academic interest of the student community.

Kaur and Manhas (2008) reported a survey on the use of Internet services and resources in the engineering colleges in the states of Punjab and Haryana. Data were collected by using a questionnaire and follow-up interviews with Internet users i.e. teachers and students of engineering colleges. The response rate was 80.8%. Results showed that all the respondents made frequent use of the Internet because they had access either at college or at home. The survey revealed that the majority of the respondents i.e. 65.6% accessed to the Internet from their college or workplace. More than 75% of the respondents' used the Internet services mainly for educational and research purposes. Google and Yahoo search engines were found to be more widely used than other search engines. More than 70% of the respondents felt that the Internet was useful, informative, easy to use, inexpensive and time saving.

Kumar and Kaur (2006) analyzed the use of the Internet and related issues among the teachers and the students of engineering colleges in India's three States viz. Punjab, Haryana and Himachal Pradesh. A well-structured questionnaire was distributed to 1980 teachers and students of all the engineering colleges of the three states of India under study. The response rate was 80.9%. This study demonstrated and elaborates various aspects of Internet use, such as frequency of Internet use, methods used for learning of Internet skill, most frequently used place for Internet use, purposes for which the Internet was used, use of Internet services, ways to browse the information from the Internet, problems faced by the users and satisfaction level of users with the Internet facilities provided in the college. They also provided information about the benefits of the Internet over conventional documents. The study was conducted particularly to find an answer to the question: Can the Internet replace library services? It was found that the Internet had become a vital instrument for teaching, research and learning process of these respondents. Some suggestions were set forth to make the service more beneficial for the academic community of the engineering colleges under study.

Lohar and Roopashree (2006) evaluated the use of library at the Bapuji Institute of Engineering and Technology (BIET) in Davanagere (Karnataka). A survey of 60 faculty members was conducted through a questionnaire. The analysis of the collected data covered the use of electronic resources and how the electronic resources were improving the academic carrier of the faculty and the problems that were faced in using the electronic resources. It concluded that the main intention of the use of electronic resources had been the academic interest of the users.

Kumar and Kaur (2006) analyzed the use of the Internet and related issues among the teachers and the students of engineering colleges of Punjab, India. A well-structured questionnaire was distributed to 960 teachers and students of all the engineering colleges of Punjab. The response rate was 84.2%. The present study demonstrates and elaborates various aspects of Internet use such as frequency of Internet use, most frequently used place for Internet use, purposes for which the Internet is used, use of Internet services, ways to browse the information from the Internet, problems faced by the users and satisfaction level of users with the Internet facilities provided in the colleges. They also provided information about the benefits of the Internet over conventional documents. They found that the Internet had become a vital instrument for teaching, research and learning process of these respondents. Some suggestions have been set forth to make the service more beneficial for the academic community of the engineering colleges under study.

Al-Ansari (2006) conducted a study to investigate the patterns of internet use by the faculty including purposes for use, its impact on teaching and research, internet resources that they used, and the problems faced while using the internet. A questionnaire, expert-reviewed and pilot-tested, was used to collect data from the faculty coming from four colleges of Kuwait University, i.e. Arts, Social Sciences, Sciences and Engineering. Half of the 491 potential participants were selected as the sample, with a response rate of 62.6%. A large majority had been using the computer and the internet for more than five

years. They used the internet mostly for and sending e-mails using search engines and WWW resources mainly for communication, research and publication. It helped them save time find up- to-date information and cooperate with their colleagues. Slow speed, lack of time and lack of access from home were the major problems. Most of them were interested in improving the internet using skills through formal training. Kuwait University needs to improve its IT infrastructure, including providing distance access and to provide formal training in the use of internet resources. This is the first comprehensive study of the use of the internet by the Kuwait University faculty. Their findings should help Kuwait University in its plans and programmes related to e-learning and strengthen pertinent resources and services of its libraries.

Kumar and Kaur (2004) examined the use of Internet by teachers and students in Shaheed Bhagat College of Engineering and Technology in India. They demonstrated the various aspects of Internet usage such as the frequency of Internet use, methods use for learning of the Internet skill, location for the Internet use, purpose and use of the Internet and ways to browse the information from the Internet. The research methodology helps the students improve their fields of engineering and information technology.

Gray and Langley (2002) investigated the rapid and recent transfer of library materials to electronic formats that had affected how users performed their library research and their perception of the library and had also changed how librarians did public service in academic science and engineering libraries. To meet the challenges of this electronic environment, librarians must acquire new skills and provide new services. It reflected on what had specifically changed the experience for the user, and considered the sorts of new skills public service librarians needed to have to the best serve user needs. It concluded by sharing some ideas on what the future might be like.

3. OBJECTIVES OF THE STUDY

The present study is an attempt to find out the use of e-resources by the users of engineering college libraries in Mysore city. The study has been conducted with the following objectives:

i. To know sources from which the engineering college users learn to make use of E-resources
ii. To know extent of use and the frequency of use of e-resources
iii. To know variety of e-resources the users make use of
iv. To know the place of accessing e-resources by the users of engineering college libraries
v. To assess the reasons for difficulties faced by the users in the utilization of e-resources
vi. To suggest measures to improve the existing e-resources in engineering college libraries.

4. SCOPE AND LIMITATIONS

Scope of the study is confined to the use of e-resources by the users of seven Engineering College Libraries in Mysore City. The following colleges have been taken for the study:

i. National Institute of Engineering (NIE)
ii. Sri Jayachamarajendra College of Engineering (SJCE)
iii. Vidya Vardhaka College of Engineering (VVCE)
iv. Vidya Vikas Institute of Engineering & Technology (VVIET)
v. GSSS Institute of Engineering and Technology for Women College (GSSSIETWC)
vi. Academy for Technical& Management Excellence (ATME)
vii. NIE - Institute of Technology (NIEIT)
viii. Further the study is limited to the sample of 1100 users including faculty, students and researchers.

5. METHODOLOGY

To fulfill the above objectives, a simple survey has been conducted and a detailed and well structured questionnaire has been designed and distributed to the selected 1100 users of seven engineering college libraries. Out of 1100 questionnaries 934 filled in questionnaires were received with the response rate of 85%. Out of 934 respondents, 710 are students, 150 are faculty members and 74 are research scholars.

6. ANALYSIS AND INTERPRETATION

The data have been collected through questionnaires, interview and observation that have been analyzed and presented in the form of tables. The opinion survey is restricted to students, faculty and research scholars only because they form core group of library users in engineering college libraries. The researcher has used the stratified sampling technique to choose the population for collection of data with an objective of taking representative samples from all user categories and from all engineering colleges under study. The details of the

Table 1 Details of Questionnaires Distributed, Responses Received and Percentage of Responses

Sl. No.	Name of the College	No. of Questionnaires Distributed	No. of Questionnaires Received	% of Response
1	National Institute of Engineering (NIE)	185	145	78.37
2	Sri Jayachamarajendra College of Engineering (SJCE)	185	150	81.08
3	Vidya Vardhaka College of Engineering(VVCE)	125	115	92.00
4	Vidya Vikas Institute of Engineering & Technology (VVIET)	165	130	78.78
5	GSSS Institute of Engineering and Technology for Women (GSSSIETW)	175	145	82.85
6	Academy for Technical & Management Excellence (ATME)	130	119	91.53
7	NIE - Institute of Technology (NIEIT)	135	130	96.29
	Total	1100	934	84.90

questionnaires have distributed, responses have been received and their respective percentage is presented in Table 1.

The table shows that altogether 1110 questionnaires have been distributed to the users of different engineering college libraries in Mysore. The responses received are 934, representing 84.90% of the total questionnaires distributed. The college-wise distribution of questionnaires states that 185 questionnaires each have been distributed to the users of National Institute of Engineering Library and Sri Jayachamarajendra College of Engineering Library, 125 the uses of Vidyavardhaka College of Engineering Library, 165 to Vidya Vikas Institute of Engineering & Technology, 175 questionnaires have been distributed to GSSS Institute of Engineering and Technology for Women Library, 130 have been distributed to the users of Academy for Technical & Management Excellence Library and 135 were distributed to the users pf NIE- Institute of Technology Library. Out of 185 National Institution of Engineering College users to whom the questionnaires distributed, 145 responses have been received. They represent 78.37% of the total questionnaires distributed. Out of 185 Shri Jayachama -rajendra College of Engineering Library users to whom the questionnaires distributed 150 responses have been received. They represent 81.08% of the total questionnaires distributed.

6.1 Branch-wise Distribution of Respondents

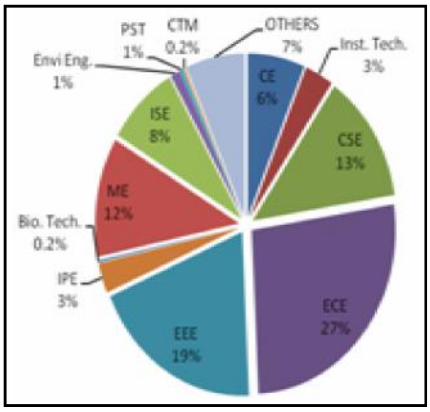

Fig.1 Branch-wise distribution

Figure 1 shows branch-wise distribution of respondents from different Engineering Colleges in Mysore based on their branch/subject they study. The highest respondents are from the branch of Electronics and Communication Engineering i.e. 250 (27%) followed by Electrical and Electronics Engineering, i.e.180 (19.3%), Computer Science and Engineering 120 (13%) and least respondents are from the branch of Construction Technology and Management 2 (0.2%).

6.2 Gender-wise Distribution of Respondents

The data of gender-wise analysis of response indicates the extent of use of libraries by male and female users. Therefore, the scholar has analysed the responses gender-wise. The table 2 presents gender-wise distribution of respondents.

Table 2 Gender-wise Distribution of Respondents

Sl. No.	Gender	Frequency	%
1	Male	488	52.25
2	Female	446	47.75
Total		934	100

The table shows that out of 934 respondents, 488 are men and 446 are women, representing 52.25% and 47.75% respectively.

6.3 Category-wise Distribution of Respondents

Table 3 Category-wise Distribution of Respondents

Sl. No.	Category of Respondents	Frequency	%
1	Students	710	76.01
2	Teachers	150	16.06
3	Research Scholars	74	7.93
Total		934	100

The table shows that out of 934 responses received from all categories and from all colleges under study, 710 are students, 150 are teachers and 74 are research scholars. They represent 76.01%, 16.06% and 7.93% respectively.

6.4 Most Frequently Used Place for Accessing to Internet

The internet is a major learning and research tool with a lot of academic resources and information to support students in their day-to-day academic endeavors in engineering college libraries; it is a modern learning and research facility provides unlimited access to information within and outside. The frequently used place of accessing the internet indicates the familiarity of the users with the internet resources.

Hence, the researcher has obtained the data relating to the frequency of library visit by the users. The data so obtained are analyzed and presented in Table 4.

Table 4 Most Frequently Used Place of Accessing to Internet

Sl. No.	Place of Accessing/ Using Internet	No. of Respondents (N=934)	%
1	College/Library	562	60.20
2	Cyber cafe	562	60.20
3	Home	512	54.80
4	Friends house	200	21.40

The above table shows that 562 users have expressed that they access to internet in their respective colleges and Cyber Cafe. They represent 60.2% each. Those who access to internet in their home are 512 and those users who access at their friends house are 200. They represent 54.8% and 21.4% respectively.

6.5 Sources of Learning/Awareness about Internet

The library users make use of different sources to learn about internet to locate and to obtain the required resources from it. Therefore, the researcher has made an attempt to collect information from the users about the sources used for learning about internet. The data so collected are analysed and presented in Table 5.

Table 5 Sources of Learning/Awareness about Internet

Sl. No.	Ways of Learning/Awareness about Internet	No of Respondents (N=934)	%
1	Self-instruction	702	75.20
2	Assistance by Library staff	360	38.50
3	Assistance by Teachers	340	36.40
4	Assistance by Friends	312	33.40
5	By Attending Formal Training	300	32.10

The above table shows that 702 out of 934 users have expressed that they learn about internet through self-instruction and 360 respondents have said that they have been assistance by the librarian. They represent 75.2% and 38.5% respectively. Those who seek the assistance from teachers are 340, users who seek assistance from friends are 312 and respondents who attend formal training are 300. They represent 36.4 %, 33.4% and 32.1% respectively.

6.6 Use of E-resources

The respondents are asked regarding various e-resources used by them. The data received from them have been presented in the table below.

Table 6 Use of E-resources

Sl. No.	Type of E-resources	No. of Respondents (N=934)	%
1	Engineering Databases	738	79.00
2	Technical Reports	610	65.30
3	E-Theses and Dissertations	596	63.80
4	E-Journals	590	63.20
5	E-Books	530	56.70
6	Online Tutorials	120	12.80

The table 6 shows that out of 934, 738users have expressed that they use engineering databases and 610 respondents have said that they use technical reports. They represent 79% and 65.3% respectively. Those who use E-theses and dissertations are 596, users who use e-journals are 590, respondents who use e-books are 530 and those who use on-line tutorials are 120. They represent 63.8 %, 63.2%, 56.7% and 12.8% respectively.

6.7 Frequency of Use of Different E-resources

The frequency of use of various e-resources by the users indicates their familiarity with different types of e-resources available in their respective libraries. Hence, the researcher has obtained the data relating to the frequency of use of e-resources by the users. The data so obtained are analyzed and presented in Table 7.

Table 7 Frequency of Use of Different E-resources

Sl. No.	Types of E-Resources	Use		
		Regularly	Sometimes	Never
1	IEEE	278 (29.8)	470 (50.3)	186 (19.9)
2	Nature	170 (18.2)	532 (57.0)	232 (24.8)
3	Emerald	110 (11.8)	440 (47.1)	384 (41.1)
4	Web of Science	380 (40.7)	390 (41.8)	164 (17.5)
5	Science Direct	470 (50.3)	290 (31.0)	174 (18.7)
6	ACM	104 (11.2)	260 (27.8)	570 (61.0)
7	Wikipedia	670 (71.7)	224 (24.0)	40 (4.3)
8	Springer Link	438 (46.9)	380 (40.7)	116 (12.4)

Note: Figures in parentheses indicate percentage

There are 278, out of 934 users, representing 29.8% of the total who use the IEEE journals regularly. Those who use IEEE journals at regular intervals are 470 (50.3%). There are 186 users who never use IEEE journals, representing 19.9% of the total respondents. Out of 934 respondents, 170 users use the Nature journal regularly. They represent 18.2% of the total respondents. There are 470 respondents who use Nature journal now and then represent 56.7% of the total. The number of users who never use nature journal are 232, representing 24.8% of the total respondents. Out of 934 respondents, 110 respondents representing 11.8%, regularly make use of emerald. There are 440 users who make use of the emerald occasionally. They represent 47.1% of the total respondents. Those groups of users who never use emerald are 384 (41.1%). There are 380 respondents who use the web of science often and they represent 40.7% of the total. There are 390 users who make use of the web of science at times. They represent 41.8% of the total respondents. Those group of users who never use Web of science are 164 (17.5%). Out of 934 respondents, 470 users use Science Direct regularly. They represent 31% of the total respondents. There are 290 respondents who use Science Direct very rarely and they represent 567% of the total. The number of users who never use Science Direct are 174, representing 18.7% of the total respondents. Out of 934 respondents, 104 respondents representing 11.2% regularly make use of ACM. There are 260 users who make use of the ACM once in a while. They represent 27.8% of the total respondents. Those groups of users who never use ACM are 570 (61%). There are 670 respondents who use Wikipedia repeatedly and they represent 71.7% of the total. There are 224 users who make use of the web of Wikipedia rarely. They represent 24% of the total respondents. Those group of users who never use Wikipedia are 40 (4.3%). There are 438 out of 934 users representing 46.9% of the total who use the Springer Link regularly. Those who use Springer Link journals occasionally are 380 (40.7%). There are 116 users who never use Springer Link representing 12.4% of the total respondents.

6.8 Reasons for Difficulties in Accessing Information

Difficulty with which the users could face in accessing information is considered as one of the indicators of its ineffectiveness. The users' opinion about the difficulty faced in accessing information helps in overcoming the limitations if any. It is necessary to know the reasons why the users face difficulty in accessing information.

So information has been sought from the respondents and the same is analyzed and presented in Table 8.

Table 8 Reasons for Difficulties in Accessing Information

Sl. No.	Reasons for Difficulties	No. of Respondents N=934	%
1	Unable to Get Full-text Journal Articles	750	80.3
2	Less Internet Access Speed	620	66.4
3	Lack of Knowledge in Computer Handling	590	63.0
4	Lack of Knowledge in Browsing E-journal	570	61.0
5	Unable to Trace Document	450	48.2
6	Unfriendly Library Staff	430	46.0
7	Lack of Training	406	43.5
8	Lack of Power Supply	120	13.0

Out of 934 users who expressed that they find it difficult to access information, 750, representing 80.3% state that they are unable to get full-text journal articles. There are 620 users representing 66.4% in total find less internet access speed as a reason for difficulty in accessing information. There are 590 users accounting for 63% who find it difficult to locate information because of lack of knowledge in computer handling. About 570 users (61%) state that lack of knowledge in browsing e-journal is the reason for difficulty in locating information. About 450 users, representing 48.2%, are unable to trace the document f and that has made them difficult to access information. Other reasons for difficulty in accessing information expressed by 430 users (46%) include unfriendly library staff by 406 users (43.5%), lack of training and lack of power supply 120 users (13%).

7. FINDINGS

i. Engineering databases (79%), Technical reports (65.30%) and ETDs (63.80%) are the most used e-resources by the users.
ii. More than 75% of the respondents have replied that they learn to use internet through self- instruction followed by 360 (38.50%) respondents who learn to use internet by attending formal training.
iii. Majority of respondents (80.3%) have replied that getting full-text journal articles is the major problem faced by the users.

8. SUGGESTIONS

i. Library should familiarize users about use of e-resources through organizing orientation programmes.
ii. The existing IT infrastructure should be reviewed to provide the reliable high speed internet connectivity at the libraries.
iii. The library should provide copying and printing facilities for downloading electronic resources at a nominal cost.
iv. Libraries should subscribe to more number of online full text e-journals required for research purpose in their area of engineering subject.
v. Majority of the respondents have suggested that they need separate browsing room to search to various e-resources.

9. CONCLUSION

The overall evaluation of library ought to be based mainly on how well it serves the needs of the users. It aims to encouraging and promoting the use of resources in ways beyond those suggested or required by the classroom. The objectives of the engineering college libraries are to supplement the instruction imparted in the class. The study has found that there are less percentages of users who make use of e-journals, e-books and online tutorials, accounting for 590 (63.20), 530 (56.70%) and 120 (12.80%) respectively against large percentage of users who use engineering databases (799; 79%), technical reports (610; 65.30%) and ETDs (596; 63.80%). There is strong need for library orientation program emphasizing on educating the users in the use of various e-resources available in the engineering libraries.

REFERENCES

[1] H. Al-Ansari, “Internet use by the faculty members of Kuwait University”, Electronic Library, Vol.24, No.6, 2006, pp.791-803.
[2] S. Arya and K. Talukdar, “Use And Effectiveness of Internet Services and Resources in the Delhi College of Engineering Library: A Case Study”, Library Hi Tech News, Vol.27, No.3, 2010, pp.12-19.
[3] E. Gray and A. Langley, “Public services and electronic resources: perspectives from the science and engineering libraries at Duke University”, Issues in Science & Technology Librarianship, Vol. 35, 2002.
[4] A. Kaur and R. Manhas, “Use of Internet Services And Resources in the Engineering Colleges of Punjab and Haryana (India): A Study”, International

Information & Library Review, Vol.40, No.1, 2008, pp.10-20.

[5] R. Kumar and A. Kaur, "Internet Use by Teachers and Students in Engineering Colleges of Punjab, Haryana, and Himachal Pradesh States of India: An Analysis", Electronic Journal of Academic & Special Librarianship, Vol.7, No.1, 2006, pp.4.

[6] M. S.Lohar and T.N. Roopashree, "Use of Electronic Resources By Faculty Members in B.I.E.T, Davanagere: A Survey", SRELS Journal of Information Management, Vol.43, No.1, 2006, pp. 101-112.

[7] M. S.Lohar and M. Kumbar, "Use of CD-Roms and Internet Resources by TRE Students in JNN College of Engineering Shimoga: A Survey", SRELS Journal of Information Management, Vol.45, No.2, 2008, pp.235-241.

[8] S. Satpathy and B. Rout, "Use of E-Resources by the Faculty Members with Special Reference to CVRCE", Bhubaneswar, DESIDOC Journal of Library & Information Technology, Vol.30, No.4, 2010, pp.11-16.

[9] S. Sharma and D.Khera, "Use of Internet by Teachers and Students in Engineering Colleges of Kurukshetra District, Haryana", Journal of Library & Information Science, Vol.34, No.2, 2009, pp.197-210.

A Study on Internet Usage Awareness among the Medical College Library Users in Salem District

A.Seeran[1], A.P.Shanmugamoorthy[2] and M.Kanakaraj[3]
[1]Annapoorana Medical College, Salem - 636 308, Tamil Nadu
[2]Coimbatore Institute of Engineering Technology, Coimbatore - 641 109, Tamil Nadu
[3]RVS College of Arts and Science, Coimbatore - 641 402, Tamil Nadu
E-Mail: drseeranlib@gmail.com

Abstract

The present study is focused on the attitude towards internet usage awareness of medical college library users in Salem district, Tamilnadu, India. The usage of the internet is a part of college students' daily routine because they have grown up with computers. The questionnaires have been received from 240 users only out of 300users. This constitutes 80% of the total response. The major findings of this study reveal that the medical college students in Salem district have good favorable attitude towards using internet on development. The result shows 69.17 % of the respondents are fully aware of internet usage and 30.83 % users are unaware of internet usage. This paper has also highlighted various problems and issues involved in handing internet and has given suggestions to improve the library services to meet the demands of the users.

Keywords: *Awareness, Internet, Library users*

1. INTRODUCTION

Internet has grown so big that it has permeated into almost all aspects of human life at home, at work, or at play. The internet has changed the course of the world completely. It has reshaped the way we communicate, work, play, and how we understand the world around us. With the rise of the Internet as a digital highway for messages and images, people now have a fast, convenient and reliable means to transmit and receive information It is now widely used as a research tool for news, education, entertainment and informal web-based education for college students that are the major users of the Internet compared to the general population. The usage of the Internet become widespread first time in college campuses in the 1990s and in many ways the internet is now a direct outcome of university-based research. Use of the internet is a part of college students' daily routine, because they have grown up with computers. It is integrated into their daily communication habits and has become an ordinary technology, as the telephone or the television. Among the applications of Internet, chatting has an important role for students in their studies and educational development. Many students are making extensive use of Internet for chating to enhance their learning. The use if internet is a staple of college students' educational experience. They use the Internet to communicate with professors and classmates, to do research and to access to their materials related to their field of study.

2. OBJECTIVES

i. To find out the purpose of using internet
ii. To find out the awareness about internet
iii. To determine the frequency of internet usage
iv. To find out the internet services
v. To find out the User Satisfaction with internet facilities

3. METHODOLOGY

For the present study, a questionnaire has been used for data collection. A random sampling technique has been adapted to medical college students of Salem district. The researcher has prepared well structured questionnaire for collecting the primary data from the users of college. Filled in questionnaire has been received from 240 users only out of 300users. This constitutes 80% of the total response.

4. ANALYSIS AND INTERPRETATION

Table 1 Category-wise Distribution of Respondents

Sl. No.	Category	No. of Respondents	%
1	UG Students	127	52.92
2	PG Students	46	19.17
3	Faculty Members	52	21.66
4	Research Scholar	15	6.25
Total		240	100

Table 1 shows that 52.92% of the respondents are under graduate students and another 19.17% are post graduate students. Remaining 21.66% of the respondents are faculty members and 6.25% research scholars.

Table 2 Awareness about Internet

Sl. No	Category	Awareness	No. of Awareness	Total
1	UG Students	82 (64.57)	45 (35.43)	127
2	PG Students	34 (73.91)	12 (26.09)	46
3	Faculty Members	38 (73.08)	14 (26.92)	52
4	Research Scholar	12 (80.00)	3 (20.00)	15
Total		166 (69.17)	74 (30.83)	240

The study of data in table-2 indicates the awareness of internet among the respondents. From the above data, there is no significant difference among awareness of under graduate and post graduate faculty members and research scholar.

Table 3 Frequency of Using Internet

Sl. No.	Frequency	No. of Respondents	%
1	Daily	112	46.67
2	Altemative Day	86	35.83
3	Once a week	22	9.17
4	Altemative Week	12	5.00
5	Once a Month	8	3.33
Total		240	100

Table 3 shows that the majority of respondents use internet daily (46.67 %), alternative day (35.83 %), and weekly (9.17 %), alternative week (5.00%) and once a month (3.33%).

Table 4 Purpose of Using Internet

Sl. No.	Purpose	No. of Respondent	%
1	Preparation of Subject	118	49.17
2	Career Information	32	13.33
3	Sending and Receiving E-mail	46	19.17
4	Entertainment	16	6.67
5	Research	15	6.25
6	General Purpose	13	5.41
Total		240	100

From the table 4 it is clear that most of the respondents (49.17%) use internet for preparation of subject 19.17% of respondents for sending and receiving emails and 13.33% respondents use for career information. Another 6.67% of the respondents use internet for entertainment, 6.25% for research and remaining 6.67 % of respondens use internet for general purpose.

Table 5 User Satisfaction with Internet Facilities Provided by the College Management

Sl. No.	Satisfaction	No. of Respondents	%
1	Fully Satisfied	132.00	55.00
2	Partially Satisfied	81.00	33.75
3	Not Satisfactory	27.00	11.25
Total		240	100

Table5 shows that only 55% of the respondents feel fully satisfied with the service provided by the college management, 33.75% partially satisfied and 11.25% have not satisfactory at all.

5. FINDINGS

The findings of respondents are awareness about Internet reveal the following facts. Out of 240 respondents 82 (64.57) UG students, 34 (73.91) PG Students, 38 (73.08) Faculty members, 12 (80.00) Research Scholar. The majority of the respondents are UG students and 38 (73.08) Faculty members and they have a habit of awareness about Internet. The findings of respondents of Frequency of using Internet reveal the following facts. Out of 240 respondents. Used internet daily (46.67 %), alternate day (35.83 %), and weekly (9.17 %), alternate week (5.00%), once a month (3.33%). The majority of the respondents use internet daily. The findings of the respondents are the purpose of using Internet. Out of 240 respondents. 49.17% use internet for preparation of subject, 19.17% for sending and receiving emails, and 13.33% respondents use for career information. Another 06.67% of the respondents use internet for entertainment, 6.25% for research and remaining 6.67%, using internet for general purpose. The majority of the respondents are for preparation of subject. Another finding is fully satisfied on internet services and sources.

6. CONCLUSION

The users of libraries of this university and its constituent medical colleges seek a need based approach to library internet services. The respondents interact with

librarians and the library resources which are on offer and the facilities provided by the medical colleges are utilized to their maximum potential and they are more than satisfied to utilize the library resources. This access to library resources has enhanced and enriched their work experience which is comparable with any other colleges throughout the world. The data collected through this course of study will serve as a benchmark for various projects of a similar nature. In future, it will provide a complete analysis of user internet and usage awareness of medical college library users in Salem district, Tamil Nadu, India.

REFERENCES

[1] SY. Bansode and SM. Pujar, "Use of internet by research scholars at Shivaji University", Kolhapur. Ann. Libr. Inf. Stud, Vol.55, 2008, pp.123-126.

[2] Kattimain, S. Parasuram and V.T.Kamble, "Awareness of Internet and Online Information Resources: A Study", PEARL: A journal of library and Information Science, Vol.4, No.3, 2010, pp.147-150.

[3] R. Kumar and A. Kaur, "Internet Use by Teachers and Students in Engineering Colleges of Punjab", Haryana, and Himachal Pradesh, India: An analysis, Elect.JAcad. Spec. Librarianship, Vol.7, No.1, 2006, No.1-13.

[4] I. Luambano and J. Nawe, "Internet Use by Students of the University of Dares Salaam", Library Hi Tech News, 2004, pp.13-17.

[5] P. Mahajan "Internet Use by Researchers: A Study of Punjab University, Chandigarh". Libr. Philo. Pract., Vol.8, No.2, 2005.

[6] K.R. Mulla and M. Chandrashakara, "Internet Uses: Mysore University Campus (India)", SRELS J. Info. Manage, Vol.43, No.3, 2006, pp.234-263.

Application of Principle Component Analysis (PCA) to Analyze Data on Library User Dependency on Formal and Documentary Sources, Information and Interpersonal Sources of MUL System

S. Perumal[1] and K. Kaliyapermal[2]
[1]University of Madras, Gunidy Campus, Chennai - 600 005, Tamil Nadu
[2]Madras University Library, Chepauk Campus, Chennai - 600 005, Tamil Nadu
Email : sperumal55@gmail.com

Abstracts

The Madras University Library system consists of four campus libraries viz., Madras University Library (MUL), Guindy Campus Library (GCL) Taramani Campus Library (TCL) and Marina Campus Library (MCL). Each library has its unique type of collection and users. In this context, to elicit opinions about the users about their dependency on formal and documentary sources, information and intrapersonal sources with the application of five scaling techniques are important to offer suggestions to improve these sources of the libraries. The data emerged out of this application is treated with Principle Component Analysis which is a multivariable statistical tool. Thus, this paper is focused on these two aspects.

Keywords: *Formal documentary sources, Information and interpersonal information sources, Informal sources, Madras University Library,Principle component analysis application, User attitudes and behaviours*

1. INTRODUCTION

The MUL system is known as Madras University Library system which consists of four campus libraries of University of Madras such as Madras University Library(MUL), Guindy Campus Library(GCL),Taramani Campus Library(TCL) and Marina Campus Library(MCL). All these libraries serve to different kinds of academics and researchers of the university and affiliated colleges. These libraries are important components of the higher education system of the country. An attempt is made in this study to find out MUL system user dependency on formal and documentary sources, information and interpersonal sources of MUL system. Further, the main focus of this paper is how to apply the Principal Component Analysis(PCA), a multivariate statistical tool for analyzing the data emerged through the applications of scaling techniques

2. NEED FOR THE STUDY

For treating large data emerged out of application of scaling technique, usually Multivariate statistical tools are more suitable. Many research scholars find difficulties to apply these tools due to lack of application knowledge. This paper mainly focuses on the application of PCA in one end and another end is to make systematic study on the MUL user dependency on formal and documentary sources, information and interpersonal sources. These attempts mainly guide the researchers who are willing to apply PCA to treat the data emerged out of conducting user surveys on dependency on formal and documentary sources, information and interpersonal sources.

3. OBJECTIVES

i. To find out the user dependency on the formal and documentary sources of the Libraries under study
ii. To identify the user dependency on information and interpersonal sources
iii. To illustrate how to treat the data emerged out of the scaling application with PCA
iv. To offer suggestions to MUL system to improve the formal and documentary sources, information and interpersonal sources.

4. METHODOLOGY

For the purpose of the study, a questionnaire has been designed and administered among the samples selected from each library by employing purposive sampling technique. Thus, 170 samples for MUL, 140 for GCL, 70 for each TCL and MCL are selected which are 10% of population of the study. The collected data has been analysed with SPSS software and PCA application is made.

5. AN OVERVIEW OF PRINCIPLE COMPONENTS ANALYSIS (PCA)

Principle Components Analysis is a multivariate statistical procedure and is gaining popularity in the field of behavioural sciences, social science as well as biology, medicine, chemistry, meteorology and geology. Dunteman says, "PCA is a statistical technique that linearly transforms an original set of variables into a substantially smaller set of uncorrelated variables that represents most of the information in the original set of variables. Its goal is to reduce dimensionality of the original data set".

The Principle Components Analysis originally conceived by Pearson (1901) was independently developed by Hostelling (1933). According to Anderson, "From the point of view of statistical theory, the set of Principle Components yields a convenient set of co-ordinates and the accompanying variances of the components characterize their statistical properties".

The goal of PCA is to explain part of the variation in a set of observed variables on the basis of a few underlying dimensions. It has no underlying statistical model of the observed variables, and focuses on explaining the total variation in the observed variables on the basis of the maximum variance properties of principal components.

Table 1 Formal and Documentary Sources

Sl. No.	Variable Code	Description
1	P310 a	Books (other than handbooks / reference books
2	P310 b	Reference books
3	P310c	Conference proceedings and papers
4	P310d	Theses and dissertations
5	P310e	Current reading materials such as periodicals / journals
6	P310f	Technical / R & D reports.
7	P310g	Standards and patent specifications
8	P310 h	Official documents including Min. of Human Resource or other publications.
9	P310i	Reprints and preprints from fellow professionals
10	P310j	Abstracting and Indexing sources/journals (including online/CD-ROM print outs)
11	P310k	Trade catalogues
12	P310l	Personal collections
13	P310m	Audio/ Video recordings
14	P310n	Forecast Publications
15	P310o	Resource materials from Publication Section of Madras University

6. AN OVERVIEW OF THE MUL SYSTEM AND THEIR FORMAL AND DOCUMENTARY SOURCES

The Madras University Library is a very old library which was established during the inception of University of Madras in 1857. It was first established in Connemara Public Library and later shifted to senate house and it was housed in the current building in 1936. This library was further divided and established into four campus libraries like GCL in 1972, TCL in 1976 and MCL in 1979. Altogether the collection of all these libraries exceeds more than six lakh documents and quite a number of e-resources especially UGC Infonet, e-resources and subscribing to number of print and non-print journals.

The formal and documentary sources of these libraries are many ranging from books, reference books, theses and dissertations, reprints and preprints, abstracting and indexing, trade catalogues, personnel collection and so on. An attempt is made by this study to identify the dependency of the respondents on formal documentary sources for their requirements for the academic and research activities. With fifteen variables on five point scale have been administered among the respondents of the study of the four campus libraries. The resulted data

have been treated with Principle Component Analysis. Thus, the tables for four principle component analysis have been generated for four campus libraries as follows and interpretations are made in the ongoing paragraphs.

7. DATA ANALYSIS AND INTERPRETATION

7.1 Types of Respondents

In the survey mostly post graduates have dominated than research scholars in all these libraries and also male participation is more.

In the table 2, the results pertaining to MUL are presented. Out of the result, only five components are extracted in the table. In the component one, eight variables are loaded with 30% of variance. The highly loaded variables such as standards and patents, specifications, indexing and abstracting sources, online journals, reprints and preprints, audio visual recordings, technical and research development reports, personal collections, official documents, and trade catalogues are highly required.

In the component two, three variables are loaded with 14.6% variance. It indicates that the respondents are also frequently depending on formal documentary sources such as conference proceedings and papers, reference books and theses and dissertations.

In the component three, three variables are loaded. The component loading is with 12.8% of variance. The component loading indicates that the MUL respondents are rarely depending on current reading materials, resource materials of publication division of Madras University and books of the libraries. In the fourth component, only one variable is loaded with 9.9% of variance. The component loading shows that forecast publications are of no use and non dependable.

The overall results and component loading indicate the nature of students and nature of activities. Thus, they mostly depend on the formal and documentary sources that are more suitable for the higher education and research. It is seen from the table 3 that in the first component of GCL only two variables are loaded with 26.0% variance.

Table 2 Principle Component Analysis(PCA) for Dependency on Formal and Documentary Sources(MUL)

Compo Nents	P310G	P310J	P310I	P310M	P310F	P310L	P310H	P310K	P310C	P310B	P310D	P310E	P310O	P310A	P310N	Total	% of Variance
1	**.820**	**.758**	**.747**	**.743**	**.732**	**.730**	**.697**	**.588**	1.26	.259	.438	.279	.004	.004	.064	4.614	30.760
2	.136	.023	263	462	294	243	248	412	**.864**	**.651**	**.518**	.066	.246	.112	.075	.2.199	14.663
3	.098	.090	.087	.002	.177	.378	.160	.024	.005	.365	.488	.674	**.649**	.627	.257	1.931	12.875
4	.069	.053	.236	.034	.117	.137	.227	.241	.112	.053	.130	.226	.537	.459	**.840**	1.496	9.974
5	.273	.162	174	217	183	089	030	404	118	390	036	495	123	405	290	1.058	7.056

The component loading and the variance indicates that the students are highly depending on reference sources and reference books for their activities.

In the component two, six variables are loaded with 16.6% of variance. This loading and percent of variance indicate that the respondents are frequently depending on audiovisual sources, technical and research development reports, special collections, official documents, trade catalogue and forecast publications.

In the component three, two variables are loaded with 14.6% of variance. This loading and percent of variance indicate that the formal and documentary sources such as current reading materials, resource materials from the publication section of Madras University as dependable sources.

In the component four, three variables are loaded with the 10.8% of variance. It shows that standard and patents, reports and reprints, theses and dissertations are rarely dependable formal sources. In the component five, two variables are loaded with 9.2% of variance. It indicates that the abstracting and indexing and conference proceedings are also rarely dependable formal information sources.

In the overall loadings and percent of variance indicate that the nature of respondents vary than the MUL respondents. Since the GCL respondents are of science background, they are highly and frequently depending on technical, research and development reports and personnel notes of their predecessors.

Table 3 Principle Component Analysis:(PCA) Dependency on Formal and Documentary Sources(GCL)

Components	P310G	P310J	P310I	P310M	P310F	P310L	P310H	P310K	P310C	P310B	P310D	P310E	P310O	P310A	P310N	Total	% of Variance
1	.458	.237	.086	.137	.352	.022	.013	.163	.201	**.854**	.254	.165	.262	**.724**	.421	6.508	26.032
2	.129	.163	.008	**.670**	**.786**	**.758**	**.578**	**.688**	.141	.029	.446	.293	.173	.060	**.601**	4.171	16.684
3	.230	.080	.037	.095	.199	.217	.517	.101	.086	.045	.059	**.809**	**.847**	.296	.104	3.657	14.626
4	**.700**	.083	**.361**	.144	.273	.184	.130	.477	.075	.103	**.512**	.060	.063	.013	.246	2.717	10.866
5	.231	**.915**	.058	.289	.172	.146	.270	.134	**.935**	.144	.094	.140	.139	.257	.011	2.314	9.254

It is seen from the Table 4 that in the first component of TCL, there are ten variables loaded with high percent of variance i.e. 38.7%. This high percent of variance indicates that the respondents are highly dependent on standards and patents, abstracting and indexing, reprints and preprints, audio visual sources, technical and research and development reports, special collections, official documents, trade catalogues, conference proceedings, resource publications of Madras University and forecasting publications.

In the component, two only one variable is loaded with 13.4% of variance. This loading indicates that the respondents are frequently depending on reference books.

In the component three, one variable with 8.5% of variance and in the component four one variable with 6.7% of variance, and in the component five, two variables with 4.4% of variance are loaded. These loadings indicate that the current reading materials and books, theses and dissertations are rarely dependable sources.

This component loading indicates that the life science students and researchers of TCL mostly depend on abstracting and indexing, standard and patents, trade catalogue, technical collections and personal sources that are more dependable resources for their activities.

Table 4 Principle Component Analysis:(PCA) Dependency on Formal and Documentary Sources(TCL)

Components	P310G	P310J	P310I	P310M	P310F	P310L	P310H	P310K	P310C	P310B	P310D	P310E	P310O	P310A	P310N	Total	% of Variance
1	**.805**	**.840**	**.709**	.633	**.783**	**.761**	**.714**	**.677**	**.587**	.360	.189	.481	**.538**	.213	**.561**	5.811	38.737
2	.195	.035	.167	.602	.276	.306	.108	.280	.564	**.762**	.142	.190	.372	.471	.127	2.019	13.459
3	.227	.110	.350	.013	.209	.124	.148	.337	.280	.130	.059	**.525**	.176	.105	.698	1.284	8.559
4	.125	.237	.286	.022	.030	.221	.213	.300	.240	.110	.026	.069	.281	**.785**	.115	1.123	4.486
5	.084	.064	.140	.037	.071	.034	.222	.054	.011	.114	**.900**	.263	.108	.049	**.099**	1.006	6.707

It is seen from the Table 5 that in the first component ten variables are loaded with high percent of variance of 41.3%. The loadings with high percent of variance indicate that the MCL respondents are depending on abstracting and indexing, personnel collections, audio visual sources, trade catalogues, theses, current journals and publications of Madras University.

In the component two, only one variable is loaded with 13% of variance. This loading indicates that they often depend on conference proceedings for their activities.

In the component three, two variables are loaded with 10.3% of variance. This loading indicates that the

respondents are rarely depending on official documents and books for their activities.

In the component four two variables are loaded with 7.2% of Variance. The low percent of loading indicates that the respondents are not depending on forecast publications and reference books.

The results indicate that for language and literature students, forecasting news and reference books are of non-dependable resources.

Table 5 Principle Component Analysis:(PCA) Dependency on Formal and Documentary Sources(MCL)

Components	P310G	P310J	P310I	P310M	P310F	P310L	P310H	P310K	P310C	P310B	P310D	P310E	P310O	P310A	P310N	Total	% of Variance
1	**.860**	**.904**	**.826**	**.523**	**.735**	**.829**	.319	**.813**	.412	.218	**.750**	**.545**	**.564**	.092	.540	6.200	41.334
2	.076	.027	.160	.405	.373	.008	.082	.225	.613	.179	.118	.108	.445	.602	.305	1.964	13.092
3	.135	.058	.179	.371	.114	.175	**.560**	.169	.529	.035	.103	.438	.011	**.675**	.180	1.549	10.325
4	.036	.100	.037	.081	.168	.091	.149	.204	.019	**.481**	.159	.436	.274	.090	**.658**	1.083	7.220
5	.143	.179	.113	.100	.076	.146	.025	.135	.022	.342	.464	.393	.517	.142	.090	0.904	6.025

Table 6 Information and Interpersonal Sources

Sl. No.	Variable Code	Description
1	P310.2 a	Personal Experiences
2	P310.2 b	Consulting experts in the field
3	P310.2 c	Consulting colleagues and Fellow professionals
4	P310.2 d	Result one's own experience
5	P310.2 e	Consulting Resources Centre Staff/ catalogues/OPACs
6	P310.2 f	Professional meetings, seminars, symposia and lectures
7	P310.2 g	Educational and Training courses
8	P310.2 h	Fellow professionals outside
9	P310.2 i	Visit to Inter disciplinary department Library and Laboratory

7.2 Principle Component Analysis (PCA) for Information and Interpersonal Sources

Information and interpersonal sources are of great use for research purposes. It is evident that these respondents are highly depending on these sources. These sources are aptly called informal sources that are usually unavailable in the library environment. However, an attempt has been made in this study to understand the dependency on the resources by the respondents of four campus libraries. The resulted data has been treated with Principle Component Analysis. Thus, four component tables for four libraries are presented here under with suitable interpretations.

The five components are extracted from all the libraries. The Table 7 presents PCA pertaining to MUL . In the first component, six variables are loaded with 49.2% of variance. The high loading of variables and percent of variance indicate that the respondents of MUL highly depend on visiting to the interdisciplinary department libraries, professional meetings, seminars, symposia, educational trainings and courses, fellow professionals, outside experienced persons are the more useful and highly dependable interpersonal sources.

In the component two, three variables are loaded with 18.4% of variance. These experts in the field, consulting collogues and personnel experiences are frequently dependable inter personnel information sources.

It is seen from the Table 8 that the first component four variables are loaded with 58.3% of variants. The high loading of variable shows that counseling colleagues and fellow professionals, educational and training works, consulting experts in the field are major dependable information and intrapersonal sources.

Table 7 Principle Component Analysis (PCA) Information and Interpersonal Sources (MUL)

Components	P 310.2 FF	P 310.2 G	P 310.2 E	P 310.2 H	P 310.2 D	P 310.2 I	P 310.2 B	P 310.2 C	P 310.2 A	Total	% of Variance
1	**.862**	**.844**	**.816**	**.810**	**.783**	**.707**	.399	.368	.499	4.433	49.261
2	.058	.138	.085	.208	.210	.115	**.779**	**.766**	**.577**	1.658	18.420
3	.231	.421	.069	.249	.096	.499	.220	.062	.482	.840	9.336
4	.287	.066	.342	.087	.440	.021	.127	.367	.097	.566	6.284
5	.196	.007	.180	.344	.110	.397	.280	.192	.163	.500	5.559

In the component two, only one variable is loaded with 14.3% of variants. It shows that result of one's own experience depends on intrapersonal sources. In the component three, two variables are loaded with 8.2% of variants and in the component four, three variables are loaded with 5.8% of variants.

These variables are nothing but to visit inter-disciplinary department libraries, personal experience, fellow professionals outside who are less dependable intrapersonal sources.

Table 8 Principle Component Analysis (PCA) for Information and Interpersonal Sources(GCL)

Components	P 310.2 F	P 310.2 G	P 310.2 E	P 310.2 H	P 310.2 D	P 310.2 I	P 310.2 B	P 310.2 C	P 310.2 A	Total	% of Variance
1	.118	.174	.161	.138	.069	.136	168	.190	.124	13.620	58.307
2	.432	.164	.005	.177	**.652**	.217	.026	.022	.243	3.343	14.313
3	.631	.020	.162	.222	.143	**.335**	**.769**	.193	.411	1.928	8.253
4	**.852**	**.254**	**.271**	.085	.606	.286	.482	.047	**.601**	1.371	5.871
5	.342	.171	.164	.553	.122	.044	.114	**1.252**	.561	1.159	4.961

It is seen from the Table 9 that in the first component, six variables are loaded with 44.7% of variance indicating that the TCL respondents are highly depending on the sources such as professional meetings, seminars, symposia, lecturers, educational trainings, consulting resource centres staff, fellow professionals outside, result of one's own experience, consulting experts in the field and personnel experience of highly dependable inter-personnel information sources.

In the component two, two variable is loaded with 15.5% of variance. This loading indicates that consulting colleagues, fellow professionals are also frequently dependable inter personnel information sources.

The results indicate that as for as dependency on interpersonal sources among the respondents of different libraries does not much vary.

Table 9 Principle Component Analysis (PCA) for Information and Interpersonal Sources (TCL)

Components	P 310.2 F	P 310.2 G	P 310.2 E	P 310.2 H	P 310.2 D	P 310.2 I	P 310.2 B	P 310.2 C	P 310.2 A	Total	% of Variance
1	**.811**	.375	**.776**	**.816**	**.819**	**.794**	**.659**	.157	.451	4.030	44.778
2	.122	.213	.130	.090	.225	.084	.537	**.820**	**.545**	1.401	15.564
3	.039	**.772**	.058	.067	.045	.295	.169	.383	.365	1.003	11.144
4	.223	.425	.170	.097	.273	.043	.178	.224	.534	.713	7.918
5	.215	.173	.461	.317	.162	.320	.185	.139	.128	**.588**	6.538

It is seen from the Table 10 that, in the first components, eight variables are loaded with 58% of variance. The high percent of variance indicates that the MCL respondents are highly depending on professional meetings, educational training courses, consulting resource centre staff, fellow professionals outside, result

of one's own experience, visit to interdisciplinary department library, consulting expert in the field, personnel experience of respondents that are highly dependable interpersonal information sources.

Components two, only one variable is loaded with 17.7% variance. This percent of variance indicates that consulting colleagues and fellow professionals are frequently dependable inter-personnel information sources.

Table 10 Principle Component Analysis (PCA) for Information and Interpersonal Sources (MCL)

Components	P 310.2 F	P 310.2 G	P 310.2 E	P 310.2 H	P 310.2 D	P 310.2 I	P 310.2 B	P 310.2 C	P 310.2 A	Total	% of Variance
1	**.896**	**.899**	**.825**	**.809**	**.868**	**.747**	**.701**	.172	**.669**	5.227	58.0874
2	.088	.033	.149	.091	.158	.199	.555	**.897**	.444	1.415	15.722
3	.168	.293	.161	.316	.143	.477	.294	.058	.413	.748	8.310
4	.159	.062	.274	.189	.272	.286	.148	.336	.244	.490	5.448
5	.022	.080	.329	.335	.142	.024	.044	.127	.301	.356	3.957

8. SUMMARY AND CONCLUSION

8.1 Findings

The dependency on formal and documentary sources varies between one library users and other, since the user groups participated in the study are heterogeneous in nature.

The Madras University library users mostly depend on standard, patents, specification, indexing and abstracting journals, reprints and preprints from R & D reports, trade catalogues and official documents that are highly dependable sources. However, they are also frequently depending on formal documentary sources such as conference proceedings, reference books, Theses and dissertations and they are not often depending on Madras University publications and forecasting publications.

The GCL users also depend on R&D reports, special collections, official documents, trade catalogues and forecasting publications, theses, reprint and preprints, standards and patents, abstracting and indexing that are also fairly dependable formal information sources.

Among TCL users, they depend on standard, patents, abstracting and indexing, reprint and preprints, and audio visual sources, R&D reports, special collections, conference proceedings, trade catalogues and publication of University of Madras along with forecasting publications. Books, current reading materials, theses and dissertations are rarely dependable sources.

Among the MCL users, indexing and abstracting, special collections, audio visual sources, trade catalogues, current journals, publication of Madras University are highly dependable formal document sources. They rarely depend on forecast publications, reference books, official documents and books.

The analysis related to information and interpersonal sources reveals the followings:

i. The MUL users depend on visiting interdisciplinary department libraries, personal meetings, seminar and symposia, education trainings, fellow professionals and outside experienced persons.
ii. The GCL users are highly depending on the consulting colleagues, fellow professionals, education and training courses and consulting experts.
iii. The TCL users are highly depending on sources such as professional meetings, seminar, symposia, educational trainings, consulting resource centre staff, fellow professional outside, own experience, experts in the field and so on.
iv. The MCL users highly depend on professional meetings, educational training courses, consulting resource centre staff, fellow professional outside, result of one's own experience, visit to the inter-disciplinary department libraries, counseling experts in field and personal experience of the respondents.

8.2. Suggestions

The formal and documentary sources are major sources for academic and researchers of the institutions. Hence, it is suggested for all the libraries under study, however it is observed that some of the formal documents such as standards, patents, specification, R&D reports are minimum in all the libraries. Subsequently, the

Government official documents, reprints and preprints are not available in the libraries such as GCL, TCL and MCL. But, it is observed that these documents are accessed and used by the users in other library like MUL. Since it is highly dependable source the libraries may take necessary steps to procure these documents to the libraries which suit the expected needs of the users.

Special collections and forecast publications are very minimum in these libraries and no action is being taken to enhance these collections. So, it is suggested to take necessary measurement to enhance these collections. The audio visual sources are also minimum in these libraries, so these may be enhanced.

It is suggested that a quite number of publications are made by University of Madras, these publications are unaware by many of the students. It is the duty of the librarians to create awareness among the users about research values of these publications.

It is suggested that the fund growth flow is not expected level over a period of few years in these libraries. So, it is suggested to enhance the budget flow of these libraries to increase the formal documentary sources.

As for as intrapersonal information is concerned, the users' perception varies between one library to the other. It suggests the university to organize number of workshops, seminars, symposia and educational training programmes.

9. CONCLUSION

The formal and documentary sources along with intrapersonal information sources are major aspects for academic and researchers of any institutions. It is the duty of any library to enhance formal documentary sources to suit the varying and ever changing needs of the users of the libraries. Unfortunately, the budget flow is non-perennial for some libraries and it is static over a period of many years. This results into major impact on the collection developments and effective functioning of the libraries. If the conditions prevail among the libraries under study they may not be effective for the academic and research supplements to the academic community for which they serve. Further, simple preservations of PCA analysis in this paper is also expected to be a guidance for the research scholars how to apply the tool to treat the large data emerged out of the applications of five scaling techniques.

REFERENCES

[1] Richard. A Johnson and Dean W. Whichern, " Applied Multivariate Analysis", New Delhi: Prentice Hall of India, 1996, pp.575.

[2] Georage H Dunterman, "Principal Components Analysis", New Delhi : Sage Publications, 1989, pp.7

[3] T.W. Anderson, "An Introduction to Multivariate Statistical Analysis", New York, John Wiely & Sons 1984, pp.451.

[4] N.Radhakrishnan and Ashok Kumar, "Opinion on E-resources in University of Madras (India) -A Case Study", PEARL - A Journal of Library and Information Science, Vol. 4, No. 1, January- March, 2010, pp.6-12.

[5] S. Perumal and K. Kaliyaperumal, "Best Practice in Madras University Library in the Context of Paradigm Shift-A Case Study", Internationalconference of 6th World congress of Librarians and Information Scientists 2011, at International Islamic University Malaysia on 16th & 17th November 2011.

Institutional Repository Initiatives in Engineering Educational Institutions in Anna University, Coimbatore Zone: A Survey

M.Santhi Visalakshi[1], R. Bala Subramani[2], S. Nirmala[3] and K. Sarangan [4]

[1]Faculty of Engineering, Avinashilingam University for Women, Coimbatore - 641043, Tamil Nadu.

[2]Department of Library and Information Science, Bharathidasan University, Tiruchirappalli - 620 024, Tamil Nadu.

[3&4]Bannari Amman Institute of Technology, Sathyamanagalam - 638 401, Erode District, Tamil Nadu

E-mail:lisbala@gmail.com

Abstract

This paper discussed institutional repositories initiative in Anna University -Coimbatore Affiliated Engineering College Libraries in Coimbatore. The main objective of this study is to investigate the awareness of Institutional Repository (IR) in an Engineering Educational institution and different aspects associated with it, such as, software, sources for user's awareness, demand of the users in changing paradigms from traditional to digital environment, etc. In the present days, libraries are also adopting the latest technologies to provide best possible services in user friendly form. This paper also examines the potential role of institutional repositories and its easiness and simplicity of use are attracting more patrons in the use of institutional repositories.

Keywords: *Institutional repository.*

1. INTRODUCTION

The Institutional Repositories (IR) is a very powerful idea that can serve as an engine of change for any Institution. . In this digital age, everyone wants contents and to be successful information service providers. So, Information Center and Libraries needs to develop services in such a way so that the end users may manipulate the content, as per their requirements. Therefore, in the present scenario, IR's are become an indispensable component for information and knowledge sharing in the scholar world. IR provides a method for capturing and maintaining today's electronic detritus so that tomorrow's scholars can understand the thinking behind the published record. Again, for the standard IRs each and every institution should have to equip its library professionals so that they can be able to cope up with the ever-growing changes in this part.

1.1 Definition: Institutional Repository

The classical definition of IR by Clifford Lynch (2003) as follows: A university-based institutional repository is a set of services that a university offers to the members of its community for the management and dissemination of digital materials created by the institution and its community members.

1.2 Benefits of Institutional Repositories

Institutional Repositories by capturing, preserving and disseminating collective intellectual capital, serves as meaningful indicators of an institution's academic quality. It has been seen that much of intellectual output and value of an institution's intellectual property is defused through thousands of scholarly journals. An Institutional Repository concentrates the institutional product credited by academic or other institutions researchers, making it easier to demonstrate its scientific, social and financial values. Thus, Institutional Repositories complements existing metrics for gauging institutional productivity and prestige.

2. PURPOSE OF IR

The repository makes the Institution's research and teaching and learning materials more visible and widely available. Students, Faculties and researchers can see and have access to the work we are doing. Many of the major funding bodies worldwide now mandate that their funded research is deposited in a repository and made freely available for others to benefit. It protects our work. The Intellectual property of the University, its staff and students is maintained always available from a well-managed source. And it provides a central system for managing the Research Assessment Exercise (RAE).

3. DIGITAL REPOSITORY SOFTWARE: OPEN SOURCE

There are number of softwares available for creating/ developing institutional digital repositories. The brief of the some are given below;

3.1 D-Space

D-Space (http://www.dspace.org) was developed jointly by the MIT library and HP. DSpace modestly describes itself as a groundbreaking digital repository system. It captures, stores, indexes, preserves and redistributes the organization research material formats. D-Space support institutional repositories and electronic records management. D-Space is being used worldwide to meet many digital archiving needs.

3.2 E-prints

E-prints open source software is a flexible platform for building high quality; high value repositories. It is recognized as the easiest and fastest way to set up repositories of research outputs of literature. E-prints (http://www.eprints.org) is the original digital repository software developed by the University of Southampton to manage an open archive. E-prints was the Open Archives Initiative (OAI) – Complaint repository software. It typically supports collections of pre-prints and technical reports often subject based in scope. Recently this software is being used/implemented to manage multidisciplinary institutional archives.

3.3 Greenstone

Greenstone (http://www.greenstone.org) is software for building and distributing digital library collections. This software is produced by the New Zealand Digital Library Project at University of Waikato and developed and distributed in cooperation with UNESCO. It has been issued a Open- Source, multilingual software under the GNU General Public License.

4. OBJECTIVES

The main objective of the study can fit to the present pilot study with slight modification and functioning IR successfully:

i. To publish and archive scholarly work of an institution locally, using authentic information sources.
ii. To enable long-term preservation of scholarly, religious, liberation work.
iii. To facilitate constituent members of an institution an easy and rapid way to publish an archive their research locally.
iv. To provide an integrated view of and act as a single entry point to scholarly work of institution.
v. To provide wider accessibility, visibility and distribution of the scholarly work of institution.
vi. To act as a self-evaluation tool for the management.

5. ENGINEERING COLLEGES OF ANNA UNIVERSITY

Anna University was established as an Unitary type of University at Chennai (formerly, Madras) in the year 1978 with four constituent institutions viz., College of Engineering, Guindy, Alagappa College of Technology, Guindy, School of Architecture and Planning, Guindy and Madras Institute of Technology, Chrompet.

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, for administrative convenience, Anna University was divided into ONE Unitary type and Five Affiliated Type Universities namely,

i. Anna University Chennai
ii. Anna University of Technology, Chennai.
iii. Anna University of Technology, Coimbatore.
iv. Anna University of Technology, Madurai.
v. Anna University of Technology, Tirunelveli.
vi. Anna University of Technology, Trichirapalli.

Anna University of Technology, Coimbatore is an affiliating type of university by an act of section of 54 of the Anna University Coimbatore act, 2006. (Tamilnadu Act No. 42 of 2006). The Government of Tamilnadu established the Anna University Coimbatore on 01-02-2007.

Under Anna University of Technology, in Coimbatore zone there are 3 government Engineering colleges, 2 Govt aided engineering colleges and 98 self financing engineering colleges and 15 stand alone institutions. They offer higher education in Engineering, Technology, Management and allied Sciences relevant to the current and projected needs of the society. Besides promoting

research and disseminating knowledge gained there from, it fosters cooperation between the academic and industrial communities.

6. METHODOLOGY

The first part of the questionnaire comprised demographic data of the respondents such as age, gender, educational qualification, total library experience, area of specialization and the type of the institution. The second part was concerned with IR development and management. The constructed questionnaire was given to subject experts for checking the content and construct validity. Based on their suggestions, changes were made and the questionnaire was distributed to the respondents.

The population consisted of librarians and assistant librarians of engineering colleges of Anna University, Coimbatore. Questionnaires were distributed to the library professionals. Out of a total of 62 questionnaires sent out, 34 were returned but only 28 were found to be suitable in all aspects.

7. FINDINGS

Table 1 shows the personal demographics details of the respondents. There was a total of 28 respondents, with21 males (75%) and 7 females (25%) Majority were in the age group of 30-40 (50%), followed by the age group 40-50 (25%).The two largest groups with the total library experience were for <10 years (42.9%) and for 10-15 years (35.7%).

Table 1 Personal Demographics Details of Respondents

Sl. No.	Demographic Variable	Classification	Frequency	%
1	Gender	Male	21	75
		Female	7	25
2	Age Group	Less than 30 yrs	6	21.4
		30-40 yrs	14	50
		40-50 yrs	7	25
		> 50	1	3.6
3	Designation	Librarian	22	78.6
		Asst. Librarian	6	21.4
4	Education	MLIS	4	14.3
		M.Phil,	22	78.6
		With Ph.D.,	2	7.1
5	Years of Experience	< 10	12	42.9
		10-15	10	35.7
		15-20	4	14.3
		20-25	2	7.1

Table 2 Documents in IR

File Formats	Respondent	%
Text(plain, pdf, html, xml)	27	96.4
Application(postscripts, rtf, ppt, zip)	22	78.6
Image(gif, jpeg, tiff, png)	18	64.3
Video(quick time,avi,mpeg)	12	42.9

It was observed that all Institutional Repositories supported Text (HTML, Postscript, PDF, Spreadsheet etc) file formats96.4%.Followed by 78.6 % follow application file format, 64.3 % follow Image file format and finally 42.9 % follow Video file format. It was observed that the total number of journal articles available in all institutional repositories which scored highest rank (Rank1). Altogether projects prepared by students, masters thesis and doctoral thesis were available in these institutional repositories (Rank2). Multimedia objects scored Rank 3. Reports, surveys, Letters and Administration related document secure least mean score and stood at last (Rank4&5).

Personal contact (Rank 1) was highly exercised promotional activity among the respondents. That was followed by „Links from library website / institutional website that scored Rank2. Less preference was given to Presentations about the Institutional Repository at administrative meetings (Rank3) and Promotional brochure (Rank4). Whereas 'Article publication in the Institutional magazine/Journal' secured least mean score and stood at last(Rank5)

Table 3 Mean Score of Documents

Types	Weighted Average Score	Rank
Pre Prints	2.488	1
Grey Literature	2.366	2
Multimedia Objects	2.115	3
Administration Related Document	1.927	5
Reports, Surveys, Letters	2.059	4

Table 4 Promotional Strategies Adopted

Promotional Strategies	Weighted Average Score	Rank
Personal Contact	4.535	1
Promotional Website/Email	4.292	2
Brochures/Pamphlets/Official Letters to Targeted Groups	3.292	4
Article Publication in the Institutional Magazine/Journal	2.971	5
Meetings and Seminars with Students/ Faculty	3.341	3

8. CONCLUSION

Institutional Repositories by capturing, preserving and disseminating collective intellectual capital, serves as meaningful indicators of an institution's academic quality. The study found that

i. All Institutional Repositories supported Text (HTML, Postscript, PDF, Spreadsheet etc) file formats.
ii. It was observed that the total number of journal articles available in all institutional repositories which scored highest rank. Altogether projects prepared by students, master's thesis and doctoral thesis were available in these institutional repositories.
iii. Personal contact was highly exercised promotional activity among the respondents. That was followed by Links from library website / institutional website.
iv. Students, Faculty members, library staff and Ph.D students were the authosrised contributors to the IRs whereas it was observed.

REFERENCES

[1] M. R. Barton and M.M.Waters, "Creating an Institutional Repository: LEADIRS Workbook", Retrieved October 18, 2005, from https://dspace.mit.edu/bitstream/1721.1/26698/1/Barton_2004_Creating.pdf 2004.

[2] S. Arunachalam, "Open Access in India: Hopes and Frustrations", Proceedings ELPUB 2008 Conference on Electronic Publishing, Toronto, Canada, 271-279. Retrieved December 15, 2008, from http://elpub.scix.net/data/works/att/271_elpub2008.content.pdf., 2008.

[3] John Bacon-Shone et al., "The Open Access Advantage", Hong Kong Open Access Committee, 2008. http://hub.hku.hk/handle/123456789/49851.

[4] University Grants Committee, Facts and Figures - Academic Year 2007/08, 25 (Hong Kong SAR: UGC, 2008), http://www.ugc.edu.hk/eng/ugc/publication/report/figure2007/index.htm (accessed 3 June, 2009).

[5] P.L.Sharma, "Institutional Repositories: An Essential tool for Information and knowledge Sharing",.

[6] Edward M. Corrado, "The Importance of Open Access, Open Source, and Open Standards for Libraries" , Science and Technology Librarianship Spring 2005.

Role of KM in Project Management Scenario at PEROT Systems Bangalore: A Study

S. Raveesh[1] and Santosh A Navalur[2]
[1]Bharat Education Society College, Jayanagar, Bangalore - 560 011, Karnataka
[2]Department of Library and Information Science, Bharathidasan University, Trichy - 620 024, Tamil Nadu
E-Mail: raveeshblr@gmail.comsantoshncsi@gmail.com

Abstract

"Knowledge Sharing is Power". This report presents the results of study into Knowledge Management (KM) performed at Perot Systems Consulting and Application Solutions (CAS) Bangalore and Noida. Project Management has been growing as a discipline for decades. From basic task planning to modern complexity management, it has evolved with the society. Today, project management is integrated in many companies and governmental organisms with strategy, via the portfolio or program management, and with the other departments, like manufacturing, human resources, legal and financial. It is a question of managing multiple products, multiple projects with interrelated resources from one or many companies, under the multiple constraints of the customers, the legal environment and the financial and market objectives. In this context, knowledge is a key point for improvement and performance. Namely, projects are temporary, which means that they start and they finish. When they start, it is better to be able reuse previous experience, in order to repeat best practices or to avoid common tricks. When they finish, it is better to be able to save or to share these best practices and tricks

***Keywords**: Knowledge management, Project management, Communities of practice*

1. INTRODUCTION

Knowledge Management is the way that organizations collaborate, create, collect, select, capture, store, share and reuse knowledge to achieve organizational objectives. It is an age-old practice but it has been an established discipline since 1995 with a body of university courses and both professional and academic journals dedicated to it. Most large companies have resources dedicated to Knowledge Management, often as a part of 'Information Technology' or 'Human Resource Management' departments, and sometimes reporting directly to the head of the organization. As effectively managing information is a must in any business to complete the project successfully for that Knowledge Management is the better solution.

2. OBJECTIVES

i. Understand the importance of knowledge Management in Project Management scenario
ii. To know how Knowledge Management practices helping for the project delivery
iii. Understand the people mindset about Knowledge Management System
iv. To understand what are the Knowledge Management practices playing effective role in Project delivery
v. How Knowledge Management is supporting to increase the Quality of projects
vi. Evaluate the existing Knowledge Management System
vii. How Knowledge management supporting to the Innovation in an organization

3. METHODOLOGY

A survey has been carried out using set of Questionnaire, it had 12 useful questions to understand how Knowledge Management System (KMS) playing effective role in project excellence. And it helped a lot to understand what the KM practices are playing effective role for the project success and how they are supporting to improve the quality of the projects.

3.1 Knowledge Management

Knowledge Management is the way that organizations collaborate, create, capture, store, share and reuse knowledge to achieve organizational objectives

3.2 Project Management

Project management is the application of knowledge, skills, tools and techniques to a broad range of activities in order to meet the requirements of the particular project.

A project is a temporary endeavor undertaken to achieve a particular aim. Project management knowledge and practices are best described in terms of their component processes. These processes can be placed into five Process Groups: Initiating, Planning, Executing, Controlling and Closing.

3.3Momentum of Knowledge Management

The last few years have seen a rapidly growing interest in the topic of knowledge management. 'Leveraging Knowledge for Sustainable Advantage' was the title of one of the first conferences (in 1995) that brought knowledge management onto the management agenda. From 1997 a surge of books, magazines and websites have come onto the scene. Today most of the large organizations have some form of knowledge management initiative. Many companies have created knowledge teams and appointed CKOs (Chief Knowledge Officers).

3.4 The Initiation of KM for Project Management

Project management has been growing as a discipline for decades. From basic task planning to modern complexity management, it has evolved with the society. Today, project management is integrated in many companies and governmental organisms with strategy, via the portfolio or program management, and with the other departments, like manufacturing, human resources, legal, financial. It is a question of managing multiple products, multiple projects with interrelated resources from one or many companies, under the multiple constraints of the customers, the legal environment and the financial and market objectives.

In this context, knowledge is a key point for improvement and performance. Namely, projects are temporary, which means that they start and they finish. When they start, it is better to be able reuse previous experience, in order to repeat best practices or to avoid common tricks. When they finish, it is better to be able to save or to share these best practices and tricks. But, the reality is different: the pressure on the project members does not allow them to take so much time as required to put on paper their experience.

Secondly, the information is not instantly available as the project begins. The actual structures for knowledge sharing have often a problem of context description, which allows the project manager to match his project with previous ones. Namely, even if the project has the same objectives, for instance, that another one, this will not mean that experience of previous project will be useful for the new one.

4. QUESTIONS/CHALLENGES FOR KNOWLEDGE MANAGEMENT IN PROJECTS

i. How can we efficiently and effectively keep knowledge from ongoing projects? What is useful, value-adding, and what must not be saved?
ii. What is the role of structures, like Project Management Offices, in this experience sharing process?
iii. A human network is better than a database, but how can we organize and maintain a performing network for knowledge and experience sharing? How can we avoid the perverse effects, like experts who hide their skills in order to not be solicited too much?
iv. As forecasts are always wrong, how can we improve them by using experience? Can we make more reliable estimates, curves, and targets?
v. One of the most valuable resources in each project Management Scenario is Time Management. How can KM cut down the employee's time and increase the Quality of the project with minimal cost.

5. KM INITIATIVE 4 PHASE APPROACH TO SUPPORT PROJECT:

The Knowledge Management initiative at Perot Systems CAS started in the year 2006, in a 4 phased approach in order to meet support the projects and organizational golas. The 4 phases are as follows:

Phase I - Audit & Identify Requirements
5.1 KM Audits

Perot Systems Knowledge Management team successfully did 27 audits across Verticals, Communities, and Horizontals over 70 audiences involved in various projects.

5.1.1 KM's Performance Goals

Main Goals in this phase are:

i. Increase Profitability of Projects: Re-Use
ii. New Revenue Streams: Better cross-selling and up-selling
iii. Associate Satisfaction: R&R of Knowledge Work,
iv. Customer Satisfaction: Knowledge continuity
v. Reduce attrition and effects: Meaning full work, Knowledge retention for better project performance

Phase 2 - Near Term "Winning the Market"

- **80-20 formula**

80% Sales & Sales Support Projects Focused

- Target users: Sales, BDG, RRC, Senior Managers, CCG, Legal/Finance/RMO

i. Build a Content Library for RRC and Sales
ii. Provide a Collaborative Content Space for New Opportunities
iii. Launch Sales CoPs with focus on: Pain points, strategies for generating new leads, conversion, cross/ up-selling for existing clients, new domains
iv. Winning the Market"

- **80-20 formula**

20% Delivery Projects Focused

- Launch and Sustain CoPs: Practice & Technology CoPs
- KM rollout in Large Accounts

i Account & Project level Content Management
ii Account level knowledge sharing session or newsletters

- **Others**

i. 1-day conference on project sharing ("Knowledge Fair")
ii. Cultural foundations
iii. Project Portals
iv. Events – e.g. Code Olympics
v. Social Networking
vi. CoPs & Social Networking

- Communities of Practice (CoP's)

Practice CoPs launched

i. Project Management, ITIL, Testing
ii. 16 sessions across 6 weeks
iii. With over 300 associates in participation
iv. PMP Study Groups at Noida and Bangalore
v. Sales & Technology CoP's launched soon

5.2 KM Technology Platform

5.2.1 Feature Requirements Document Ready

5.2.2 Evaluated Market Options

Tier 1 Products

i. Demos from Documentum, Humming Bird, FileNet
ii. Very costly in purchase model
iii. Will work out cheap in Partnership or SI model
iv. Tier 2 Products
v. Lack mature architecture
vi. Doubts on support and future enhancements

5.2.3 In-house Option

I Share Point Solutions

i. Limited to Content and Portal Management to support all projects
ii. Weak on Collaboration and KM functionality

II Evaluating other options that can be delivered in-house

i. Hybrid platform – Share Point + other tools
ii. Explore usability of Open Source Technologies & Freeware Tools

5.3 PSC Connect

I Delphi connect

i. Leveraging Delphi Expertise to enhance the participatory knowledge sharing among the people working in the projects
ii. Participated in Delphi Conference and Workshop

II Other KM Initiatives Connect

i. Connected with other units/groups in PSC that are currently implementing or planning to initiate KM for different projects
ii. Leverage their ideas/plans in our initiatives
iii. Explore possibility of joint investment on KM Technology Platform

5.4 Branding KM in CAS (Consulting and Application Solutions at Perot)

- Create a branding for KM@CAS

i. Give a deep connecting name to the initiative
ii. Go public with charter and purpose
iii. Props like Banners/Badges/Diaries/Table top items etc.
iv. Positive Word of Mouth through influential CoPs
v. Knowledge Events/Fairs/Contests/Workshops
vi. A published Reward and Recognition scheme for Knowledge contributors
vii. Newsletters

Phase 3 - Medium Term "CAS wide KM"

The Medium Term objectives are:

i. Rollout across all verticals/horizontals
ii. Significant impacts beyond basic usage, workflow
iii. Enterprise-wide CoPs
iv. Cross-project, cross-vertical best practices
v. Surveys, questionnaires

Phase 4 - Knowledge Organization (2008 and ahead)

i. KM maturity models
ii. Superior estimation, delivery
iii. Innovative culture
iv. MAKE award!

Support Obtained

- Executive support for Study groups in CoPs
- Support from Technology Team to create Knowledge portal
- Knowledge Worker parameters into KRAs for Manager Level and above

6. UTILIZATION OF PROJECT KNOWLEDGE MANAGEMENT SPACES

After four phase implementation of KM for Project management Project teams can use knowledge spaces to assimilate knowledge gained during the project. The Project Manager or the owner of the knowledge space must oversee access to the knowledge space and quality and quantity of content. Project teams can utilize their knowledge space:

i. To maintain project information (Business and technical process).
ii. To transfer knowledge in transition.
iii. Can be used to collaborate in distributed teams (on-site/offshore).
iv. Can be used during induction of new resources to the project

7. CONCLUSIONS

Management is a fastest growing area and people who are involving in project management are always in stress. In each project, each resource is restricted. So there is an immense necessity to save the resources like time, money and human resource. How to cut down the project workers time? How to solve project-handling problems? How to find and fill the knowledge gap? How to minimize the resources and maximize the revenue?, are critical paths to Knowledge Management System.

A Knowledge Management System is playing an effective role in Project Management Scenario, but still there are some challenges like creating Knowledge sharing culture, innovation through KM and Return on Investment (ROI). Although it's my pleasure to mention that Project Managers, Team Leads and project associates are agreeing that KM is a sharp tool to save resources, practice like reusable components saving 30% to 40% of the associates' time, time is nothing but money for employees. Communities of Practice and forums are playing key role while solving project execution and handling problems, Best practices are the fillers to company's revenue. Knowledge sharing sessions are supporting to the innovation.

REFERENCES

[1] Project Management Guidebook; By Method123 ; ©2003 Method123 Ltd, ISBN 0-473-10445-8
[2] Chris Collison and Geoff Parcell, "Learning to Fly: Practical Knowledge Management from Leading and Learning Organizations ", Capstone Publisher; 2 Pap/Cdr edition (January 14, 2005) ; ISBN-10: 1841125091.
[3] Madanmohan Rao, "Knowledge Management Tools and Techniques Practitioners and Experts Evaluate KM Solutions", Elsevier Publication, January 2004, ISBN: 0-7506-7818-6
[4] Encyclopedia of Knowledge Management – David G. Schwartz, Bar-Ilan University, Israel, Copyright © 2006 by Idea Group Inc.
[5] http://www.pmi.org
[6] http://www.softwareprojects.org/
[7] http://www.managementhelp.org/plan_dec/project/project.htm

Indian Journal of Information Science and Services (IJISS)

(ISSN: 0973-8967)
(A half-yearly refereed research journal on Library and Information Science)

Information for Authors

1. All papers should be addressed to The Editor-in-Chief, Indian Journal of Information Science and Services (IJISS), Bannari Amman Institute of Technology, Sathyamangalam - 638 401, Erode District, Tamil Nadu, India.
2. Two copies of manuscript along with soft copy are to be sent.
3. A CD-ROM containing the text, figures and tables should separately be sent along with the hard copies.
4. Submission of a manuscript implies that : (i) The work described has not been published before; (ii) It is not under consideration for publication elsewhere.
5. Manuscript will be reviewed by experts in the corresponding research area, and their recommendations will be communicated to the authors.

Guidelines for submission

Manuscript Formats

The manuscript should be about 8 pages in length, typed in double space with Times New Roman font, size 12, Double column on A4 size paper with one inch margin on all sides and should include 75-200 words abstract, 5-10 relevant key words, and a short (50-100 words) biography statement. The pages should be consecutively numbered, starting with the title page and through the text, references, tables, figure 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. List only one reference per reference number. Each reference number should be enclosed by square brackets.

In text, citations of references may be given simply as "[1]". Similarly, it is not necessary to mention the authors of a reference unless the mention is relevant to the text.

Example

[1] K.C.Garg, B.Dutt and Suresh Kumar, "Scientometric Profile of Indian Science as Seen Through Science Citation Index", Annals of Library and Information Studies, Vol. 53 No. 3, 2006, pp.114-125.
[2] S.Mohamed Esmail, G.Vetrikondan and M.Raja, "Information Access Pattern of Teaching Staff and Research Scholars of Natural Science in Annamalai Univiersity", Indian Journal of Information, Library and Society, Vol. 17 No. 1-2, 2004, pp.17-26.

SUBSCRIPTION

The annual subscription for IJISS is Rs.500/- which includes postal charges. To subscribe for IJISS a Demand Draft may be sent in favour of IJISS, payable at Sathyamangalam and addressed to IJISS. Subscription order form can be downloaded from the following link http:// www.lib.bitsathy.ac.in./ ijiss.html.

For subscription / further details please contact:

IJISS
Learning Resource Centre
Bannari Amman Institute of Technology
Sathyamangalam - 638 401, Erode District, Tamil Nadu Ph: 04295 - 226340 - 44
Fax: 04295 - 226666 E-mail: ijiss@bitsathy.ac.in Web:www.lib.bitsathy.ac.in

Indian Journal of Information Science and Services

Volume 6 Number 1& 2 January - December 2012

CONTENTS