INDIAN JOURNAL OF LIBRARY AND INFORMATION SCIENCE

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

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

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Indian Journal of Library and Information Science

September - December 2012

Volume 6 Number 3

Contents

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Indian Journal of Library and Information Science
Volume 6 Number 3, Sept - Dec 2012

Cloud Computing Technology: A Boon for Library and Information Services

M. Gopalaswamy*, S.N. Kumar**

Abstract

Information technology has changed the lifestyle of mankind in every manner. Application of Information technology has influenced every area of specialization, library and information centers are no exception. Right from the beginning of its inception, libraries are found embracing the new technologies to improve its services and perform effectively to satisfy the information needs of its end user. As the readers are expecting more efficiency in services, Library and Information Centers are adopting new trendy technologies to cater the needs of its users. As a result, efforts are being made to adopt the internet, mobile technology many more.... in the field of library and information services. The next generation of internet i.e, web 2.0 has had a novel influence on how people interrelate and connect with each other, both from the individual view point and a business. Now in the era of digital libraries, a new concept is emerging called Cloud Computing, which offers information retrieval systems, particularly digital libraries and search engines, a wide variety of options for growth and reduction of maintenance needs and encourages efficient resource use. In simple terms, it is the ability to use resources and tools through the internet without really owning or being near them. This paper reveals the basic features of the emerging technology, its service models, its benefits to the libraries and some novel examples of selected libraries worldwide where cloud computing technology is adopted.

Key word: Cloud computing technology; ICT; Digital library.

Introduction

In this era of information technology, the facets of work and personal life are moving towards the concept of availability of everything online. Understandings this trend, the big and giant web based companies like Google, Amazon, Salesforce.com came with a model named 'cloud computing' the sharing of web infrastructure to deal with the internet data storage scalability and computation. The National Institute of Standards and Technology defines the cloud computing 'a model for on-demand network access to a shared pool of configurable computing resources that can be rapidly provisioned and released with minimal management effort service provider interaction'.

Cloud computing is an online service model by which hardware and software services are delivered to customers depending upon their requirements and pay as an operating expenses without incurring high cost. Basically cloud computing is a set of services that provide infrastructure resources using internet media and data storage on a third party server.

The term 'cloud' is used to indicate the whole of computing services accessible via the Internet. It is an all-encompassing description of the complex internet connected networks that exist in datacenters all over the world that power services and applications behind the scene.

As a metaphor for the Internet, ''the cloud'' in a familiar cliché, but when combined with ''computing'', the meaning bigger and fuzzier. In recent years the term 'cloud computing', has been vital in the world of information technology. Cloud computing are changing

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(Received on 03.10.2012, accepted on 25.11.2012)

the way. Information technology is implemented in organizations today, transforms a way we design, build and deliver applications and the architectural consideration that enterprises must make when adopting and using cloud computing technology.

Cloud computing is rather a new approach to the use of shared computing resources, a substitute to having local servers handle applications. A large number of computer servers and other resources are group together and offers their combined capacity on an on-demand and, pay-per-use basis. The end users usually do not have any idea where the servers are positioned, they just only login. Cloud computing, a new technology is basically originates to serve-up the high-tech industries and corporate enterprises which are encouraged to implement various state-of-the-art information technologies to improve their business operations because of rigorous market competition and a vividly changing business. Libraries now a days are changing unaffected by the new technology which a serving a lot to the firms and high-tech industries with its beneficial applications and services. Adopting new technology like cloud computing to the libraries can promote them in its core areas such as technology, Data hosting archives, information and community.

To summing up, we can say that, cloud computing is a model for enabling ubiquitous, convenient, on-demand network access to a shared pool of configurable computing resources (eg, networks, servers, storage, applications and services) that can be rapidly provisioned and released with minimal management effort of servies provider interaction.

The Concept of Cloud Computing

The cloud computing is considered as fifth generation of computing with reference to mainframe, personal computer, client server computing and the web. In other words, cloud computing is a construct that allow us to access applications that actually reside at a location other than the computer or other Internet-connected device, like distant datacenter. It allows the users to use applications and access the information from any computer with internet access. The benefits of cloud computing lies in the fact that, other company hosts the application and handle the costs of servers and manage the software updates, and on the basis of contract one will pay less for services.

Features of Cloud Computing

Cloud Computing have following characteristics.

1. Availability of Infinite computer resource on demand:- Cloud vendors bring emergence of large computing infrastructure availability. Organizations acquire these on demand basis. The advantage is that organizations donot need to set up servers for their requirements.

2. Ability to pay for the use of computing resources:- Cloud billing model is very different from the traditional billing techniques. Typical billing models include per-user billing, per –GB billing or per user billing.

3. Cloud computing does not involve long-term commitment to use the computing infrastructure:- The vendor does not enforce long-term usage of services.

4. Cloud computing does not comprehend any eloquent capital expenditure for any organization:- In cloud computing organizations just use the computing services without buying it. i.e. hiring the computing resources instead of buying them.

5. Location independent resources:- Services are available from any location, i.e. ubiquitous network access, which enables the resources to be accessed from any where.

6. Free of contracts:- Cloud computing can be ordered online without detailed formal contracts.

Types of Cloud

There are three major categories of cloud services available, they are,

Software as a service (Saas)

Applications or software is delivered as a service to the customer who can access the program from any online device. An instance of software runs on the cloud and services multiple end users or client applications. The most extensively known example is salesforce.com. Google Apps also offering basic business services including email and word processing. Services like Quicken online, various search engines, social networks, wikipedia, encyclopedia Britannica on the internet are also falls into this category. There is usually little customization or control available with these applications. However, subscribers benefit from low initial costs, 24x7 support services, and free of hosting, installing, upgrading or maintaining the software.

Platform as a Service (Paas)

With this, a computing platform is provided which supplies tools and a development environment to help companies build, test, and deploy web-based applications. This is the newest entry where an application platform is offered to developers in the cloud. Developers write their application to a more or less open specification and then upload their code into the cloud where the application is run, being able to scale up automatic ally as usage for the application grows, Mosso, Heroku, Google App engine, Engine yard, Joyent, force.com falls under this type of cloud. Applications which are built using these provider's services, however, are usually locked into that one platform.

Infrastructure as a Service (IaaS)

This type of cloud computing is also referred to as HaaS or Hardware as a Service and it involves both storage services and computing power-over the network i.e. Internet. Amazon's Web Services, One of the major players in this area, offers two main products including the Elastic Compute Cloud (EC2) which provides computing resources and Simple Storage Services (S3) for data storage. Other than this, Eucalyptus, Gogrid, Right Scale and Linode are some examples of IaaS. Developers and system administrators obtain general compute, storage, queuing and other resources and run their applications with the fewest limitations. This is the most powerful type of cloud, in which virtually any application and any configuration fits the internet can mapped to this type of service.

Infrastructure Models of Cloud Computing

There are about Four basic service Modes of cloud computing viz.,

Private Cloud

The cloud infrastructure is provisioned for exclusive use by a single organization comprising multiple consumer (e.g., business units). It may be owned, managed, and operated by the organization, a third party, or some combination of them, and it may exist on or off premises.

Community Cloud

The cloud infrastructure is provisioned for exclusive use by a specific community of consumers from organizations that have shared concerns (e.g., mission, security requirements, policy and compliance considerations). It may be owned, managed, and operated by one or more of the organizations in the community, a third party, or some combination of them, and it may exist on or off premises.

Public Cloud

The cloud infrastructure is provisioned for open use by the general public. It may be owned, managed, and operated by a business, academic, of government organization, or some combination of them. It exists on the premises of the cloud provider.

Hybrid Cloud

The cloud infrastructure is a composition of two or more distinct cloud infrastructures

(private, community, or public) that remain unique entities, but are bound together by standardized or proprietary technology that enables data and application portability (e.g., cloud bursting for load balancing between clouds).

The cloud in the Library

Libraries information centers have the greater opportunity to improve their services and relevance in present day situation i.e., information society. Cloud computing is one avenue for this move into the future. It can bring several benefits for libraries and give them a better and different future.

The cooperative effect of libraries using the same, shared hardware, services and data-rather than hosting hardware and software on behalf of individual libraries-can result in lowering the total costs of managing library collections and enhancing both library users experience and library staff workflows.

While local library systems served an important purpose earlier in library automation now represent a tremendous duplication of effort. Each library builds and maintain a database, buys equipment and installs and updates the software. Infact, some libraries can get stuck in perpetual upgrade mode, while involves lots of testing and retesting and time-consuming customization.

Cloud computing and Libraries

Libraries have been using cloud computing services for over a decade. Online Databases are accessed as cloud applications. Large union catalogs can also be defined as cloud applications. Apart from this, library community can apply the concept of cloud computing to amplify the power of cooperation and to build a significant, unified presence on the web. This approach to computing can help libraries save time and money while simplifying workflows.

The potential areas of improvement could include

- Most library computer systems are built on pre-web technology
- Systems distributed across the Net using pre-web technology are more expensive to integrate.
- Libraries store and maintain much of the same data hundreds and thousands of times.
- With library data scatter across distributed systems the library's web presence is weakened
- With libraries running independent systems collaboration between libraries is made difficult and expensive
- Information seekers work in common web environments and distributed systems make it difficult to get the library into their workflow.

In simple words, we would say that, the main use of cloud services by libraries is either taking advantage of freely available applications for internal use in the library or for social networking purposes within their own community. It did not reveal a move to use the cloud for building the larger library community into a force on the web. From the viewpoint of librarians, they have begun to consider the advantages of cloud computing for efficiency and collaboration, but the types of services being used imply this is only efficiency and collaboration within their own libraries, again, not taking advantage to reach out across the community to build system-wide efficiencies and collaboration.

Library community can apply the concept of cloud computing to amplify the power of cooperation and to build a significant, unified presence on the web. This new, unified presence has the potential to give libraries significant scale and impact on the web in a manner similar to major search engines, online booksellers, and social networking sites.

Information Services Using Cloud Computing

Novel instances of libraries where cloud computing adopted for providing effective services are as follows:

Online Computer Library Center

Online Computer Library Center is a nonprofit, membership, computer library service and research organization dedicated to the public purposes of furthering access to the world's information and reducing the rate of rise of library costs, that means OCLC has been functioning us a cloud computing vendor. They provide cataloging tools over the internet and allow member institution to draw on their centralized data store. This centralized database allows for the sharing of catalog records between libraries and greatly reduces the time spent in cataloging in coming material.

Worldcat is another example of cloud computing architecture drawing on the union catalog infrastructure they have built up over the years.

Library Thing

One of the site that combines aspects of social networking and cloud computing is library thing. This offers services which are just like social networking site, authorizes people to contribute information and suggestion about books and allows them to interconnect globally to share interests. This site also contributes web services for libraries after paying a nominal fee, allows them to draw on the vast database of recommendation and other users in library thing.

Amazon and Google

These are among the leading enterprises also providing solutions for libraries by having partnerships between library automation vendors. Amazon has been developing for year's large web services architecture and they now offer hosting services for data which are priced at GB per month and CPU per hour rates. Users have to pay what they actually use.

Google for years is working for the dissemination of information also taking interest in library solutions going to implement " App engine" which provides a hosted service for application within their server farms and on massive and highly redundant storage system. IBM is showing curiosity in the world and has begun developing as infrastructure known by the name " Blue Cloud"

Kindle and Mobile Me Services

In the e-book arena, Amazon is providing some reading services with "kindle". If one have wireless connection, can purchase and read a rapidly growing list of books and periodicals from the kindle no matter for the location with this service largest text can be downloaded in spur of seconds.

Another service is "Mobile Me" provided by Apple computing. The concept is distributed calendaring and messaging no matter which device is being used. Modifications made via one device are instantly reflected on all of the devices and computers that are tied into "Mobile Me". This has many applications in the library world for eg., with the library acting as the gatekeepers, institutions could provide mobile access to say a list of articles to their students simply by selecting them and giving them a code which would bring up the lists of articles from a vendor's cloud. The same cloud works for preprint archives, data archives and digital object repositories.

Reed Elsevier

It is a service provider for scientific information working with hospitals to provide just in time information to medical technicians as they need the information. It is capitalizing on the cloud computing model. There is the possibility to place monographic and article content or even technical manuals. So that technician and other medical personnel can get assistance exactly when they need it. This utilizes the cloud computers and other devices used in the medical profession can be tied into the data and application provided by Elsevier from anywhere.

Seer Suite

This was developed as a result of extensive research and development with the aim of enabling efficient dissemination of scientific information and literature, Seer Suite refers to a collection of open source tools that provide the underlying application software for creating academic search engines and digital libraries such as CiteseerX., which is an application instance of Seer Suite, a framework for building digital libraries, repositories and search engines. This autonomous citation indexing and extensive document metadata from documents crawled from the web across computer and information science and related fields. Cloud computing is particularly attractive choice of CiteseerX as it offers information retrieval systems, particularly digital libraries and search engines, a wide variety of options for growth and reduction of maintenance needs and encourages efficient resource use. The dynamic and elastic provisioning features of a cloud infrastructure allow rapid growth in collection size and support a larger user base, while reducing management issues.

DuraSpace

Dura Space is a hosted service and open technologies to help organizations and end users effectively utilize public cloud services. Built upon existing cloud services that can work on Amazon, Atmos, Sun, Rackspace and other cloud services.

Chronopolis Project

Chronopolis Project is designed primarily on a preservation storage system. Chronopolis tools also monitors files and does auditing.

Terrapod

Terrapod is a digital video library, which allows us to outsource, upload and collection of data to the creators of the content.

Advantages of Cloud Computing for Library and Information Center

The advantages of cloud computing includes,

- Helpful in participate in the web's information landscape
- Increased visibility and accessibility of collections
- Reduced duplication of effort from networked technical services and collection management
- Streamlined workflows, optimized to fully benefit from network participation
- Co-operative intelligence and improved service levels enabled by the large-scale aggregation of usage data
- Make libraries greener by sharing computing power thus reducing carbon footprints.

The major vision is to use cloud computing to deliver library resources, services and expertise at the point of need within user workflows and in a manner that users want and understand. It should free libraries from managing technology so that they can focus on collection development, improved services and innovation. The cloud computing model will encourage libraries and their users to participate in a network and community of libraries by enabling them to reuse information and socialize around information. It can also create a powerful, unified presence of libraries on the web and give a local group and global reach.

In the concluding remarks we can say that, apart from having many advantages, several difficulties must be overcome for cloud computing to be used on a large scale: the first one is the standardization of services offered by cloud vendors. Secondly, the limited support to relational database offered by current cloud solutions. And finally, privacy of data located in a cloud. Once all of these difficulties will be surmounted, cloud computing will have the possibilities to be a massively used paradigm.

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Indian Journal of Food and Chemical Toxicology	3	22000	800
Indian Journal of Food Chemistry	3	37000	1100
Indian Journal of Food Engineering	3	25000	800
Indian Journal of Forensic Medicine and Pathology	4	12000	576
Indian Journal of Forensic Odontology	4	3000	288
Indian Journal of Genetics and Molecular Research	2	4800	262
Indian Journal of Library and Information Science	3	7200	600
Indian Journal of Nutrition & Food Sciences	3	38000	900
Indian Journal of Obstetrics and Gynecology	2	1500	200
Indian Journal of Pathology: Research and Practice	3	22000	915
Indian Journal of Pediatric Education	4	3000	150
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Indian Journal of Library and Information Science
Volume 6 Number 3, Sept - Dec 2012

Learning Object Repositories an Emerging Knowledge Management Tool for Sharing and Reusing Learning Resources

Purushothama Gowda M*

Abstract

In today's knowledge-driven society, libraries attached to the academic institution are finding it very difficult to manage their knowledge resources and cope up with ever changing and diversified demands of the user community of the academia. Knowledge resources have gained importance and hold the key to scholarly teaching, research and learning environment. Against this backdrop, Resource Learning Centers(RLC) want to equip their students, research scholars and teaching faculties with necessary skills to make them ready to take on the challenges of an ever-evolving society. This requires an educator who is no longer only 'dispenser of knowledge' but also a 'facilitator of learning'. A Learning Object (LO) is a 'modular digital resource', a discrete piece of content that has educational value. Learning objects that are stored in database or archives are called Learning Object Repositories (LOR). Faculty members, research scholars and students can make use of these LOR simultaneously and within and between RLCs / academic institutions and enhance the equality of teaching, research and learning process. This papers highlights the concept of LOR and discusses the need for LOR in the RLCs for effective teaching, research and learning. It explores some other practical problems emerging in this context , like academic community participation, quality of learning objects, quality of metadata, etc.

Introduction

Information Technology (IT) era is era of global competition where the society is fueled by knowledge. In order to meet the modern challenges of the new education, research and training needs of this society RLC/ library have to cope up to the shifting demands of the institutions and the changing aspirants of the students, research scholars and faculty members.

There is need to teach, guide differently to embrace new ITs and exploit effective ways of teaching, research and learning. Past research provides ample evidence to show that *how* faculty teaches is as important as *what* the faculty teaches, not only in terms of its impact on the process skills the student develop, but also in terms of the content information that they learn. The goal must be to equip students and research scholars with well developed skills that enable them to be lifelong learners, ready to face the challenges of an ever-changing global society. Developing the IT skills in students and research scholars for an educator who is a 'facilitator of learning' and no longer only a 'dispenser of knowledge'.

In a IRC, collection of resources alone cannot provide the perfect guide to creating such a learning environment, there are resources that can help us as we consider new ways to teach and to facilitate learning, knowledge sharing and management.

Digital repository

A digital repository or a "collection of digital objects" is where digital content are stored and can be searched and retrieved for later use. The term 'repository' is used to emphasize the fact that many people may contribute digital objects to be shared among a community. Digital repositories may include search

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(Received on 11.04.2009, accepted on 22.05.2009)

outputs, journal articles, theses, learning objects, audiovisual objects, presentations, learning materials and research works.

Learning Objects (LOs)

A Learning Object (LO)is any piece of information that can be used to contribute to a learning experience. Los are produced by bringing together subject knowledge and pedagogical expertise of the knowledge developer. An LO can be single page of text , a graphic animation or simulation with some learning objective. Alternatively it can be a composition of other Los.

LO can be defined as "any digital resource that can be reused to support learning" [1] and an independent and self unit of learning content that is predisposed to reuse in multiple instructional contexts" [2]

LOs are building blocks of learning. This is a little bit like building a house. Two different houses may contain many of the common elements such as the type and number of doors or windows but everyone doesn't want exactly same house. LO recognize that it is important to be able to tailor each house based on individual needs but that there are many common elements that the builder can reuse across different houses.

Metadata and standards

Metadata is "structured data which describes the characteristics". It shares many similar characteristics to the catalogue that take place in libraries, museums and archives [3]. Metadata is the information about the learning about the learning object that identifies it. For example, labeling makes it easy to identify which ice cream is inside a container without having to open up the container and look inside. The type of ice cream (content) in the ice cream container (structure) is identified by the labeling (metadata).

Metadata is used to describe what the learning object contains; metadata is what makes the LO reusable.

Learning Object Repository (LOR)

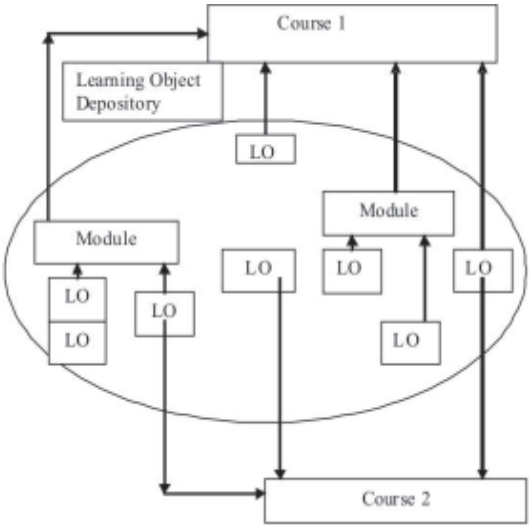
A Learning Object Repository (LOR) is a large area for objects that enables users to

find and reuse learning object (Hatala and Nesbir,2001).In the case of the ice cream container, The repository would be a refrigerator. The refrigerator holds many objects of different types. How organized the refrigerators is results in how easy it is to find what is inside.

A repository is a database designed to hold structured documents (Figure 1) .It

Includes featues such as search, edit, access control, reuse of elements within other document through reference. once the repository is populated with learning objects clearly identified by associated metadata,

Figure 1 A Learning Object Repository



Source : Tan Daniel , Et al (2003)

there exists a bank of information to draw upon. This bank-LOR may be only within an institution or may be part of a boarder

Community of institutions LORs are key technologies for permitting sharing and reuse of learning materials.

Need for LOR in Academic Institutions

While creating the teaching material, the faculty usually gathers information from a

wide variety of resources like books, the internet etc, assimilates the information and constructs the actual teaching material. Every faculty does the same information gathering and assimilation process individually, and the end result is usually not reusable by other faculties. The teaching material could be course notes, examination

Papers, exercises, assignments simulations, powerPoint presentations or anything used in the teaching process.

Every faculty stores information in his/her own folder, and only they know how and where they have stored information. The information is not shared colleagues and it is lost if the faculty is disorganized,the periodicity of courses is long or when the faculty

Leaves the organization.

Each faculty uses his/her own materials but would like to know about the reuse material his colleagues are using. If the learning material but would like to know the reuse materials his colleagues are using. If the learning material can be shared and reused , it will not only save time but will also give different view points on the same subject area. Such a reuse will save time, which be a real benefit or teachers to have access to additional material when student react unexpectedly to the planned course .Of course ,differences in teaching styles and methodology of differences faculties teaching the same subject, brings variety and creativity to a classroom.

There is a need to develop a learning object Repository (LOR) in academic institutions to ensure:

- Sharing and reusing digital objects.
- Access to a variety of leaning materials.
- Improve the quality of the leaning experience.
- Cater to different learning and teaching styles.
- Minimizing the cost of creating and providing access to resources.
- Ensuring he long-term sustainability of digital resources.
- Sharing learning materials within and digital institutes.

LORs are underprinned by the concept of interoperability and a growing awareness of the need o optimize the alue of resources created within educational institutions.

LORs offer a means by which institutions can break the cycle of individual silos of

Digital content by establishing a common store he access for all. Repositories can ensure the availability of content o improve the quality of learning experience and cater to different learning, and teaching styles. They can also stimulate a culture change in teaching and learning, as teachers review how hey deliver their courses and forces on how to improve the learning experience.

Learning Object Repository (LOR) Architecture

There are two major types of LORs : Repositories containing both the learning objects and learning object metadata. These repositories may be used to both locate and deliver the learning object.

Repositories containing metadata only: The learning objects themselves are located at a remote location and the repository is used as a tool to locate learning objects.

Some Learning Object Repositories are stand alone

They function a lot like pottals; They contain a web-bases user interface, a search mechanism, and a category listing.

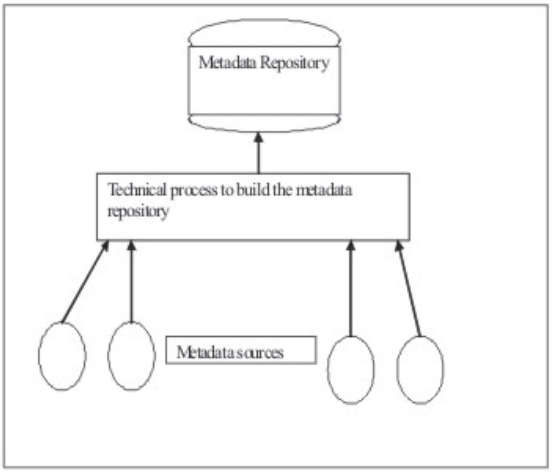
Another class of LORs functions more like a database attached o another product. A

Learning Content Management System (LCMS),for examples, may contain a learning object repository intended for its exclusive use.

Two major models for LORs exist:

- The centralized repository (see figure 2) in which the learning object materials is located on single sever or website (the learning objects themselves may be located somewhere else).

Figure 2: Centralized Metadata Architecture

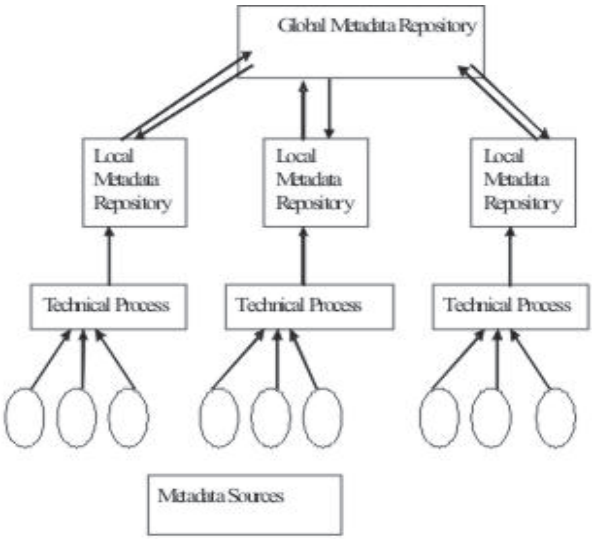


Source : Marco David (2001)and www.tdam.com/i018ht04.htm

- The distributed or decent repository (Figure 3) in which he leaning object metadata is contained in a number of connected servers websites. Distributed

LORs typically employ a peer-to-peer architecture to allow any servers or websites to communicate with each other.

Figure 3: Decentralized Metadata Architecture



Source : Marco David (2001)and www.tdam.com/i018ht04.htm

Practical Problem Faced

The quality of the learning objects, the standardization and quality of learning object metadata, and the problems associated with sharing are some areas of the practical problems emerging in the field of learning object repositories as they offer a solution for creating , managing and sharing reusable learning materials.

Quality of Metadata

With the development of e-learning standards and specifications, a growing number of LORs are now being implemented. Some of these repositories are beginning to encounter problems with the metadata creation process and report that the quality of their metadata is having adverse effects on resources discovery. Practical problems resulting from a poor understanding of the metadata creation process are beginning to Emerge.

Sketch

Standardized metadata is central to interoperability, at its best, it is a powerful tool that enables the user to discover and select relevant material quickly and easily. At worst, poor quality metadata can mean that a resource is essentially invisible within a repository or archive and remain unused. Good quality metadata is thus a key component in successful implementation of LORs.

Quality of leaning Objects (LOs)

The quality of LOs being deposited in the repositories is also a major concern. In order to be able to control the quality of LOs being deposited in LORs Peer Review of the LOs are done at some repositories like MERLOT. LOs are designed and developed by a team of instructional designers, editors, technicians, and student intern at Wisconsin Online Resource Center Repository to maintain a certain quality.

Staring Data

Repositories can grow only when there is self-archiving and faculty participation. The current culture in academic institutions does not encourage sharing and there is a lack of appropriate technology to facilitate sharing. There are no incentives and rewards to share. Hence here is a need for a charge in the culture within academic institutions so as to encourage deposit.

Digital Rights

Many teachers and content creators resist their materials online for fear they will be copied and/or distributed endlessly with no compensation or credit to the creator. Some of these fers are real and some are exaggerated, Most learning objects do not acquire real value until they aggregated into lessons and courses, and it is likely that few individual learning objects will generate revenue on their own. Nonetheless these perceptions are real, and authorship and credit should always be acknowledged. At the same, time, the needs of users much also be taken into consideration .LORs will not succeed fit is difficult and time-consuming to download to learning object because of over-protective digital rights management.

Cost

The productions of learning materials and distribution incur huge cost. More complex and sophisticated the materials are, the higher the cost of maintenance will be. Storing of the resources according o the need of the institution has to be taken care of otherwise, the cost on the institution will be more. So, unless certain foundations or corporate fund the projects of the creation of LOs and maintenance of LORs, it will be very difficult for institutions in many developing countries to create their own repositories.

Sketch

Bandwidth

LORs are available online and to access it and use it on requires an internet connection. To fully utilize the benefit of repositories a broadband connection is required. This again is a cost consuming factor, May developing countries have to improvise on their communication system to get the full advantage of these repositories.

Examples of Learning Object Repositories

Multimedia Educational Resource for Learning and Online Teaching (MERLOT)

MERLOT (www.merlot.org) is probably the most well-known learning object repository it is a centralized repository containing metadata only and points to objects located at remote locations. MERLOT is a stand-alone repository, which acts like a portal for learning objects. In addition to providing searching and categorization, provides a peer review service provided by communities of experts in different subject areas.

MERLOT is a free and open resource designed primarily for staff and student in higher education.Anyone can contribute descriptions of learning materials to the catalog or use MERLOT materials subject to licensing and rights agreement.

ARIADNE Knowledge pool System (www.ariade.eu.org)

The mission of the European Union's ARIADNE project is to enable be better quality leaning through the development of learning objects, tools and methodologies that enable a "share and reuse" approach for education and training. The ARIADNE knowledge pool system is a distributed repository of leaning objects and SQI for Simple Query Interface. ARIADNE supports English, Dutch, French, Spanish, German, Italian, Finnish, Danish, Portuguese, Swedish, and Romanian languages.

Campus Alberts Repository of Educatonal Objects (CAREO)

CAREO (www.careo.org) is a centralized collection of learning objects intended for educators in Alberta, Canada. The CAREO educational object repository is a stand lone repository contains metadata and provides access to learning objects located on remote web serves CAREO's primary goal is to create a searchable, web-based collection of multidisciplinary teaching materials for education across the province and beyond.

Sketch

National SMETE Digital Library (SMETE) (www.smete.org)

The SMETE digital library is a dynamic online library and portal of services by the SMETE Open Federation for teachers and students .Here one can access a wealth of teaching and learning material as well as join this expanding community of science,

mathematics, engineering and technology explores of all ages. If one is a student, one will have access to resources that can help one prepare for a class or examination. If the classroom right away. SMETE opens up the worlds of science, mathematics engineering and technology education to teachers and students anytime anyplace.

Learning Object Repository for Edinburgh University (LORE (www.lore.ed.ac.uk)

LORE provides a learning object repository for the University of Edinburh's learning projects and will investigate the provision of a university wide repository Initially the

Repository is only available to the University of Edinburgh staff.

Wisconsin Online Resource Center (www.wisc.online.com)

The Wisconsin online Resources Center is a digital library of web-based learning resources called "learning objects" The digital library of objects has been developed primarily by the faculty of the Wisconsin Technical College System (WTCS) and produced by multimedia technicians who create the learning objects for the online environment. The Wisc-Online digital library contains 1,938 objects that are accessible to all WTCS faculty at no cost and with copyright clearance for use in any WTCS classroom or online application. other colleges, universities and consortia from throughout the United states and around the world can use the library with permission, learning objects are designed and development by a team of instructional designers, editors, technicians, and student interns.

EduSource Canada (www.edusource.ca)

The general vision of the EduSource project is focused on the creation of a network of linked and interoperable learning object repositories across Canada. The initial part of the project will be an inventory of ongoing development of the tools, systems, protocols and practices. EduSources Canada is to be based on national and international standards fully bilingual; and accessible to all Canadians.

Conclusion

Academic institutions, especially higher education institutions, throughout the would are in a phase of rapid charge. In the post Y2K world, most institutions have placed computers on faculty desks, installed campus network (LAN) and created websites, Networked communications systems, from small through text chats, have encouraged faculty previously isolated by geographical location to collaborate.

The new educational system is learner center with the teacher bring a facilitator and classroom lectures being enhanced with the use of ICT in contrast to the traditional teacher-centric educational system. The new system should enable teachers to create challenging assignments to close the gap between the worlds of instructions and work, thus increasing the efficiency of learning.

Technology opens up avenues for innovation in design and delivery of courses, sharing expertise among faculty in different parts of the world, an educational system where content and learning materials should be shared among faculty.

Learning increasingly takes place in diverse environments-web-based courses, video courses, traditional classrooms, websites, and resource repositories. A huge amount of learning material is being produced in order to support leaning and teaching in a wide range of contexts (school academic, training, life-long learning, etc) The rapid increase of learning resources techniques and tools for searching, managing and reusing.

LOs are at the intersection of a number of emerging issues, including rapid application design approaches, digital rights, e-learning design and knowledge management. They are adaptable and flexible in any place of learning. They add flexibility to the teaching and learning experience, Faculty can use LOs when teaching a basic concept, applying concepts in "real world" application, checking and testing mastery, providing simulation, or giving remedial instruction.

Faculties in academic institutions need to share resources, LOs for effective teaching and knowledge sharing. Initiatives to share knowledge support the vision of an inte-campus collaborative for teaching and learning with technology. Providing faculty with a repository of "learning objects" would help in generating and reusing teaching material. The challenge is to convert the information that currently resides with individuals and make it widely and easily available to any faculty member.

Academic institutions have initiated the process of sharing research outputs with the use of Institutional Repositories, Courseware with the use of Open Courseware Initiatives and learning materials with the use of LORs to enhanced learning and teaching through technology and to move toward a stronger culture of professional collaboration and scholarship in educational practices.

Access to a variety of learning materials which can be shared and re-used improves the quality of the learning experience. Ensuring the long-term sustainability of digital resources and sharing learning material within and across institutes is possible with the use of LORs.

While many universities are pondering whether or how to implement a LOR, a growing number of institutions and consorria are activity engaged in setting up and running repositories. The practical experiences gained by these initiatives-organizational, technical, and legal-should prove instructive to other institutions, and the technical infrastructures that several of the projects are developing might provide turnkey systems that speed repository implementation by others.

LORs in academic institutes are growing with the hope to leverage the shared values, research outputs and learning objects available……presenting themselves as open spaces for virtual learning communities.

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Indian Journal of Library and Information Science
Volume 6 Number 3, Sept - Dec 2012

Use and Impact of E-Resources at Nutan Vidyalaya B.Ed and D.Ed College, Gulbarga

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Abstract

In this decade availability of e-resources in a B.Ed and D.Ed college library is very common. But their proper and fair use is a matter for discussion. This paper examines the existence of various e-resources and databases in Nutan Vidyalaya B.Ed and D.Ed college library. The study also highlights the preferences and importance of online resources among the students and lecturers.

Keywords: E-resources; Communication; Traditional resources; Sources of information; OPAC; Internet; Library.

Introduction

Advances in computer applications during the past twenty to thirty years have brought rapid changes in the way information is gathered, stored, organized, accessed, retrieved and consumed. The application of computers in information processing has brought several products and services to the scene. The Internet and the Web are constantly influencing the development of new modes of scholarly communication; their potential for delivering goods is quite vast, as they overcome successfully all the barriers of communications including geographical limitations associated with the print media. Further, the distribution time between product publication and its delivery has been drastically reduced. The Internet can be used for efficient retrieval and meeting information needs. This is very important for academic libraries since most of them call for more and more research and academic work. This important fact is convincing many libraries to move towards digital e-resources, which are found to be less expensive and more useful for easy access. This is especially helpful to distant learners who have limited time to access the libraries from outside by dial-up access to commonly available electronic resources, mainly databases, OPACs and Internet, which are replacing the print media.

Libraries have witnessed a great metamorphosis in recent years, both in their collection development and in their service structure. Over the last several years, a significant transformation has been noticed in collection development policies and practices. Print medium is increasingly giving way to the electronic form of materials.[1]

Objectives

The prime objective of this study was to analyze dependency of the students and lecturers on e-resources, the perceived impact of the e-resources on their academic efficiency and problems faced by them while using the e-resources. This study was particularly conducted to assess the benefits of the e-resources over conventional sources of information.

Some of the major objectives includes:

- know the different types of electronic resources and services available in the N.V. B.Ed and D.Ed college library;

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(Received on 16.08.2010, accepted on 26.08.2012)

- study the different types of electronic resources used by students and lecturers;
- study the purpose and frequency of using the electronic resources and services available in the library;
- locate the bottlenecks faced by the students and lecturers while accessing and using the electronic resources in the library;
- study the impact of electronic resources and services on the academic work of the students and lecturers;
- know the productivity and quality of information retrieved through e-resources.

Survey Design

The study was limited to the students and lecturers of Nutan Vidyalaya B.Ed and D.Ed College, Gulbarga.

A questionnaire survey was conducted to collect the information regarding the use of e-resources, frequency of use of e-resources, purpose of using e-resources, frequency of locating desired information, problems faced by the users while using e-resources. A total of 100 questionnaires were distributed to collect the primary data out of which 82 questionnaires were found usable for analysis. The questionnaires were completed by personal visits with users. Questionnaires were distributed randomly to the users. The collected data was analyzed and presented in the table format.

Discussion

Table 1 shows that the majority of students, i.e. 46 (88.46%) and lecturers 28 (93.33%) preferred to use e-journals. Second highest preference was WWW and use of e-mail with 30 (57.69%) and 41 (78.84%) among students, respectively and 23 (76.66%) and 18 (60.00%) among lecturers. Fifty percent of lecturers and 30.77% of students made the use of e-research reports. Table 1 highlights that only the well-known e-resources were preferably used by the students and faculty members; the rest of the e-resources, i.e. e-bibliography, e-maps, e-thesis, e-books were comparatively less used.

Table 1: Use of Various E-Resources

Databases	Respondents	
	Students	Lecturers
E-Journals	46 (88.46%)	28 (93.33%)
E-Data archives	8 (15.38%)	2 (6.67%)
E-Manuscripts	6 (11.53%)	2 (6.67%)
E-Maps	4 (7.69%)	4 (13.33%)
E-Books	16 (30.77%)	5 (16.66%)
E-Magazines	14 (26.92%)	19 (63.33%)
E-Thesis	5 (9.61%)	3 (10.00%)
WWW	30 (57.69%)	23 (76.66%)
E-Newspaper	14 (26.92%)	3 (10.00%)
E-Mail	41(78.84%)	18 (60.00%)
E-Research Reports	16 (30.77%)	15 (50.00%)
E-Bibliographic Databases	10 (19.23%)	3 (10.00%)

Table 2 represents that 42 (80.77%) students and 26 (86.67%) lecturers were able to access the e-resources very easily. Only 10 (19.23%) students and 4 (13.33%) lecturers felt that using the e-resources is not easy

Table 3 highlights that majority of students, i.e., 43 (82.69%), and lecturers, i.e., 24 (80.00%), responded that the interface of the library Website is user-friendly. Few students,

Table 2: Ease of Access to E-Resources

Respondents	Total	Yes	No
Students	52	42 (80.77%)	10 (19.23%)
lecturers	30	26 (86.67%)	4 (13.33%)

i.e., 9 (17.31%), or lecturers, i.e., 6 (20.00%), thought that the interface of the library Website is not user-friendly.

Table 4 shows that the majority of students, i.e., 34 (65.38%), and lecturers, i.e., 23 (76.67 %,) were using the library Website as gateway to access the electronic sources. A few of the students, i.e., 18 (34.61%), and lecturers, i.e., 7 (23.33%), were not using the library Website as gateway to access the electronic sources.

Table 3: User-Friendly Interface to the Library Website

Respondents	Total	Yes	No
Students	52	43 (82.69%)	9 (17.31%)
Lecturers	30	24 (80.00%)	6 (20.00%)

Table 4: Use of the Library Web Site as a Gateway to Access Electronic Resource

Respondents	Total	Yes	No
Students	52	34 (65.38%)	18 (34.61%)
Lecturers	30	23 (76.67%)	7 (23.33%)

Table 5: Training Taken Related to Electronic Resources

Respondents	Total	Yes	No
Students	52	27 (51.92%)	25 (48.08%)
Lecturers	30	15 (50.00%)	15 (50.00%)

Table 5 shows that 27 (51.92%) students took the training regarding access to electronic resources, while 25 (48.08%) students did not take any training programs. Fifteen (50.00%) lecturers took the training regarding the access to electronic resources, but 15 (50.00%) lecturers had not taken any training regarding the access to electronic resources

Table 6 reveals that 33 (63.46%) students and 26 (86.67%) lecturers usually used e-resources. Fifteen (28.85%) students and 4 (13.33%) lecturers used the e-resources sometimes, whereas 4 (7.69%) students used e-resources rarely. It was noted that students used the library e-resources more frequently than the lecturers.

Table 7 indicates that most respondents accessed e-journals and search engines to get required information at their institute. Twenty-four (46.15%) students and 17 (56.67%) lecturers preferred to use e-journals whereas 37 (71.15%) students and 14 (46.67%) lecturers used search engines to get the desired material. Online databases were also very popular among lecturers, as 9 (30.00%) of them preferred to use these. Use of e-books was less by the students and lecturers in comparison to other online resources. It was noted that the lecturers accessed the maximum relevant material from e-journals.

Table 7: Where Do You Mostly Access Required Information

E-Resources	Students	Lecturers
E-Books	5 (9.62%)	2 (6.67%)
E-Journals	24 (46.15%)	17 (56.67%)
Online-Databases	9 (17.13%)	9 (30.00%)
Search Engines	37 (71.15%)	14 (46.67%)

Table 8 reveals the fact that 20 (38.46%) students and 20 (70.00%) lecturers searched the catalogues of other libraries. Thirty-two (61.54%) students and 10 (30.00%) lecturers did not retrieve catalogues of other libraries. The majority of the students were not interested in the catalogues of the other libraries. This indicates that N.V. B.Ed and D.Ed college library gives extremely good services to its users.

Table 8: Searching Other Libraries' Catalogues

Respondents	Total	Yes	No
Students	52	20 (38.46%)	32 (61.54%)
Lecturers	30	20 (70.00%)	10 (30.00%)

Table 6: Frequency of Using E-Resources

Respondents	Total	Usually	Sometimes	Rarely
Students	52	33 (63.46%)	15 (28.85%)	4 (7.69%)
Lecturers	30	26 (86.67%)	4 (13.33%)	-

Table 9: Frequency of Use of Different Databases

Databases	Use Often		Use Sometimes		Never Use		Unfamiliar With	
	Students	Lecturers	Students	Lecturers	Students	Lecturers	Students	Lecturers
Gynanodaya	8 (15.38%)	8 (26.66%)	9 (17.30%)	5 (16.66%)	15 (28.84%)	6 (20%)	9 (17.30%)	2 (6.66%)
Current Science	6 (11.53%)	2 (6.66%)	12 (23.07%)	6 (20%)	16 (30.76%)	4 (13.33%)	9 (17.30%)	4 (13.33%)
Emerald	5 (9.61%)	4 (13.33%)	14 (26.92)	5 (16.66%)	9 (17.30%)	6 (20%)	6 (11.53%)	4 (13.33%)
DOAJ	5 (9.61%)	4 (13.33%)	13 (25%)	8 (26.66%)	7 (13.46%)	8 (26.66%)	7 (13.46%)	4 (13.33%)
Edutrack	24 (46.15%)	18 (60%)	8 (15.38%)	4 (13.33%)	10 (19.23%)	2 (6.66%)	6 (11.53%)	2 (6.66%)
Edusearch	6 (11.53%)	3 (10%)	7 (13.46%)	--	15 (28.84%)	9 (30%)	10 (19.23%)	6 (20%)
JCGR	1 (1.92%)	--	--	2 (6.66%)	19 (36.53%)	10 (33.33%)	11 (21.15%)	9 (30%)
Wikipedia	18 (34.61%)	8 (26.66%)	16 (30.76%)	6 (20%)	4 (7.69%)	5 (16.66%)	1 (1.92%)	2 (6.66%)
JEP	20 (38.46%)	16 (53.33%)	9 (17.30%)	7 (23.33%)	7 (13.46%)	2 (6.66%)	6 (11.53%)	2 (6.66%)
UGC Info Net	5 (9.61%)	--	21 (40.38%)	8 (26.66%)	7 (13.46%)	7 (23.33%)	5 (9.61%)	5 (16.66%)

Table 9 indicates that the majority of students used Edutrack, JEP and Wikipedia often, i.e., 24 (46.51%), 20 (38.61%) and, 18 (34.61%) respectively, whereas 18 (60%) lecturers used Edutrack and 16 (53.33%) used JEP often. Use of Gynanodaya was not frequent among respondents. Twelve (23.07%) students and 6 (20%) lecturers sometimes used current Science (particularly science subject related students and lecturers), 14 (26.92%) students and 5 (16.66%) lecturers used Emerald database sometimes, 21 (40.38%) students and 8 (26.66%) lecturers use UGC InfoNet, whereas 20% of respondents were unfamiliar with Edusearch which is shocking in a B.Ed and D.Ed college.

Table 10: Reasons for Using E-Resources

Reasons for Using E-Resources	Students	Lecturers
Time Saving	34 (65.38%)	18 (60.00%)
Time Consuming	3 (5.77%)	----
Easy to Use	39 (75.00%)	24 (80.00%)
Difficult to Use	4 (7.69%)	---
More Informative	25 (48.08%)	18 (60.00%)
Less Informative	3 (5.77%)	--
More Expensive	5 (9.62%)	6 (20.00%)
Less Expensive	6 (11.54%)	12 (40.00%)
More Useful	27 (51.92%)	18 (60.00%)
Less Useful	3 (5.77%)	----

Table 10 elaborates that majority of the students preferred to use e-resources in comparison to traditional resources because 39 (75%) of them felt that e-resources are easy to use, felt it was time saving, 27 (51.92%) felt it was more useful and 25 (48.08%) felt it was more informative. Sixty percent of lecturers preferred to use e-resources because they felt that e-resources are time saving, more informative and more useful. Eighty percent of lecturers used e-resources due to their easiness. Six (11.54%) students and 12 (40.00%) lecturers used e-resources because they are less expensive. Only 3 (5.77%) students thought that e-resources are less useful. The results from Table 10 indicate that e-resources were much preferred by respondents due to their nature of being more informative, more useful, and less expensive.

Table 11 elaborates that many students, 32 (61.54%), and lecturers, 22 (73.33%), thought that e-resources never diminish the importance of traditional resources, whereas 20 (38.46%) students and 8 (26.67%) lecturers felt that e-resources may replace traditional sources of information. The results of Table

Table 11: Do E-Resources Diminish the Importance of Traditional Resources

Respondent	Total	Yes	No
Students	52	20 (38.46%)	32 (61.54%)
Lecturers	30	8 (26.67%)	22 (73.33%)

11 indicate that in the era of information and technology, academics are equally attached to traditional sources of information.

Conclusion

The study shows that use of e-resources is very common among the students and lecturers of Nutan Vidyalaya B.Ed and D.Ed College and majority of the students and lecturers are dependent on e-resources to get the accurate and relevant information. But practical use of e-resources is not up-to the worth in comparison to investments made in acquiring these resources; secondly, infrastructure and training programs should also be revised as per requirements. It was observed that the availability of e-resources on the campus is almost sufficient for all the existing disciplines but the infrastructure to use these resources is not adequate and can hinder the ability to meet the requirements of users.

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Indian Journal of Library and Information Science
Volume 6 Number 3, Sept - Dec 2012

Job Satisfaction of Library Professionals in Medical and Engineering College Libraries in Coastal Karnataka

Felcy Lewis*, T.Y. Mallaiah**

Abstract:

The results and discussions in this paper are based on the primary data collected from the professionals and semi-professionals working in 5 medical college libraries and 7 engineering college libraries in Coastal Karnataka through a pre-tested, structured, comprehensive questionnaire with a response rate of 86.24%. This paper reports on the views and perceptions of medical and engineering college library professionals in Coastal Karnataka in respect of their job, job environment and organization in addition to identifying and analyzing the key individual, work and organizational characteristics influencing their job satisfaction. This study finding has implications for human resource management research and practice in medical and engineering college libraries. The key issues considered were job rotation, work environment, leadership qualities and employee development. Superior subordinate relations in the organization have been discussed.

Keywords: Job environment; Job satisfaction; Medical colleges; Engineering colleges.

Introduction

In the era of information technology, human resource development and human resource planning play an important role in library and information centres. Library is a tripartite organization consisting of information materials of various kinds, users with various information needs and library personnel. The effective functioning of the library depends on the capabilities, attitudes and values of its staff. Library, being a service-oriented organization, depends on its human resources to achieve its goals of providing adequate service to its users. It is possible to satisfy most of the needs of the users with available resources only when the library staff understands the actual needs of the users, has clear ideas about the resources available in and through their library and is capable of devising and applying appropriate techniques to satisfy user needs. Library staff is the key resource of the library. These human resources are the people without whose skills, information would not be discovered nor gathered together nor made widely accessible and intelligible – without whom the library would become a chaos.

The organization has to create conducive environment at the workplace to make the staff committed to the organization. The work environment which suits the requirements of job and conveniences of the employee maximizes workers efficiency and productivity. Work environment significantly influences certain factors of human resources like values, attitudes, aptitude etc. It also includes perception, personality, motivation, morale, group formation, maintenance, utilization, leadership styles, levels of job satisfaction, individual differences, human relations, superior, superior-subordinate

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(Received on 04.09.2009, accepted on 20.10.2009)

interaction and relations, organizational climate, communication etc.

Among S.R.Ranganathan's five laws of library science, the fourth law says: "Save the time of the reader". That is, it urges the staff members to serve the user quickly and efficiently. Likewise, the fifth law speaks of library staff's responsibility to know the provisions for the growth of the library – expansion of physical facilities and extension of the services. It is, therefore, necessary that library professionals work with dedication to serve the users effectively. This is to say that libraries in general, and academic libraries in particular, need a highly committed, competent, and dedicated workforce. Libraries are the connecting nodes in the chain of information communications between the generators and the users. The main purpose of professional college libraries is to cater to the diverse needs of the clientele, starting from the basic information to reach the end user in nano-seconds of time and place and in desired format. Information and Communication Technology (ICT), judiciously used, can befit information professionals as well as information seekers and users.

Review of Literature

Crow and Hartman (1995)[1] studied that many organizations devote considerable time and effort to improve job satisfaction, hoping for improved performance to the extent that happiness and satisfaction are a result of one's heredity and past experiences. Management, clearly, has a very limited role in effecting change. This suggests that because of the complexities associated with one's level of satisfaction, executives and managers take a conservative approach to methods or programmes that promise high job satisfaction and enhanced productivity.

Neils and Carl (2002)[2] conducted a survey on job satisfaction and motivational strategies among library directors. The study focused on library leaders' satisfaction with their jobs, level of activity and their working conditions in the library. The context of this survey was the problems of recruiting right kind of staff and the need to create attractive workplaces. Recommendations were made to recruit and motivate the staff. Based on the recommendations, it was found that many libraries and information centres in the future will face a shortage of qualified applicants for positions as information professionals.

Neils (2003)[3] conducted a survey on job satisfaction among library managers. Based on a survey of British and Danish library managers, the paper explored the concept of job satisfaction and its relation to stress, job content and job conditions. It is also evident that nationality plays a significant role in relation to factors such as stress, freedom in decision making, size of the employing institution and the mix of tasks in the job.

Shields (1988)[4] conducted a study on work and motivation in Academic libraries. The literature of human motivation in a work setting was reviewed. The main theories were those of individual needs, equity and expectancy/value. This was followed by an examination of the relationship between motivation and methods of job and work design. The area of application for these principles was academic libraries, the main characteristics of which were identified. These included the influence of environmental factors, such as technological innovation and economic recession, the nature of the higher education system and the user community, an analysis of the attitude of library staff and the nature of library work. The division between professional and non-professional staff was seen as particularly important in this context. The theories of motivation and work design were then applied to academic libraries and some gaps in the literature identified. Emphasis on higher order needs and lack of theory on motivation and the social aspects of work was noted. An outline of the most useful theories was offered and the importance of library managers remaining responsive to local needs is stressed.

Mallaiah T.Y., (2008)[5] conducted a survey on job and job environment of library professionals in University libraries in Karnataka. The results and discussions in this

study were based on the primary data collected from 188 library professionals in Karnataka through a pre-tested, structured, comprehensive questionnaire with a response rate of over 86%. This study reported on the views and perceptions of university library professionals in Karnataka in respect to their job, job environment and organization in addition to identifying and analyzing the key individual, work and organizational characteristics influencing their job satisfaction. These study findings have implications for human resource management research and practice in university libraries. The key issues considered were job rotation, promotion policy, reward system, employee frustration, leadership qualities, and superior-subordinate relations in the organization were discussed.

Objectives

1) To discuss the job and job environment (the organization) of library professionals;
2) To identify and analyze the major personal, work and organizational factors influencing motivation, performance and job satisfaction of library professionals and;
3) To point out some human resource management implications to suggest strengthening the motivation and performance of medical and engineering college library professionals based on the findings of this study.

Methodology

The study was mainly based on the primary data collected from the professionals and semi-professionals working in medical and engineering college libraries of Coastal Karnataka. The study relates to human resource development of library professionals. Hence, the information, opinions, perceptions and attitudes of these library professionals were collected and analyzed. There are about 7 medical colleges in Coastal Karnataka, of which 5 are academic and 2 are deemed universities. There are 15 engineering colleges in Coastal Karnataka, of which 13 are academic and 2 are deemed universities. The library professionals identified in the study were grouped into 2 categories namely professionals and semi professionals. The total population considered for the study included 72 distributed across 5 medical college libraries and 25 distributed across the 7 engineering college libraries. The questionnaire was self-administered by the respondent population. Out of 97 potential respondents, 85 returned completed questionnaires, accounting for a response rate of over 86.24%.

Results and Discussion

Response Rate of Library Professionals

The members of the library staff covered under the study were professionals and semi-professionals working in 5 medical college libraries and 7 engineering college libraries in Coastal Karnataka. The total strength of such professionals in these libraries is 97. The questionnaire was sent to these 97 professionals and semi-professionals considered for this study. The questionnaire was self-administered by the respondent population. Eighty-five respondents submitted their questionnaire, which accounts for a response rate of 86.24%. Although the questionnaires were mailed to the respondents through surface post, the high rate of response for the current study could be attributed to the investigator's follow up activity through telephonic reminders and personal visits.

Table 1: Response Rate of Professionals

Particulars	Medical Colleges		Engineering Colleges	
	Numbers	Percentage	Numbers	Percentage
Number of questionnaires distributed	72	100.00%	25	100.00%
Number of questionnaires received	63	87.50%	22	88.00%

Reason for joining present job

People select a particular job for various reasons. Some may look for good salary while some look at security and still others may prefer a job that is near to their hometown. There may be a few who really like a particular job as a profession. It was, therefore, attempted to know as to what motivated the respondents to take up their present job in the professional college library system. The responses received from the respondents are presented in Table 2

Table 2: Reasons for Selecting Library Profession

Sl. No.	Library profession: Attracting factor	No. of Responses	
		Medical Colleges	Engineering Colleges
1	Accidentally joined this profession	34 (53.96%)	10 (45.45%)
2	To earn livelihood	16 (25.40%)	1 (4.55%)
3	Status of profession in the society	-	2 (9.10%)
4	Better salary	4 (6.35%)	0
5	Love for the library profession	9 (14.26%)	9 (40.90%)

Table 2 indicates that among medical college respondents about 53.96% joined the profession by mere accident; 25.40% joined library profession to earn livelihood; 14.26% joined because of their love for the profession; 6.35% of them joined because of better salary. But none of them felt that it was a respectable job having status in the society. Among engineering college respondents about 45.45% joined the profession by mere accident; about 40.90% joined because of their love for the profession. Added to this, 9.10% of the respondents felt that it was a respectable job having status in the society. However, 4.55 % of them joined to earn livelihood. But none of them felt that this profession will yield them better salary. Hence, about 51.76% of the total respondents opted for the library profession by accident and 21.17% for love of the library profession and 20% to earn livelihood.

Inter-section transfer in the library

Job rotation is the surest way of keeping the employee away from complacency and boredom of routine work. It is difficult for an employee to sustain his interest in a given job for any substantial length of time, as humans have the tendency of outgrowing their jobs through the learning and experience that they gain over a period of time. Stimulating human mind through diversity of challenges is a sure way to bring to forefront its creative instincts and taking the individual and organizational performance to a higher plane. This is where job rotation can prove to be a handy tool. A well planned job rotation programme in an organization has immense potential of positive impact on job satisfaction, engagement of people and finally on retention of people. Job rotation at junior and middle level professionals may be pivoted around their strengths and attributes and the future roles expected of them. Focus must be on exposure in all related areas of domain of expertise, so that as one climbs to higher rungs of the management, they have an overall experience of their domain. Done this way, job rotation gets aligned with career development, leadership development and employee satisfaction which would finally result in higher levels of intrinsic motivation among the employees, and, hence may contribute in retaining talent. It is in this context that an attempt is made to know the opinion of the respondents as to the suitability of the existing inter-section transfer policy in the libraries.

Table 3 indicates that a majority of respondents of medical college and engineering college representing 84.13% and

Table 3: Is Inter- section Transfer Necessary?

Sl. No.	Opinion	No. of Responses	
		Medical Colleges	Engineering Colleges
1	Yes	53 (84.13%)	16 (72.73%)
2	No	10 (15.87%)	6 (27.27%)

72.73% respectively were very happy with inter-section transfer in both the college libraries. Only about 15.87% of the medical college and 27.27% of the engineering college professionals were not at all happy with inter-section transfer policy in the library. The reasons for accepting and not accepting the inter-section transfer policy by the employees were ascertained and are presented below.

Table 4 shows that about 33.96% and 62.5% of both medical engineering college employees respcetively welcomed inter-section transfer as it provides an opportunity to become familiar with all sections of the library. About 28.30% of the medical college respondents believed that it makes work interesting and challenging. Opposed to this, 25% of the engineering college respondents opined that it helps to increase job efficiency. About 22.64% of the medical college employees felt that it avoids development of vested interest.

Table 4: Reasons in Favour of Inter-section Transfer

Sl. No.	Reasons	No. of Responses Medical Colleges	No. of Responses Engineering Colleges
1	Provides a chance for all-round familiarity	18 (33.96%)	10 (62.5%)
2	Gives an opportunity to show latest talent	6 (11.32%)	1 (6.25%)
3	Makes work interesting and challenging	15 (28.30%)	1 (6.25%)
4	Avoids development of vested interest	12 (22.64%)	0
5	Helps increase general job efficiency	2 (3.78%)	4 (25%)

Thus, a majority of the respondents in both the colleges were in favour of inter-section transfer in the library because they believed that it provides them an opportunity to exhibit their hidden aptitude and skills, stimulates their learning process and creates an interest in the day-to-day work of the library. They also feltl that it makes them familiar with all-round work.

Table 5:Reasons Against Inter-section Transfer

Sl. No.	Reasons	No. of Responses Medical Colleges	No. of Responses Engineering Colleges
1	Working in one section is convenient, easy and less working hours	2 (20.00%)	1 (16.67%)
2	It may not help employees to settle down in one job	3 (30.00%)	2 (33.33%)
3	It may create tension and uncertainty	3 (30.00%)	0
4	It may create imbalance in staffing	1 (10.00%)	1 (16.67%)
5	It may unsettle the employee and reduce involvement	1 (10.00%)	2 (33.33%)

It is clear from the above table that 10 respondents (about 15.87%) of medical colleges and about 6 respondents of engineering colleges (about 27.27%) were not in favour of inter-section transfer. Among medical college employees, about 30% of each thought that transfer policy may not help the employees in settling down in a specific job and that it may create tension and uncertainty; over 20% felt that working in one section is convenient, easy and entails less working hours; about 10% felt that it may create imbalance in staffing and another 10% felt that it may unsettle the employees and reduce involvement. Among engineering college employees about 33% thought that transfer policy may not help them to settle down in a specific job and that it may unsettle the employee and reduce involvement; about 16.67% each felt that working in one section is convenient, easy and entails less working hours and that it may create imbalance in staffing.

Thus, comparatively, majority of the respondents in both the colleges were not in favour of inter-section transfer in the library because they believed that the transfer policy may not help the employees settle down in a specific job; that working in one section is convenient, easy and entails less working hours.

Work environment in organization

All library centres have a comfortable work environment in terms of ambience, recreational facilities, climate control, cleanliness and fixtures. The interiors have been specially designed to ensure a healthy work environment — both psychologically and physiologically. The colours are bright and attractive to create a positive impact on the library users. 'Unrest' among the employees is the reaction to working conditions. Unsatisfactory physical environment, long hours of work, repeated shifts, etc. may promote unrest in the minds of employees. Thus, working conditions play an important role in maintaining better relations. Satisfactory working conditions, apart from improving employee-employer relationships, also help in ensuring adequate safety. In this context, the employees' opinion about the space to work, furniture, equipment and working material, lighting arrangements, ventilation, provision of drinking water, toilet facilities and restrooms, which have a direct bearing on an employee's work behavior - were obtained and the results of their analysis are shown in Table 6.

Table 6: Work Environment in Organization

Sl. No.	Work environment	No. of Responses	
		Medical Colleges	Engineering Colleges
1	Highly relaxed	23 (36.51%)	0
2	Relaxed	4 (6.35%)	6 (27.27%)
3	Highly demanding	22 (34.92%)	6 (27.27%)
4	Demanding	11 (17.46%)	7 (31.82%)
5	Moderately demanding	3 (4.76%)	3 (13.64%)

It is observed from Table 6 that 36.51% of medical college respondents stated that the work environment in their organization was highly relaxed; about 34.92% stated that it was highly demanding; another 17.46% felt that it was demanding; a few (about 6.35% and 4.76% respectively) stated that the work environment in their organization was relaxed and moderately demanding.

Of engineering college respondents, 31.82% stated that the work environment in their organization was demanding; about 27.27% each felt that the work environment in their organization was relaxed and highly demanding and another 13.64% felt that it was moderately demanding. But none of them stated that the work environment in their organization was moderately demanding. Comparatively, majority of the respondents of both the colleges felt that the work environment in their organizations was highly demanding.

Table 7: Respondents' views on the management/leadership

Sl. No.	Opinion	No. of Responses	
		Medical Colleges	Engineering Colleges
1	It is not noticeable to any appreciable extent	14 (22.22%)	1 (4.55%)
2	People do not look up to it	5 (7.94%)	3 (13.64%)
3	It leaves much to be desired	4 (6.35%)	4 (18.18%)
4	It inspires confidence to a fair extent	19 (30.16%)	6 (27.27%)
5	It inspires a tremendous amount of confidence	21 (33.33%)	7 (31.81%)
6	No response	-	1 (4.55%)

Respondents' views on management/leadership

It is pertinent, while discussing the level of efficiency and effectiveness of the employees, to know how the management is carrying the affairs of the library. It is in this context that the views held by the staff on different aspects of library management become relevant. The results are summarized in Table 7.

Table 7 indicates that 33.33% and 31.81% of medical college and engineering college respondents respectively viewed the management to be inspiring tremendous

amount of confidence in them. About 30.16% and 27.27% of medical and engineering college respondents respectively viewed that management inspires confidence to a fair extent, whereas 22.22% and 4.55% of medical and engineering college respondents respectively opined that leadership had failed in making its presence felt. Hence, they felt, their work suffered from lack of leadership guidance. About 7.94% and 13.64% of medical reengineering colleges respectively confirmed that the management leaves much to be desired. Comparatively, it is observed that majority of both the college respondents viewed the management to be inspiring tremendous amount of confidence in them; it inspires confidence in them to a fair extent.

Relationship between superiors and subordinates

In any organization, superior–subordinate relations deteriorate due to the hierarchical structure and functioning in the organization. The subordinates may not have regular informal interaction with their superiors that might force them to take the officious way of taking appointments to see their superiors. What hurts them more is that sometimes it may be easier for outsiders to have access to their superiors. Congenial superior-subordinate relations and good behaviour towards each other are highly essential for the sound health of the organization. During the study, a number of questions were asked to elicit the opinion on interpersonal relations between the superiors and the subordinates in the university libraries. The questions asked related to whether the respondents frequently meet their superiors to receive instruction, whether they get proper instruction from their superiors and whether they relish a call from the superiors to instruct them, etc.

Table 8 indicates that 39.68% of medical college respondents confirmed that there is a lot of mutual understanding between the views of management and the employees while, 30.16% said that there is mutual understanding between the views of management and employees. About 17.46% said that there is some mutual understanding between the views of management and employees. Remaining 12.70% felt that there is no mutual understanding between the views of management and employees.

About 36.36% engineering college respondents confirmed that there is mutual understanding between the views of management and the employees. About 31.81% of engineering college respondents said that there is a lot of mutual understanding between the views of management and employees, whereas about 18.18% said that

Table 8: Relationship between the Superiors and Subordinates

Sl. No.	Opinion	Medical Colleges	Engineering Colleges
1	No mutual understanding between the views of management and employees	8 (12.70%)	4 (18.18%)
2	Mutual understanding between the views of management and employees	19 (30.16%)	8 (36.36%)
3	Some mutual understanding between the views of management and employees	11 (17.46%)	1 (4.55%)
4	A fair amount of mutual understanding between the views of management and employees	0	2 (9.10%)
5	A lot of mutual understanding between the views of management and Employees	25 (39.68%)	7 (31.81%)

Table 9: Respondents' Views on the Leadership Style of their Superiors

Sl. No.	Opinion	No. of Responses	
		Medical Colleges	Engineering Colleges
1	Considers work as the only important aspect and totally ignores my development	9 (14.30%)	0
2	Considers work most important and is not very much interested in my development	6 (9.52%)	2 (9.10%)
3	Considers work more important but has some interest in my development	6 (9.52%)	6 (27.27%)
4	Considers work very important but also gives fair amount of importance to my development	10 (15.87%)	8 (36.36%)
5	Takes as much interest in work as in my development	32 (50.79%)	6 (27.27%)

there is no mutual understanding between the views of management and employees. It is clear that majority (87.3% and 81.82%) of both the colleges' respondents were of the view that there is overlapping of organizational and employees' views. Remaining 12.70% and 18.18% of the respondents had negative views on this issue.

Leadership style

Leadership style is the manner and approach of providing direction, implementing plans and motivating people. It is the ability of the superiors to induce subordinates to work with zeal and confidence. Leadership is said to be an integral part of effective management. It inspires employees, secures cooperation, creates confidence and, in some cases, ensures good working climate. For the convenience of the present study, four types of leadership styles were considered, namely, dictatorial, benevolent, democratic and weak. Table 9 shows the styles of leadership of the superiors as perceived by the respondents.

Table 9 indicates that half (50.79%) of medical college respondents acknowledged that leadership takes as much interest in work as in employee development. About 34.91% respondents acknowledged that management did have some interest in employee development in addition to stressing on effect in work. At the other extreme, 14.30% respondents felt that the leaders considered work as the only important aspect and totally ignored the development of the employees in the organization.

Table 10: Extent of Accountability in Organization

Sl. No.	Extent of Accountability	No. of Responses	
		Medical Colleges	Engineering Colleges
1	Not at all established and everybody passes The buck	-	0
2	Hardly ever established	5 (7.94%)	1 (4.55%)
3	Established in some instances and to some extent and purpose	14 (22.22%)	6 (27.27%)
4	Fairly well established in our organization	2 (3.17%)	6 (27.27%)
5	Very well established in our organization	42 (66.67%)	8 (36.36%)
6	No response	-	1 (4.55%)

Table 11: Views on Employee Development in the Libraries

Sl. No.	Reaction of Superiors	Medical Colleges	Engineering Colleges
1	Not at all interested in this aspect	10 (15.87%)	1 (4.55%)
2	To a little extent committed to this aspect	11 (17.46%)	2 (9.09%)
3	Allow me to develop through my own efforts	8 (12.70%)	3 (13.63%)
4	Help me to develop by taking fair amount of interest in this process	13 (20.64%)	13 (59.09%)
5	Help me a great deal by going all out to ensure my development	21 (33.33%)	3 (13.64%)

About 36.36% of engineering college respondents felt that leaders considered work very important but also gave fair amount of importance to employee development. About 54.54% of the respondents acknowledged that the management did have some interest in employee development in addition to stressing on effect in work. About 9.10% felt that leaders considered work most important and were not very much interested in employee development

Table 12: Respondents Views on Satisfaction with the Job

Sl. No.	Opinion	No. of Responses	
		Medical Colleges	Engineering Colleges
1	Completely satisfied	11 (17.46%)	5 (22.72%)
2	Satisfied	25 (39.68%)	15 (68.18%)
3	About half-and-half	15 (23.81%)	1 (4.55%)
4	More dissatisfied than satisfied	7 (11.11%)	0
5	Completely unsatisfied	5 (7.94%)	1 (4.55%)

Table 10 indicates that 66.67% of medical college respondents felt that the accountability in organization was very well established, whereas about 22.22% felt that to some instances and to some extent & purpose it was established. About 7.94% said that it was hardly ever established and a few, about 3.17%, of respondents said that it was fairly well established in their organization.

About 36.36% of engineering college respondents felt that the accountability in organization was very well established, whereas 27.27%, each felt the extent of accountability in organization was established in some instances and to some extent & purpose and that it was fairly well established. A negligible 4.55% expressed their negative views about the amount of accountability in their organization. Comparatively, it was observed that majority of both the college respondents felt that the accountability in their respective organizations was very well established.

The results show that about 33.33% of the medical college respondents felt that their superiors helped them a great deal by going all out to ensure their development. About 20.64% felt that their superiors helped them to develop by taking fair amount of interest in this process. About 17.46% felt that their superiors were committed to this aspect to a little extent. A negligible 15.87% felt that their superiors were not at all interested in this aspect.

About 59.09% engineering college respondents felt that their superiors helped them to develop by taking fair amount of interest in this process. About 13.63% each felt that their superiors helped them a great deal by going all out to ensure their development and to allow them to develop through their own efforts. A negligible 13.64% felt that their superiors were not at all interested in this aspect and their commitment was less.

Table 12 indicates that 39.68% of medical college respondents and 68.18% of the engineering college respondents were satisfied with the present job. About 23.81% of medical college respondents showed half-and-half satisfaction about the library profession. About 17.46% respondents expressed that they were completely satisfied with the present job. About 68.18% of engineering college respondents said that they were satisfied with the present job whereas about 22.72% of the respondents expressed that they were completely satisfied with the library profession. About 4.55% each showed negative satisfaction towards the library profession.

Comparatively, it was observed that majority of the library professionals were satisfied with their job, majority of medical college respondents were satisfied half-and-half opposed to the majority of engineering college respondents who were completely satisfied with the present job.

Major Findings

1. Majority, about 51.76%, of the total respondents said it was by mere accident that they joined this profession; 21.17% opted for library profession because of their love for the profession; and 20% to earn livelihood.
2. A majority of the respondents in both the colleges were in favour of inter-section transfer in the library because they believed that it provides them with an opportunity to exhibit their hidden aptitude and skills, stimulates their learning process, and creates an interest in the day-to-day work of the library. They also felt that it makes them familiar with all-round work.
3. It is clear that majority (87.3% and 81.82%) of both the colleges' respondents in the library were of the view that there is overlapping of organizational and employees' views. Remaining 12.70% and 18.18% of the respondents had negative views on this issue.
4. Comparatively, it was observed that majority of the library professionals were satisfied with their job; majority of medical college respondents were satisfied half-and-half as opposed to majority of the engineering college respondents who were completely satisfied with the present job.

Suggestions

1. It was found that the reaction to the possible introduction of job rotation was generally positive. It is suggested that the library manager should consider the introduction of job rotation policy in the library.
2. There is an urgent need for the management to have a well-defined policy and criteria on library staff development, training and promotion if it is to provide better library services to the college community.
3. Orientation programs for new library staff in academic libraries are crucial whether they are for those new to the profession or experienced. It is suggested that staff development programme be introduced in the library for training and orientation to the specific organizational environment (including personnel issues such as hours of work, compensation procedures, insurance, etc.), job expectations, the organizational structure and facilities, and specific job tools, goals, policies, and procedures. These type of programmes will make new library staff feel welcome and engaged in helping the library to meet its goals.
4. Since the professionals do not seem to have confidence in the leadership of the library, it is suggested that a development programme be formulated to inculcate leadership qualities in the superiors.

Conclusion

New technologies have brought various changes in the work style of library professionals. The mission of libraries has not changed due to technology. Work environment is a significant component in respect of motivation of the employees. Work ethics and work itself are the other two variables associated with employee motivation. This study aimed to gauge the limitations of existing human resource management practices relating to library professionals and semi-professionals working in the medical and engineering college libraries of Coastal Karnataka and to assess the views regarding job, job environment and organization. The study also identified and analyzed the key individual, work and organizational characteristics influencing their job satisfaction. This endeavor was set against the background of the need for a consolidated approach to the development of professionals in the library and information field. This approach was perceived to be important to educate, enlighten and inspire the user community by way of strengthening the professional college library system with competent, qualified, skilled and able staff.

Certainly, this challenging, competitive and dynamic environment requires that organizations today and in the future identify, develop and retain employees who are able to make substantive contributions to the success of the organization. Thus, the organization has to create conducive environment at the workplace to keep the employee committed to the organization. The work environment which suits the requirements of job and conveniences of the employee maximizes the workers' efficiency and productivity.

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Indian Journal of Library and Information Science
Volume 6 Number 3, Sept - Dec 2012

Use of CD-Rom Databases in Karnataka State Universities

Syed Shah Ahmed Sarmast *

Abstract

An attempt has been made to assess awareness & usefulness of CD – ROM databases by the users of Karnataka State Universities. The Karnataka State University provides CD-ROM databases to its users, for Research & Development activities. A questionnaire & interview schedule was designed to collect the relevant information. About 1578 questionnaires distributed, only 432 users were using CD-ROM databases. The percentage of using CD-ROM databases was 27.38%, the remaining 72.62% users were not using CD-ROM databases.

Key words: Karnataka State University; CD-ROM databases; Bibliographical databases.

Introduction

CD-ROM databases have capacity to store thousands of bibliographical databases. Users can search for current documents easily in CD-ROM Databases. The CD-ROM Databases not only provide bibliographic details but also provide effective abstracts of articles, reports, conference papers, patents etc. All the Karnataka State University Libraries provide CD-ROM databases in science discipline.

Methods

Since the study was related to the users and their use of CD-ROM databases, in order to bring the authenticity of the research, a detailed questionnaire was developed. The questions were framed in such a way that all the possible inquiries could be asked with one goal. Beside the questionnaire, the interview method with proper schedule was applied in the reader's case. Especially the research scholars were contacted and the interviews were conducted and counter questions of the readers were solved right at the time of the interview. In all, 1578 questionnaires were distributed & 1146 users found not using CD-ROM databases and remaining 432 users using this facility

Objectives

1) To understand the awareness about CD-ROM databases, particularly to teaching faculty and research scholars of Karnataka State Universities.
2) To investigate the availability of CD-ROM databases facility at university libraries of Karnataka state.
3) To study the problems faced by teaching faculty and research scholars in using CD-ROM databases.
4) To provide the suggestions for optimizing the use of CD-ROM databases.

Scope of the study

The present study intended to cover CD-ROM databases facility for teaching faculty and research scholars of science disciplines in Karnataka state universities, particularly general universities. These are Bangalore University, Bangalore; Gulbarga University, Gulbarga; Karnataka University, Dharwad; Kuvempu University, Shankarghatta;

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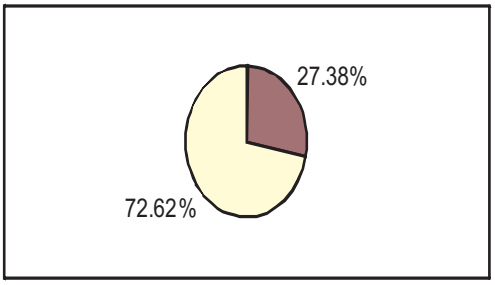
(Received on 28.04.2009, accepted on 26.07.2012)

Mangalore University, Mangalore; and university of Mysore, Mysore.

Table 1: Use of CD-ROM Database

Response	Number	Percentage
Yes	432	27.38%
No	1146	72.62%
Total	1578	100%



Dia 1: Use of CD-ROM Database

Discussion

Use of CD-ROM Database

It is clear from Table 1 that due to facility of Internet and its services, CD-ROM databases were not much in use. Hence only (432) 27.38% users used CD-ROM databases and (1146) 72.62% users did not use CD-ROM database.

Table 2: Frequency of using CD-ROM Database.

(N=432)

Response	Number	Percentage
Every day	15	3.47%
Twice/ Thrice a week	67	15.51%
Once in fortnight	151	34.95%
Occasionally	199	46.07%
Total	432	100%

Frequency of using CD-ROM Database.

Table 2 shows that a very few users, i.e., (15) 3.47% users, used CD-ROM database every day, because all the universities of Karnataka do not provide CD-ROM databases in every subject. This is because most of the users are using Internet and only few users use CD-ROM databases twice / thrice a week, i.e. (67) 15.51%. Similarly due to the Internet facility, (151) 34.95% users use CD-ROM once in fortnight and (199) 46.07% users use occasionally.

Table 3: Time spent in searching CD-ROM Databases

(N=432)

Time Spent	Number	Percentage
Less than one hour	361	83.56%
1 to 2 hours	66	15.28%
2 to 3 hours	5	1.16%
Total	432	100%

Table 3 shows that, most users used CD-ROM database for less than one hour, i,e., (361) 83.56% users. This is because users got the search results in less time. Few users, i.e. (66) 15.28% used CD-ROM database for 1 to 2 hours, because they searched for more exhaustive information for research and teaching purpose. Very few users, i,e., (5) 1.16% used CD-ROM database for 2 to 3 hours.

Table 4: Reasons for using CD-ROM databases

(N=432)

Response Reason	Number	Percentage.
Searching Database for latest abstract	336	77.77%
For searching earlier literature on a given topic	215	49.76%
For searching latest publication of given author	166	38.42%

Reasons for using CD-ROM databases

Table 4 shows that (336) 77.77% users used CD-ROM database for searching latest abstract of journals and conference papers; (215) 49.76% of users used CD-ROM database for searching earlier literature on a given topic because it is helpful for research and teaching purpose; (166) 38.42% of users used CD-ROM database for searching latest publications.

Table 5: Preference of CD-ROM databases against printed version

(N=432)

Response for CD-ROM	Number	Percentage
YES	400	92.59%
NO	32	7.41%
Total	432	100%

Table 6: Reasons for preferring CD-ROM Data bases against printed version

N=400

Opinion	Number	Percentage
Convenient to use	386	89.35%
Easy to search	398	92.12%
Faster to search	392	90.74%
Can take print/ download research result	280	64.81%

Preference of CD-ROM databases against printed version

According to table 5, 400, i.e., 92.59% users gave preference to CD-ROM database than printed version because searching through printed version takes more time. Few users, (32) 7.41%, gave preference to printed version.

Reasons for preferring CD-ROM Databases against printed version

Table 6 shows that the reasons for preference of CD-ROM databases are convenient to use (386) 89.35%; easy to search (398) 92.12%; fast to search (392) 90.74%; (can take print/download 280) 64.81%.

Table 7: Advantages of CD-ROM Database

(N=432)

Reason	Number	Percentage
Project work	77	17.83%
Research work	332	76.85%
For teaching	23	5.32%
Total	432	100%

Table 8: Ranking of CD – Rom Databases

N=432

Database	Number	Percentage	Rank
Dissertation international abstract	108	25%	1
Biological Abstract	61	14.12%	2
INSPEC	51	11.81%	3
Math Sci	48	11.11%	4
Biotechnology abstract	40	9.26%	5
Cross Culture	32	7.41%	6
Geo Ref	28	6.48%	7
Eric	24	5.55%	8
ABI/inform	21	4.86%	9
Psyc info	19	4.40%	10
Total	432	100%	

Advantages of CD-ROM Database

From table 7, it is clear that (332), i.e., 76.85% users used CD-ROM databases for research work, (77), i.e., 17.83% users used for project work and few users used for teaching purpose (23), i.e., 5.32%.

It is clear from Table 7 that Karnataka State University, libraries are not providing CD-ROM databases in all subjects and users are using Internet more. Hence, less users use CD-ROM databases. The percentage and preference rank of CD-ROM database are given below:

Table 9: Storing Searched Results

(N=432)

Storing Methods	Number	Percentage
By downloading in Pen drive and CD	380	87.97%
By taking printout	30	6.94%
By noting down important points	22	5.09%
Total	432	100%

Ranking of CD – ROM Databases

Table 8 shows it is clear that preference percentange rankup of CD_ROM database in the order : Dissertation abstract (108), 25%, 1st Rank; Biological abstract (61), 4.12%, 2nd Rank; INSPEC (51), 11.81%, 3rd Rank; Math Science (48), 11.11%, 4th Rank; Biotechnology abstract (40), 9.26%, 5th Rank; Cross culture (32), 7.41%, 6th Rank; Geo Ref (28), 6.48%, 7th Rank; Eric (24), 5.55%, 8th Rank; ABI/Inform (21), 4.86%, 9th Rank; Psy info (19), 4.40.%, 10th Rank.

Table 10: Awareness about Logical Operators

(N=432)

Awareness	Number	Percentage
Yes	403	93.29%
No	29	6.71%
Total	432	100%

Storing Searched Results

As shown in Table 9, (380) 87.97% users storef the searched information in CD and pendrive because saving on pendrive and CD is easy and quickly accessible. Further, some universities give printout for abstracts available in the CD-ROM databases; hence, (30) 6.94% users stored printouts while remaining users, i.e., (22) 5.09% stored by noting down important points.

Awareness about Logical Operators

Table 11: Searching options in CD-ROM Database

(N=432)

Advantage	Number	Percentage
User Friendly	432	100%
Total	432	100%

Table 12: Method of Searching CD – Rom Databases

(N=432)

Response	Number	Percentage
self	390	90.28
With the help of written instruction	30	6.94
With the help of staff	12	2.78
Total	432	100%

It is clear from Table 10 that almost all users who use CD-ROM database are aware of logical operators, i.e., (403) 93.29% users use logical operators like AND or OR or NOT. These operators used to carry out search results and even the users possess some computer knowledge, therefore they use it. The staff of university is co-operative to help the users in carrying out search results using logical operators. Very few users, i.e., (29)6.71%, are not aware about logical operators.

Searching options in CD-ROM Database

Table 11 indicates that all, i.e., (432) 100% users responded that CD-ROM database searching procedure was user friendly. As searching does not involve typing of command, users do not need any training or technical knowledge.

Table 13: Users attitude towards Library Staff

(N=432)

Response	Number	Percentage
Co-operative	415	96.06%
Non-operative	17	3.94%
Total	432	100%

Table 14: Using CD-ROM Database whenever required

(N=432)

Response	Number	Percentage
Yes	301	69.68%
No	131	30.32%
Total	432	100%

Method of Searching CD – Rom Databases

Table 12 reveals that most users, i.e., (390) 90.28% search the databases by themselves because the searching procedure is very simple and user friendly; (30) 6.94% users search the database with the help of written instruction, because only Gulbarga University provides this kind of facility to its users. Few users take the help of library staff, i.e., (12) 2.78% because they do not use more CD-ROM databases.

Table 15 Reasons for not using CD-ROM Databases when required.

(N=432)

Response	Number	Percentage
Due to timing	101	23.37%
Due to rush	30	6.94

Users Attitude Towards Library Staff

Table 13 reveals that (415) 96.06% users had given opinion that library staff are very co-operative when they are using CD-ROM databases, because the nature of the library staff is good and they know their duty. Few (17), 3.94% users have given opinion that the staff of library is non co-operative because CD-ROM database of all subjects is not available and timing of using CD-ROM database is restricted.

Using CD-ROM Database whenever required

All the Karnataka Universities do not provide all subjects' CD-ROM databases. Hence, Table 14 shows that (301), 67.68% users used CD-ROM databases and (131), 30.32% did not use CD-ROM databases service.

Reasons for not using CD-ROM Databases, when required.

It is also clear from Table 15 that few users, (101) 23.37% are facing problems like timing because time for using CD-ROM database is 10 AM to 5.00 PM; remaining (30) 6.94% of users are not using CD-ROM databases because of rush.

Result

- A total of 2023 questionnaires were distributed out of which 1578 (78%) questionnaires were received from teaching faculty and research scholars covered from 6 universities of Karnataka State, i.e., Bangalore University, Gulbarga University, Karnatak University, Kuvempu University University of Mysore and Mangalore University.
- The male respondents were (818) 51.84% and female respondents were (760) 48.16%.
- The response received from teaching faculty was (421) 26.68% and (1157) 73.32% from research scholars. Majority of the respondents (980) 62.10% had research experience between 1-5 years.
- Around one-fourth respondents, i.e., (401) 25.41% possessed PhD qualification and (1177), i.e., 74.59% respondents did not have non PhD qualification .
- More than half the respondents, i.e., (955) 60.5%, are had 1-5 years membership with library.
- The frequency of visit to library showed (558) 35.36% users who visited library twice/thrice week followed by (614) 38.91% once in fortnight.
- About more than half respondents (868) 55.01%, spent less than one hour in library followed by (540) 34.22% who spent 1-2 hours.
- More than one-fourth, (432) 27.37% respondents were using CD-ROM databases.

- Less than half, i.e., (199) 46.07% respondents used CD-ROM databases occasionally followed by (151) 34.95% who used this facility thrice a week.
- Less than one-fourth respondents, i.e., (361) 22.87% spent less than one hour searching CD-ROM databases.
- More users, i.e., (366) 77.77% used CD-ROM databases for searching latest abstract followed by, i.e., (215) 49.76% who used CD-ROM databases for searching earlier literature.
- Almost 400, i.e., 92.59% respondents gave preference to CD-ROM database than printed documents, stating reasons for using CD-ROM databasesas easy to search (398) i.e., 92.12% followed by (386) 89.35% stating convenient to use.
- The response for advantage of CD-ROM database for research work was (332) 76.85% followed by project work, (77), 17.83%.
- Most of the users of CD-ROM database, i.e., (380) 87.97% downloaded in Pendrive and CD.
- Majority of users of CD-ROM database, (403), 93.29%, had the awareness about logical operators.
- All users, i.e., (432) 100% of respondents using CD-ROM databases were of the opinion that searching procedure is user friendly.
- Majority of the users of CD-ROM database, i.e., (390) 90.28% were searching the information by self.
- Almost 450, i.e., 96.06% respondents said attitude of library staff was co-operative in nature.
- More than half, i.e., (301) 69.68% respondents were not having problems to use CD-ROM database.
- Less than one-fourth of users, i.e., (101) 23.37% were having timing problems to use CD-ROM databases.

Suggestions

An attempt has been made to address several sets of overall recommendations based on the findings and users suggestions of the study that may help further to illuminate the better use of CD-ROM databases. The suggestions are given below:

- Provision of current/update CD-ROM databases facility.
- Provision of CD-ROM facility in all subjects
- CD-ROM facility should be provided through LAN to Departments and Hostels.
- Training in use of CD-ROM databases.
- Connecting CD-ROM databases facility through LAN to Department & Hostels.
- Awareness about the worthiness of CD-ROM database.
- Provision of campus network facility
- Strong infrastructure facilities.
- Provision of separate CD-ROM section

Conclusion

The present study intended to cover CD-ROM databases facility in Karnataka State University. Due to the Internet and its services, only 27.38% of users are using CD-ROM databases. Hence, the University should provide this database facility in all subjects, totally updated, and also spread the awareness about the worthiness of the CD-ROM databases.

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Indian Journal of Library and Information Science
Volume 6 Number 3, Sept - Dec 2012

Development of Serial Management in University Environment: Commerce and Management Discipline (2004-2008)

Khemanna V. Aldi*, P.G. Tadasad**

Abstract

Serials collection management is more challenging for librarians in university libraries. This study covers collection development of commerce and management serials in six general universities of Karnataka state. Due to the limited budget, space, lack of onsite or off site storage, and shortage of staff, it required balanced collection development of scientific serials. This article identifies the year-wise and university-wise subscription of Commerce and Management serials. Total 451 (67.7%) of the serial titles in collection were Commerce and they accounted for (67.7%) and for 251 (32.3%) of Management serial titles subscribed to by six university libraries from 2004-2008. This study helped to know how many universities subscribed to common titles and how many universities subscribed uniform serials independently without any duplication.

Keywords : Serial titles; Commerce; Management; Karnataka universities.

Introduction

The primary purpose of the serials collection is to support the undergraduate and graduate programs of the University, to provide general and advanced materials for students, research scholars and faculty members in all fields, and to furnish a limited number of materials for leisure reading. A library is recognized not by its building nor by its staff or interior decoration. It is known by its collection. In fact, the future generation will blame us or praise us for its collection. A university library collection has to be developed in such a way that the objectives of universities should include research in scientific serials. In the present day, need for nascent information is fulfilled by the scientific serials in print and electronic medias. Among them scientific serials are considered as important source of communication of nascent information. Such information kindles the fire in the researchers for updated knowledge in order to develop it more. The continuity of the developments is available through scientific serials only. Therefore, scientific serials contribute mainly as a strong resource for research in any academic institution. Serials serve as a major source of current information in many academic disciplines.

Objectives

The primary objective of the present study was to investigate the existing library collection management of scientific serials in university libraries of Karnataka state. The specific objectives of the study were:

To investigate the serials collection development process

To know common Commerce and Management serials subscribed by all the universities

To know the year-wise and university-wise Commerce and Management serials subscription

To find out the number of uniform titles subscribed to by five universities' libraries, four universities, three universities and two universities.

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(Received on 11.11.2009, accepted on 26.07.2012)

To find out what are the Commerce serials subscribed to by universities independently without any duplication.

To know where the particular Commerce and Management serials were subscribed

To prepare union catalogue of Commerce and Management serials

Scope and limitation

The scope of the study population comprised authentic data collected from Kardex system and Accession Register of university libraries of Karnataka state viz: i) University of Mysore; 2) Karnatak University, Dharwad; 3) Bangalore University, Bangalore; 4) Gulbarga University, Gulbarga; 5) Mangalore University, Mangalagangothri and 6) Kuvempu University, Shankarghatta. It covered only Commerce and Management subject serials between the period from 2004 to 2008.

Review of literature

The growth of library collection through the expansionist years of the 1960s and early 1970s was spectacular and can largely be attributed to those staff called subject specialists.

Anita [1] describes the collection development program in National Institute of Science, Technology and Development Studies library. An appropriate collection development plan was developed by resource sharing with outside libraries and making use of available information technology. Rosamma [2] attempts a comparative cost benefit analysis of the two systems of subscription to periodicals (direct and subscription by agency), based on the experiences of Calicut University Library and Kerala University Library, and observed that direct subscription system is more efficient and economical. Kapur and others [3] presents the results of a survey conducted with regard to periodical departments in 7 north Indian university libraries and highlights the specific problems faced in the acquisition and management of periodicals. Dalai and others[4] discuss the various steps involved in the acquisition of periodicals in the library of the Regional Research Laboratory, Bhubaneswar, Orissa, outline methods of direct acquisition from publishers and indirect acquisition through agents, and compare data on receipt and non receipt of journals from publishers and through agents. Pathak [5] highlights the growth of periodical subscriptions, increase in exchange rates and other factors affecting the number of periodicals subscribed to by academic libraries and research libraries in India. Goldberg and others [6] address the consistent themes surrounding serials management, including the importance of periodicals to libraries, maintenance of serials records, organization and staffing of serials departments, automation, and education. While libraries continue to try to manage serials, the virtual future may make serials control a moot point. Miller and others [7] look at the issues revolving around new dynamics, including distance education, electronic serials and how librarians should proceed in the near future. Much change is expected in US Copyright law. The library literature has yet to examine aims to provide new answers, and ask new questions. Tapaswi and Maheswarappa [8] present an analysis of serials preferred and cited in various communications by Indian oceanographers during 1963 to 1992 they note a shift in preference of serials from general sciences to oceanography (interdisciplinary) and to oceanography as a core subject. Ramaiah and Reddy [9] observe that periodicals are an important component of university library collections. However, the periodicals are expensive and need to be continued year after year. University libraries are suffering from inadequate and inelastic budgets and the general economic recession in India, coupled with the rise of subscription prices of periodicals. This decline of serials collections in the universities is affecting the academic excellence of teaching and research. They examine the periodical subscriptions of a sample of universities in Andhra Pradesh, India, and suggests ways to overcome the

financial trauma suffered by the university libraries

Methodology

Data was collected from existing documentary resources available in six general university libraries of Karnataka compiled based on Kardex and also Accession Registers maintained in the library . For the purpose of the research paper, serials were confined to only Commerce and Management subject journals. General references/other discipline journals were not taken into account.

Data analysis and interpretation

In this paper, an attempt was made to analyze and interpret the data collected from six general university libraries of Karnataka state on collection development of Commerce and Management serials. The collected data is presented in the form of Tables and Graphs analyzed by using simple method of calculation.

Scientific serials subscribed to by all the university libraries in the field of Commerce and Management from 2004-2008 are shown in Table 1 In the year 2004 only one serial title, i.e. **Vikalpa** was subscribed to by five university libraries. Five serials, i.e. Business India, Indian Journal of Industrial Relations, Journal of Accounting and Finance, Yojana (English), and Yojana (Kannada) were subscribed to by three universities and eleven serials subscribed to by two universities. However, 35 serials were subscribed to by university libraries independently.

Fig 1: Subscription of Commerce and Management serials in Universities libraries (2004)

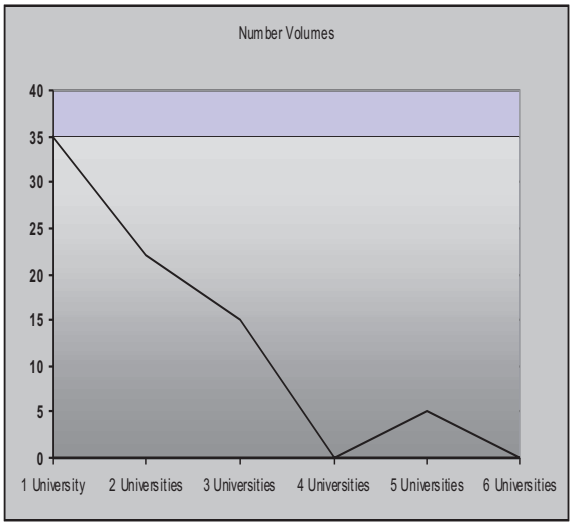


Table 2 and fig 2 show that during 2005, six commerce and management scientific serials, i.e. IIMB Management Review, Indian Journal of Industrial Relations, RBI Bulletin, Vikalpa, Yojana (English) and Yojana (Kannada) were subscribed to by half of the university libraries under study and ten serials, i.e. Business world, Chartered Accountant, Chartered Secretary, Effective Executive, Harvard Business Review, Indian Accounting Review, Indian Journal of Commerce, Indian Journal of Marketing, International

Table1: Subscription of Commerce and Management serials in Universities libraries (2004)

No. of Universities	Number Serials	Total Numbers	Percentage
1 University	35	35	45.4
2 Universities	11	22	28.6
3 Universities	05	15	19.5
4 Universities	-	-	-
5 Universities	01	5	6.5
6 Universities	-	-	
Total		**77**	**100.0**

Table 2: Subscription of Commerce and Management serials in Universities' libraries (2005)

No. of Universities	Number Serials	Total Numbers	Percentage
1 University	47	94	71.2
2 Universities	10	20	15.2
3 Universities	06	18	13.6
4 Universities	-	-	-
5 Universities	-	-	-
6 Universities	-	-	-
Total		**132**	**100.0**

Fig 2: Subscription of Commerce and Management serials in Universities libraries (2005)

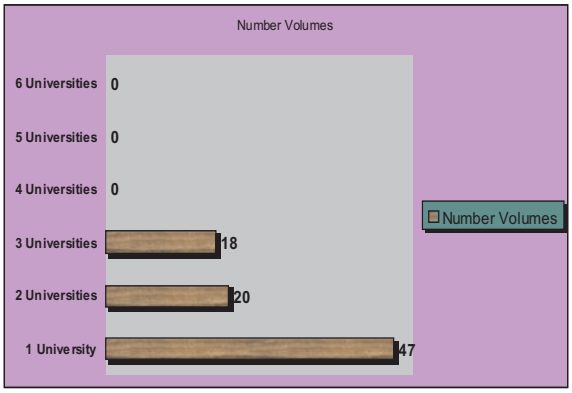
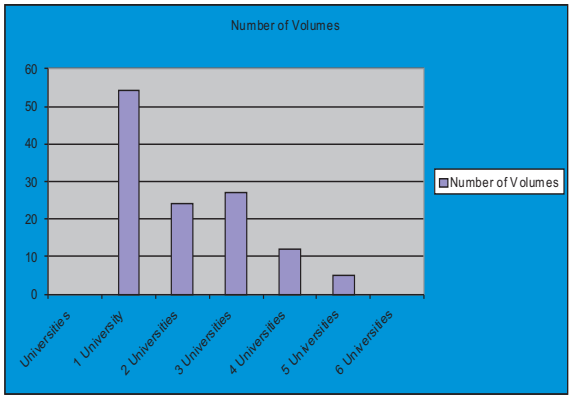


Fig 3: Subscription of Commerce and Management serials in Universities libraries (2006)



Accounting Finance Research, Journal of Accounting Research and Management Accountant were subscribed to by only two universities and 47 serials subscribed to independently by universities without any duplication.

In the year 2006, five university libraries subscribed to only one the same serial, i.e. Yojana (English), three serials, i.e. Business India, Vikalpa and Yojana (Kannada) were subscribed to by four universities. Half of the universities subscribed to nine serials - Accounting World, Capital Market, Finance India, Harvard Business Review, Indian Journal of Commerce, Journal of Accounting and Finance, Management Accountant, Productivity News and RBI Bulletin, only two university libraries subscribed to twelve serials. On the other hand, 54 serials were subscribed to separately by universities without any duplication (Table-3)

It is observed from Table 4 that in the year 2007, two scientific serials (7%), i.e. Vikalpa and Yojana (English) were subscribed to by five university libraries; three serials (8%), i.e. Harvard Business Review, Indian Journal of Industrial Relations and Management Accountant were subscribed to by four university libraries; nine serials (18%), i.e. Accounting World, Business world, Capital Market, Finance India, Indian Journal of Marketing, Journal of Accounting and Finance, Productivity News, The Management Accountant and Yojana (Kannada), subscribed to by three universities; only two university libraries subscribed to 19 (26%) common titles; about 60 (41%) Commerce and Management serials were independently subscribed to by university libraries.

Table 3: Subscription of Commerce and Management serials in Universities libraries (2006)

No. of Universities	Number Serials	Total Numbers	Percentage
1 University	54	54	44.3
2 Universities	12	24	19.7
3 Universities	09	27	22.1
4 Universities	03	12	09.8
5 Universities	01	05	4.1
6 Universities	-	-	-
Total		**122**	**100.0**

Table 4: Subscription of Commerce and Management serials in Universities libraries (2007)

No. of Universities	Number Serials	Total Numbers	Percentage
1 University	60	60	40.8
2 Universities	19	38	25.8
3 Universities	09	27	18.4
4 Universities	03	12	8.2
5 Universities	02	10	6.8
6 Universities	-	-	
Total		**147**	**100.0**

Fig 4: Subscription of Commerce and Management serials in Universities libraries (2007)

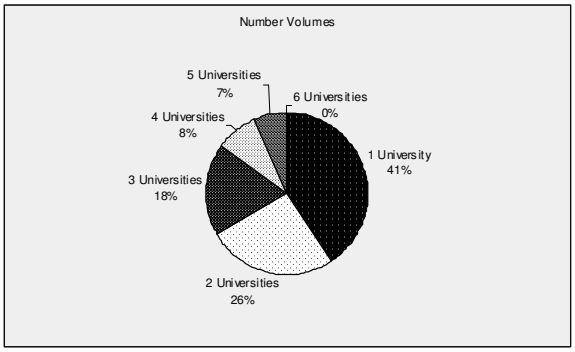


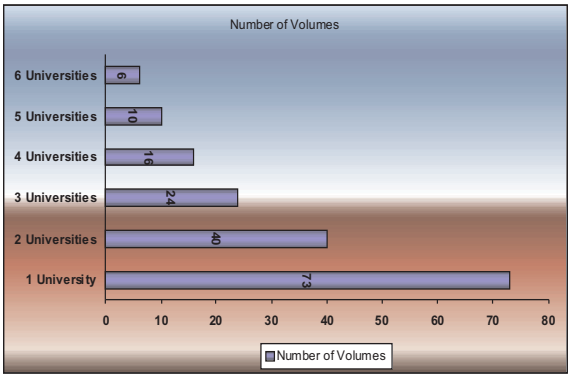
Table 5 shows that during 2008, only one serial, i.e. Vikalpa was subscribed to by six universities in common title and two serials, i.e. Management Accountant and Yojana (English), subscribed to by five universities. Similarly four university libraries subscribed to three scientific serials, i.e. Finance India, Yojana (Kannada) and Harvard Business Review, in common titles and half of the university libraries subscribed to these eight serial titles, Accounting World, Business India, Business world, ICFAI Journal of Management Research, ICFAI Journal of Entrepreneurship, Journal of Accounting and Finance, Journal of Marketing Research and RBI Bulletin. However, twenty serials were subscribed to by only two university libraries. Total 70 serial titles were subscribed to by universities independently without any duplication.

Table 6 shows the subject-wise distribution of scientific serials subscription in commerce

Table 5: Subscription of Commerce and Management serials in Universities libraries (2008)

No. of Universities	Number Serials	Total Numbers	Percentage
1 University	73	73	43.2
2 Universities	20	40	23.7
3 Universities	08	24	14.2
4 Universities	04	16	9.4
5 Universities	02	10	5.9
6 Universities	01	06	3.6
Total		**169**	**100.0**

Fig 5: Subscription of Commerce and Management serials in Universities libraries (2008)



and Management discipline from 2004-2008. It is found from the table that total 666 serial volumes were subscribed to by all the university libraries. More serials were subscribed to by all the universities in Commerce subject 451 (67.7%) compared to Management subject 215 (32.3%) serials subscribed by all university libraries.

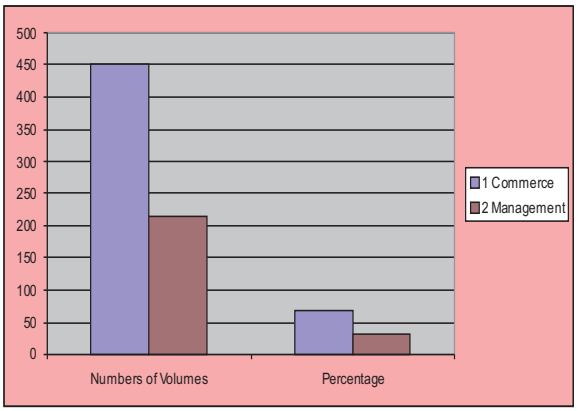
Conclusion

Due to the rising prices of scientific serials, libraries today face a challenging task of meeting unlimited information demands of their users with limited financial budget. The demands of the users are justified because of information explosion in every subject discipline. It requires a balancing act which can quench the thirst of postgraduate students, research scholars and the faculty of universities.

Table 6: Subscription of Commerce and Management Serials in universities: Subject-wise

Sl. No.	Subject	Numbers of Volumes	Percentage
1	Commerce	451	67.7
2	Management	215	32.3
	Total	**666**	**100.0**

Fig 6: Subscription of Commerce and Management Serials in universities: Subject-wise



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Indian Journal of Library and Information Science
Volume 6 Number 3, Sept - Dec 2012

Impact of E-resources and Services in Academic Law Libraries in India

B. Manikya Rao

Abstract

This paper discuss the need for an incorporated electronic resources and services for academic law library users; e- resources availability from the web and advantage of e- resources and also discussed with types of e-journals e-databases and examines the interface requirements in legal education. It concludes by looking to the future in research and development of useful system.

Introduction

Simple literacy suggests that 'Education' is nothing but formative experience or development of mental characteristics. Elite literacy enunciates that education is the "formative experience in the development of character or mental power" (by human being) but the celestial truth is that education is not the unique province of human race only.

However education is the primordial move in the acquisition of knowledge. Which may subsequently be solidified in to enlightenment, such is the eternity of the education in human life and it is a pious potion for a noble and robed intellectual. It is axiomatic that education is the best friend of oneself. If you befriend knowledge with the help of education you are said to have been equipped for ultimate realization in the words of Joseph Addison what sculpture is to a block of marble education is to a human soul' Thomas Kemps once said "nowhere in the world could one find peace, expect in a corner with a small book" True books are the soul of education no doubt.

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(Received on 30.08.2012, accepted on 03.09.2012)

Sanctimonious is law and legal education and more sanctimonious are law colleges one cannot dream of a peaceful society dehorns the law. The education in law is the summit of the multi based pyramid of education after all law does nothing more than giving the relation between the authority and power (Madhavi, Ravulapati. 2007)

Prof Meyers S. Mc Douglas an inspiring law teachers emphasises on this aspects holding that in any country, it is the function of legal educations to shape and transmit more fundamentals, community perspective about the relation of authority and naked power to train specialties in all the particular skills, necessary to the effective management of processes, of authorities, decisions and to assist both in the clarifications. Of basic community policies about the shaping and sharing of all values and in the inventions of institutions and procedures appropriate to the recurring of such clarifying policies.

Significance of Law College Libraries

The primary mission of the law college library is to meet the information needs of the faculty and students of the institution it supports. In addition to their role in educating future lawyers, law colleges are the major producers of scholarly literature in law and rely on academic law libraries for both the primary and secondary materials needed for research and publication. Beyond support for the core functions of legal education and

research, the specific missions of law college libraries vary depending on the size and missions of law colleges of different types. Differences among law colleges result in differences among their libraries in collection size and composition, staffing and services offered, and additional clienteles served.

In the back drop of relevance of law and legal education in contemporary society in post Liberalisation, Privatisation and Globalisation era, one should understand the Institutions imparting legal education. Library in a legal education imparting institution plays an important role. The strength of legal education depends upon the strength of library which is metamorphosed in cyber age.

Provision of information in electronic formats is becoming even more important than the traditional information services in today's context. People want to get identify information in the speediest way possible. To meet the rapidly changing needs of users, libraries have started providing electronic access to wide variety of resources including full text article of journals (Rekha, T.P. 2000)

Meaning of E-Source

Any electronic product that delivers a collection of data, it may be text referring to full text databases, Electronic journals, image collection, and other multimedia collections. These may be delivered on CD-ROM, on tape, via the internet and so on.

Definition

The University of Glasgow defines the term E-Resource as any resources that is available over the internet can be called an E-Resources.

"A digital version of a print journal like electronic publication with no print counterpart made available via the web, e-mail or other means of internet access. Some web-based e-journals are graphically modeled on the print version. The raising cost of print journal subscription has led many academic libraries to explore e- alternatives. Dictionaries of e-journals are available online (Sarasvathy, P and Giddaiah, D. 2007).

Objectives

- To find out the frequency of using library for E-Resources
- To find out the purpose for which E-Resources is used
- To find our whether library staff give orientation and extend their help to use E-Resource facility
- To find out the impact of E-Resources

Advantages of E-Sources

- The data occupies less space and can be replicated easily and made secure electronically,
- The data can be made available immediately through communication networks like internet to anyone, anywhere and,
- Provides enormous search speed and facility.

Selection and Evaluation of E-Sources

During the last few years, documents have begun to appear on the Internet. As a result, information specialists from all over the world have started to evaluate electronic sources of data, applying standards both different and the same as those used for print data. The main concern is to achieve the highest quality of access and information throughout the www virtual library. Unfortunately, ultimate standards have yet to be agreed, even though some criteria do already exist. It has not been possible to adapt traditional evaluation criteria because the very newness itself of electronic sources demands new standards. The Internet carries both non-professional and professional information. There is a distinct difference between a "site" and a "database". An Internet "site" can be any URL in the Internet, which contains a document, a collection of

data, or just an index to some sources gathered by some good-hearted persons.

The process of monitoring and evaluating databases is a question of content expertise and access and requires certain skills. They range from weighing and authenticating documents found, identifying value-added features and engaging in establishing database policies, understanding copyright issues, maintaining links or implementing mirror sites and dealing with different languages and various formats. Some consider *that "source evaluation is an art,"* which can only be achieved by first acquiring an extraordinary level of understanding (Natarajan, M. 2007).

Impact of Electronic Technologies on Libraries

It is obvious that electronic technologies have already had considerable impact. Virtually all libraries, at least in the most-developed countries, are now members of networks that greatly facilitate the location of sources of information and the gaining of access to them. Card catalogues have largely been replaced by online catalogues and these are being expanded through the addition of materials not previously included. The whole idea of what a catalogue should be is changing; it is no longer seen as a tool bounded by the collections of a single library but one that reveals the availability of resources in a network of libraries or even one that is essentially a gateway to universe of information resources in printed, electronic or other forms. Use of terminals or work stations to access databases of various kinds is now routine for many libraries, and most now add electronic resources to their collections in CD-ROM or other forms.

Theses developments have occurred with surprising speed, suggesting that the changes of the next decade will be more dramatic and rapid than those of the past decade. That this electronic revolution in libraries has occurred, of course, is due to developments over which the library profession has had little direct control, most obviously the growth of electronic publishing and of networks that facilitate scholarly communication

Electronic Books (E-Books)

E-books are nothing but the electronic version of printed books. In addition to textual matters the e-books consist of hyperlinks, search facilities and multimedia capabilities. E-books compilers compile also the source files into an easy to distribute life format like HTML, PDF and RTF files. In other words, an e-books has electronic text and that text is showed to the readers visually. The electronic text is saved into a floppy disk, transferred into a CD-ROM, downloaded from the Internet or built into a palm – sized digital reader project.

A number of electronic publishers have emerged: plus well-known publishers of print materials, including Oxford University Press and Princeton University Press, have started to experiment with electronic publishing Electronic publishers. Many of the electronic books or electronic publishers' Web sites freely permit and encourage readers to provide feedback on works, often directly to the author rather than to the publisher.

There is a growing trend for vendors to work directly with patrons, without any involving the library. Users may establish their own accounts, charge services to credit cards or pay by a prearranged method, and have requested materials delivered directly to them by fax, e-mail, etc.

Electronic Journals (E-Journals)

Type of E- Journals

1. Online Journals
2. Offline Journal
3. Network Journal

As per report published in 'Nature' (No. 397, p. 194-95, 1999) "a journal without a web version is now rare and probably endangered". A journal contains intellectual works of the researchers relating to current information on a particular subject field. An e-journal is processed, published and

distributed all over the world by electronic network. E-journal started with the full text databases offered by Dialog in 1980s. Dialog provided with only ASCII files of the journals which exposed off the diagrams, photo, graphs, etc.

Electronic publishing has led to a new era of communications and information sharing. Electronic journals have helped publishers and scholars to disseminate information much more quickly than was previously possible. Initially, electronic journals were seen by many as a passing fad. Many in the library profession considered them problematic and inappropriate for library collections since they presented problems in terms of acquisitions, subscriptions, cataloguing, and archiving.

Franks (1993a) offers several reasons why electronic publishing was adopted by scholarly research journals long before it was used for other kinds of publications.

- The intended audience uses the Internet more than the general population and is familiar with using documents in an electronic form;
- Libraries are experiencing extreme financial hardship and cutbacks in funding;
- There is a strong move for scholars to find less costly ways to promote their work.

Although Franks' reasoning is valid and continues to hold true, electronic journals have not become as central to scholarly publishing and libraries as some forward thinking individuals might have anticipated. (Chandra Biswas, Bidhan. Bhandani K.Ghush 2004).

Characteristics of Electronic Journals

The term 'electronic journal' is ambiguous, and it is not always clear whether the producers of a given title are referring to a distribution format for a print journal, an electronic archive of a print journal, or a journal published exclusively in an electronic format. Electronic journals come in a variety of styles and formats, much like their print counterparts. Some journals attempted to solve this problem by including line numbers at various points throughout the journal. Surprisingly, a number of electronic journals continue to use this practice. Users of early electronic journals often printed hard copies, and many Libraries preferred to provide paper printouts of the electronic journals rather than access to the actual online version. Each generation shares a set of common characteristics.

First-Generation Electronic Journals often are

- Simple file structure (one file equals one article, or one file equals one issue);
- Published by individual or groups of scholars;
- Disseminated by e-mail and the implied audience is the individual subscriber;
- Copyright restrictions are usually waived to the extent that proper attribution is made.

Second-Generation Electronic Journals are often

- HTML-based or use the Web to disseminate specially formatted issues;
- Issues or articles include graphics, multimedia, or links to other Internet resources;
- File structures are less hierarchical, and there is less uniformity in structure from one title to another.
- Users are notified by e-mail when new issues are available, and may retrieve issues from the server.

Electronic journals have undergone a dramatic transformation in style and format since their initial appearance in the early 1990s. Many now have full-colour Web pages with an attractive and easy to use layout. Despite the fact that layout and presentation of electronic journals have greatly improved, and access has been facilitated by the Web and online archives, users still may prefer to print hard copies of selected issues and articles to reading from a computer screen.

Legal Data Bases

Electronic fee-based databases

- Lexis Nexis is one of the leading providers of comprehensive information and business solutions to professionals in a variety of areas—legal, risk management, corporate, government, law enforcement, accounting and academic. The database provides access to 5 billion searchable documents from more than 32,000 legal, news and business sources.
- Westlaw is Thompson West's online legal research service. It provides quick, easy access to a collection of statutes, case law materials, public records, and other legal resources, journals and law reviews published from all around the world. The primary legal materials are available on jurisdictions of UK, USA and Commonwealth countries.
- Manupatra is an Indian legal information database comprising legal and business module. It includes case updates from the Supreme Court and all High courts, orders of tribunals, 1100 Central Acts with all amendments incorporated, notification circulars of 36 Government of India ministries including SEBI and RBI updated daily, full-text of Bills in Parliament and ordinances, agreements and drafts, committee reports, stamp duty, court fees, court rules, etc.
- INDLAW is an Internet provider of research modules relating to Indian legal, tax, business and regulatory issues. Indlaw is part of the Indian law online project which was launched in April 1997 as a collaborative exercise between professionals and academicians based in U.K, and in India to build an electronic legal library to enable solicitors, advocates, students and clients to have access to information on various primary and secondary legal documents like the constitutional texts, parliamentary debates, case law, parliamentary and state enactments and delegated legislation in both India and the U.K.
- EJurix is a collection of law information in India covering more than 2, 5,000 full-text judgments. It covers all Supreme Court, High Court and Tribunal decisions reported till now for the modules covered.
- Hein Online is an image-based collection of legal periodicals. Each volume starts from volume one. Most of the titles are from USA and UK. Legal Pundits is an Internet-based legal and regulatory information services
- World Bank Resource Online-World Bank e-Library is an electronic portal of the World Bank's full-text collection of books, reports and other documents on social and economic development.

Technology Management

Law librarians have been working with electronic legal research resources for over 30 years, most notably since Lexis emerged in the 1970s as the pioneering full-text research database. Thus, technology has been integral to legal bibliography for so long that law libraries have naturally been at the forefront of the introduction of computer systems into American law colleges. In most law colleges, the library was the first department to designate specific technology responsibilities to one of its staff members. Although many different models now exist, some where law college information systems and the law library are combined and some where they are separate, it is still generally recognized that library staff are among the most technologically capable in the entire college. Consequently, these highly skilled and specialized professionals have a well developed perspective on when it is appropriate to rely on online or CD-ROM legal research resources and when it is best to turn to resources in print or microform formats. Law librarians, therefore, are the best equipped to guide students, faculty, and support staff in making choices about which formats to use in which research situations. Because of their expertise in both legal doctrine and legal bibliography, law librarians can distinguish between the factual and conceptual aspects

of research problems and can assess the impact of format and resource selections in addressing these different types of issues. Law students, faculty, and staff also frequently seek law librarians' assistance on hardware and software issues and their advice about electronic research, computer purchases, and Internet connectivity (Ruth Levor)

The law college's computer labs are usually located in the law library and maintained by Librarians and staff members. Research classes, often taught by librarians, are regularly scheduled in these labs. This training goes beyond expanding the students' Westlaw and Lexis skills. Students are introduced to many specialized databases, some licensed through special subscriptions, some available to the public but not widely known. They are trained in tax research, foreign law research, location of treaties and international documents, and creation of legislative histories using online sources. They are also trained to assess the credibility and authority of these sources and to weigh the efficiency and costs of online research against the other information formats available to them in the Library.

Conclusion

The law college library, like other institutions faces a variety of challenges from the impacts of technology and globalization, as well as from the rapid rate of continuous change on all fronts. In many ways, the law library's ancient mission remains similar to what it has been, while the means to accomplishing that mission have changed. The responses of academic law libraries to a changing environment can be seen both in the increased awareness given to building stronger collections in foreign and international law and in non-law materials, and in efforts to improve access to digital information through electronic publication projects and development of domestic mirror sites for legal information held outside the India. In addition, many academic law librarians have taken leadership roles for general technology development and implementation within their law colleges.

Usually, highly skilled and specialized law library professionals provide law faculty with the utmost in customized research support for their teaching and scholarship, a level of research support that is unavailable in general academic libraries.

In the present rapidly evolving technological environment, the law librarians are expected to play a proactive role in providing guidance and reaching out the Users. They must evaluate the quality of print and electronic information, teach legal research methodology and be seen as core participants in the mission of their institutions. To perform a new role effectively, Law librarians must keep pace with the breakneck speed of emerging technologies and adjust to the new research needs and information use behaviors of users of legal education and profession.

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Indian Journal of Library and Information Science
Volume 6 Number 3, Sept - Dec 2012

CeRA (Consortium for e-Resources in Agriculture): A Boon to the Users of Mahatma Phule Krishi Vidyapeeth, Rahuri

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Abstract

This paper discusses the meaning of consortia as well as concept, need and benefits of Library Consortia and emphasized on a particulars of CeRA (Consortium for e-Resources in Agriculture), which is an unique Consortia launched on 30th April 2008 by Indian Agricultural Research Institute (IARI) New Delhi and gives its importance, Features and Facilities to the users.

Key words: Consortia; Library consortia; Need; Benefit; Indian scenario; CeRA-objectives; Features; Facilities.

Introduction

Today, the information needs of the users have increased enormously so much that no single library on its own can meet their needs. As to provide right information to right user at right time is an integral part of the library services it is necessitated the need for effective linkages and co-operation between libraries and information centers for sharing of available resources and information through network services. In Research libraries, Librarians are facing challenges of providing better services with decreased cost or budget. Consortia can become an excellent way in the process of collection, organizing and making accessible the electronic resources.

In the field of agriculture, Libraries are playing pivotal role in providing services to the scientists, teachers, students, researchers and farmers in agriculture and allied subjects. Therefore it is the nerve center of all educational, research, training and extension activities in agriculture. Agricultural libraries have now become highly complex centers with a multiplicity of functions catering to a wide variety of clientele having divergent interests. Now a day due to information explosion, diversity of use needs multidisciplinary research duplicity of resources, escalation cost of foreign journals and financial crunch causes impossibility of self sufficiency which leads the libraries to opt for resource sharing. Therefore, the ICAR has taken initiative in formation of e-Consortium CeRA under the project of NAIP (National Agriculture Innovative Project) for using additional advantages like unlimited access, downloads, easy accessibility, any-where at any time accessibility, full text download etc.

Definition of Consortia

A consortium could be described as a group of organizations who come together to fulfill a combined objective that usefully requires co-operation and the sharing of resources and need to have a clear mutual goal in order to ensure their success. The aim should be to deliver "more than the sum of the individual part" A library consortium formation can be local, regional, state, national and inter institutional level.

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(Received on 18.12.2009, accepted on 20.09.2012)

(http://www.isical.ac.in/serial/consortia/CBSOr-11.pdf) [8]

According to online free dictionary

"An association or a combination, as of businesses, financial institutions or inventors, for the purpose of engaging in a joint venture."

(www.thefreedictionary.com/consortia) [9]

What is Library Consortium?

Group of libraries come together with common interest to form consortium. One of the libraries or agencies is works as coordinator for identification of libraries for each publisher, legal matter etc. The aim of consortia is to achieve what the members of the group cannot achieve individually. In other words "Consortia is a strategic alliance of institutions that have common interests." (V. S. Cholin and Karisiddappa) [1]

Need of Library Consortia [7]

- Information explosion
- Diversity of user needs
- Financial Crunch
- Impossibility of self Sufficiency

Benefits of e-journals Consortia

- Scope for electronic archives
- Availability and monitoring of usage statistics;
- Can be read anywhere in the world, at any time by any number of people.
- Article include links to other cited journals, e-books etc.
- Reduced storage costs.
- Developing Common resources databases.
- Effective document delivery systems.
- A single Interface and access points.
- Enhanced search facilities.
- Better scope for developing a union catalogue among participating libraries.
- Sharing of resources.
- Possibility to achieve objectives.
- Smaller libraries are benefited.

Indian Scenario

An increasing cost of information resources, technological advancements that offer newer methods of information processing, retrieval and dissemination are some of the factors which have made partnership a necessity and which led to the formation of e-journal consortium. The development of the consortium is the outcome of the desire for resource sharing.[4] It is seen that various consortium listed below are formed throughout India in different subjects fields.

1. UGC-INFONET (University and Colleges)

   http://www.ugc.ac.in/new_initiatives/infonet.html
2. Inter University Centers (IUC-DAEF Consortia, Atomic Energy)

   http://www.springerlink.com/content/n56100u25r65g735/
3. FORSA (Forum for Resource sharing in Astronomy and Astrophysics)

   http://www.rri.res.in/htmls/library/forsa.html
4. CSIR e-journal consortium (Council of Scientific and Industrial Research)

   http://www.iiap.res.in/library/CSIR-DST
5. HELINET (Health Sciences Library and Information Network)

   http://www.rguhs.ac.in/HELINETHOSTCONSORTIUM/homehelinetho st.htm
6. INDEST (Indian National Digital Library in Engineering Sciences and Technology Consortium)

   http://paniit.iitd.ac.in/indest/
7. ICMR (Indian Council of Medical Research)

   http://www.icmr.nic.in/home.htm

8. CSIR (Council for Scientific and Industrial Research)

   http://www.iiap.res.in/library/CSIR-DST

9. UGC-DAE Consortium for Scientific Research.

   http://www.csr.ernet.in/

10. ICICI Knowledge Park [10]

    http://www.iciciknowledgepark.com.

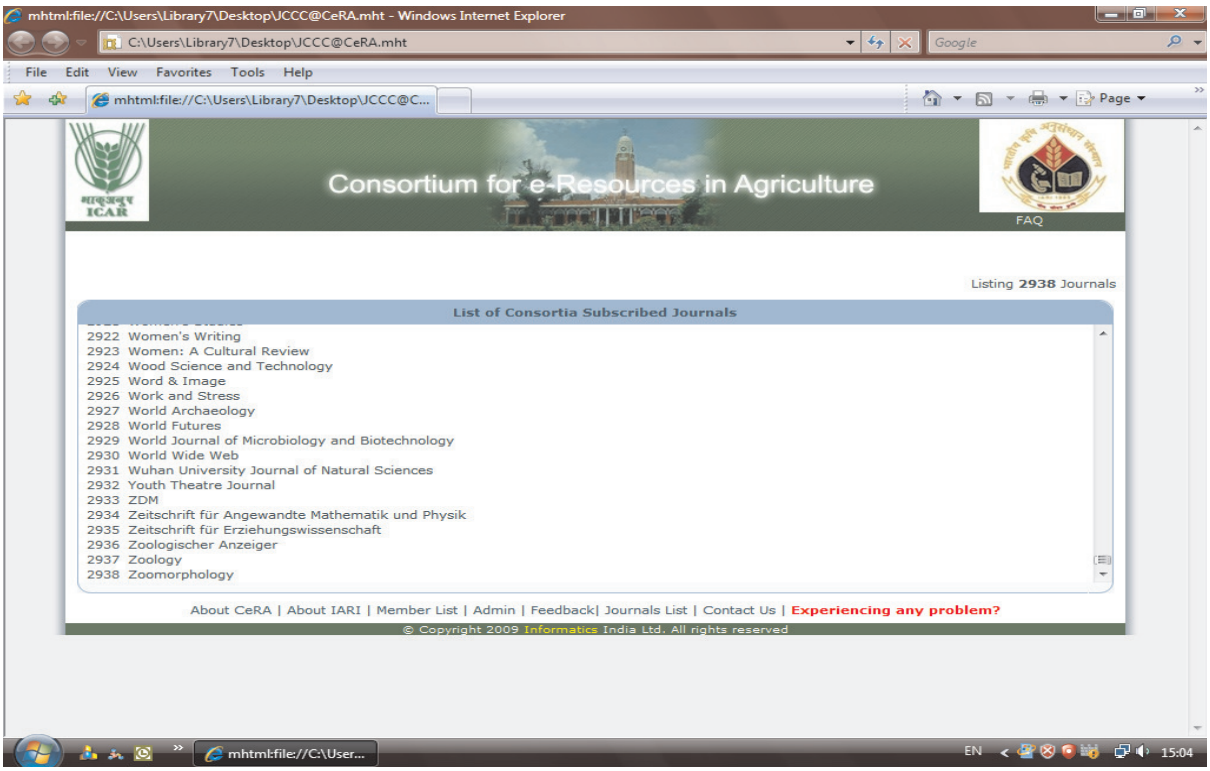
11. IIM Library Consortium

12. ISRO Library Consortium

CeRA (Consortium for e-Resources in Agriculture)

In order to cater the need of research scholars, scientists, students in the field of agriculture and allied subject, hence unique consortium 'CeRA' was formed in Agriculture field. The CeRA was launched successfully on 30th April 2008 at its Head quarters at the Indian Agriculture Research Institute (IARI) by Dr. Mruthyunjaya, National Director,

Sr. No.	Name of the Organizations	No. of Organization
1	Deemed Universities	5
2	ICAR Headquarters and Krishi Anusandhan Bhawans	3
3	National Bureau	5
4	Institutes	42
5	National Research Centres	21
6	Project Directorates	9
7	State Agricultural Universities	38
	Total	**123**



NAIP and Dr. S. A. Patil Director, IARI, New Delhi with following objectives.[2]

Objectives of CeRA [7]

- To develop the existing R&D information resource base of ICAR institutes/ universities, etc., comparable to that existing in world's leading institutions/ organizations
- To subscribe e-journals and create an e-access culture among scientists/teachers in ICAR institutes/agricultural universities
- To develop a Science Citation Index (SCI) Facility at IARI for evaluation of scientific publications
- To assess the impact of CeRA on the level of research publications measured through SCI

The Consortium consists of following organizations.

Outcome/Impact/Deliverables

- Online accessibility of all important journals related to agriculture and biotechnology to researchers and students of the consortium members
- Quick access to world R&D information as available world wide
- Permanent archive of the subscribed e-databases
- Improvement in the quality of scientific publications, and teaching and research guidance
- Providing one print version of each title subscribed for ready reference at IARI free of cost.

Features of CeRA [6]

- Main feature of the CeRA, the JCCC Service (Journals Customs Contents of Consortium) of M/S Informatics.
- CeRA has covers contents of about 3982 journals at present.
- Today, 123 member libraries also available as a value added service.
- Open Access journals of open j-gate since the project (CeRA) was implemented through consultancy of M/S Informatics, Bangalore.
- Creation and Maintenances of the CeRA website, promoting, organizing user awareness programmes, training to users and Librarians are also part of its Consultancy activities.[2]

Facilities to the Users [6]

1. When user click on URL of the CeRA, the IP of his Computer will be verified with the IP address provided by members of library to publisher for Authenticity. If it matches with the IP range provided to the publishers, then user will be welcome with Institute name of that particular IP and user can use all features except "admin".
2. Members which could not get access through IP address are provided with user name and Password separately.
3. User can send request for Document delivery for an article which are not ready available on portal and collect the same from libraries after receiving the request.
4. Quick Search: Users query like author, Keyword, title etc. are searched in all peer Reviewed journals/professional and industry journals after given search term. User can simplify his search by selecting subject either by Agricultural and Biological Sciences, Art and Humanities, Basic Sciences, Biomedical sciences, Engineering and Technology and Social and Management science or all Subjects.
5. Advanced Search: In advanced search user can be use Boolean operators for getting better and specific result as well as Title, Keyword, Abstract, Author, Institute/ Address and Selecting Subject on Agriculture Science selecting publication year range or latest updated like last one week or last one month
6. Browse Journals: User can browse the journals by Subject, title or publisher in alphabetical order with hyperlink.
7. My journals: User can get an Alert of his interest after registering his name by creating profile with mandatory details. When user made query and retrieve search results each article/journal it is indicate that whether it is a consortium subscribed journal (CS), Library Subscribed journal of CeRA members (LS) or open journal (OA). If it is CS and OA journal then user have full text facility, if it is LS journal then "Request for Article" is the facility available.
8. Members List: Institute members under this Consortium are listed alphabetically, by clicking on Institute the user can see the details of administrator/librarian/contact person like department, Address, phone/ mobile/fax, e-mail, Institutes website etc. for requesting an article or Document delivery. At present CeRA comprises of 123 libraries as members.[8]

Conclusion

It is concluded that Libraries can not satisfy the informational requirements of their users by their own resources, therefore the need of the co-operation to each other for the optimum use of their resources. Due to the revolution in the field of Agricultural Research and development the expectations of users from the library has increased and this compelled the libraries to share their resources to cater to the informational needs of the users. Here the CeRA is the Consortia formed for a common agreement between various Agricultural libraries which agree together to co-operate with each other to achieve certain common objectives. ICAR spending much

more money on CeRA. It is the better plan to give the better services to the Scientist, Researcher, Staff, Students and farmers in Agriculture and Allied Subject.

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Indian Journal of Library and Information Science
Volume 6 Number 3, Sept - Dec 2012

Selecting Software Technology for Multilingual System and Issues Involved there after: A Strategic Plan

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Abstract

In India, all apex literary libraries are gradually adopting to the changes that are taking place in the information world. This paper focuses primarily on those sectors that are nurturing multilingual resources, shows how changes in technology are impacting such libraries. Subsequently this paper describes the various steps in involved in selecting software/hardware technology for multi-lingual system, offering a broad strategic plan to go for automation, thus highlighting priorities of hardware and software selections. Also it takes it to considerations the integrated system and varied modules to replace all traditional library functions, at the same time capable of connecting to the world resources. Apart from identify various steps to embrace automation, makes an attempt to show how multi-lingual approach is not possible with earlier Indian script codes for information interchange. Eventually Unicode offers an excellent opportunity to Indian languages to store and publish the information in any Indian languages. Lastly it furnishes some softwares having Unicode support that helps in building and distributing multilingual library resources.

The intention of writing this article is to offer, an overview of how changes in technology are impacting today's libraries working in multilingual milieu and its user's expectation and discusses at length about selecting software technology for multilingual system, analyzing a strategic plan.

As we are all aware that The Sahitya Akademi Library which functions under aegis of Sahitya Akademi, the National Akademi of letters, occupies an important place not only in library map of the capital, truly this library is the premier library of letters in the cultural map of the Nation. It has an enriched collection of 24 languages in literature, literary theory and criticism, philosophy, history and cultural studies, which enjoys an active and appreciative readership. Apart from this apex body, other reputed multilingual libraries that deserve mention here are National Library, Tulsi Sadan Library, Delhi Public Library, and *Central Institute of Indian Languages* etc.

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(Received on 21.05.2009, accepted on 23.04.2012)

In the post independence face, particularly the last two decades we have witnessed that, with the acceptance of telecommunication systems and the strengthening of the computer technology infrastructure which have been key factor in revitalization of India's Science and technology, defense, world affairs, economy, art and culture and special research organizations and libraries bodings. The conventional thinking of a library as a store of information held locally has almost eradicated as the library of today is becoming a gateway to information resource worldwide. In India all prominent cultural and literary libraries are gradually adopting to this change with the advent of multilingual, multimedia concepts, networking and the information super highways such rapid changes in the world has placed the onus on India's library and information professionals to find ways of making the multilingual literary heritages in their custody, available electronically.

Recently the Sahitya Akademi selected a software for its multilingual library and gradually moving towards absolute library automation. This article therefore tries to highlight how to create a basic technology plan and develop a library profile in preparation of library automation. The paper also explains how such libraries access and identify

institutional needs and priorities and then go about writing a technology plan. Now at the outset question arises as how to select and implement a new information system, which begins with system implementation checklist. In such situation, to commence library and information professionals first look for automation options. Specifications of software selection and subsequently the process of selecting a system, from preparing the invitation to the tenders through evaluating supplier responses to making the final decision. Pre-selection matters are negotiating a contract with the supplier of choice, testing and maintaining the system, training, and the special attention is paid to the multilingual aspect of the library system requirements and specifications for such a libraries.

Library Automation

Generally library automation involves, integrated systems on which the traditional library functions of Circulation, Cataloguing, the On-line Public Access Catalogue, Acquisitions and Serials control are computerized using the library's database as the foundation. While 'planning for automation' can still be defined as planning for integrated systems that 'Computerized a multiplicity of library functions using a common database'. However as the world has shrunk and rapid technological change, has forced for comprehensive re-examination of what automating the library really means. Subsequently, library automation *per takes* the following:

- access by users to library databases from home or office, with direct downloading of information and text on demand
- full-text storage of documents, complete with full-text keyword searching and on-demand printing
- vastly expanded storage of indexes
- storage of pictorial and graphic material
- The availability of 'intelligent systems' providing transparent, one-step searching and access to various library in-house and remote databases.

One should also take into consideration that today's integrated system should not only must provide module automating the traditional library functions but also must be capable of connecting through the local system into systems of other suppliers, databases – bibliographic and full content, online and CD-ROM and the internet.

But in the process of converting traditional library to automated one in a multi-lingual setup, some additional issues come up like software should be able to process multilingual script materials; the specific MARC code have to be followed for all language etc. thus the library management software should have MARC format / support.

MARC 21: MARC short for Machine Readable Cataloguing, constitutes a group of communications formats that conforms to the ISO 2709/NISO

Z 39.50 standards. It is the vehicle for converting bibliographic paper files to machine readable ones.

The important segment of a MARC bibliographic record is the 008 field, fixed-length data elements, also known as 'fixed field codes'. It provides such information as whether the item being described in the record is a monograph or serial, in which country it was published, etc. While cataloguing, the language code has to be selected from 008 tag subfield along with other delimeters for entering the data.

008	090701e2001 ii 000 f tel d

Source: Sahitya Akademi Library Indian language MARC sheet

Unicode: Encoding of Indian Language characters

Indian Script Code for Information Interchange, acronym of ISCII refers to a standard devised for Indian character representation by the Bureau of Indian Standard (BIS) which is 8 – bit code. It touches

Indian language codes as per ISO standard.

Table language code:

ISO 639-2 Code	Name of the language
asm	Assamese
ben	Bengali
doi	Dogri
eng	English
guj	Gujarati
hin	Hindi
kan	Kannada
kas	Kashmiri
kok	Konkani
mai	Maithili
mal	Malayalam
mni	Manipuri
mar	Marathi
nep	Nepali
ori	Oriya
pan	Punjabi
raj	Rajasthani
san	Sanskrit
snd	Sindhi
tam	Tamil
tel	Telugu
urd	Urdu

Source: http://library.igcar.gov.in/readit-2005

upon 10 Indic script derived out of ancient Brahmi Script.

ISCII uses extended ASCII (American Standard Code for Information and Interchange) that means it uses 128 characters positions for character representation of Indic scripts.

Multilingual approach is not possible with ASCII. ASCII was built around the Latin alphabet. As such, they are restricted in their abilities to provide data representation for the non-Latin alphabets used by the majority of world's population.

As all countries began using computers, each was devising codes that would most effectively represent their native languages. None of these were necessarily compatible with any others, pacing yet another barrier in the way of the emerging global economy. In 1991, before things got too far out of hand, a consortium of industry and public leader was formed to establish a new international information exchange code called Unicode.

As the basic code of Unicode is 16 bit, it has the capacity to encode the majority of characters used in every language of the world. It provides code points for more than 6500 characters. The data can be entered, stored, and indexed in the original language itself. Unicode has therefore, given wonderful opportunity to the Indian languages, as we can now create, store and publish the information in our own mother tongue.

Roman Transliteration

Transliteration between Indian languages is simple, unambiguous and phonetically similar. However, there is need for a Scheme for transliteration from Indian Scripts to Roman Script. In order to maintain the uniformity, the books are entered in the Accession register in Roman script only. Traditionally, the transliteration was phonetic based and had many diacritical marks in order to represent letters in unique way. Later came the computer era wherein it was still more difficult to manage the diacritical marks. The phonetic symbols were created as symbols, saved as pictures and inserted within the text wherever it was required, because those representations were not in the computer keyboard.

Let's see as to what kind of development has taken place in our country in the direction of storage of information, say in Hindi language which is spoken by about 30% of the population. Currently propriety Hindi fonts of different standards are using which are not compatible with each other that's why causing problems in information exchange. In

order to facilitate free exchange of information, Department of Information Technology, Government of India has accepted Unicode encoding for fonts as Indian standard in this regard. By using Unicode compliant fonts for Hindi, the problem relating to the exchange of information with Hindi content is completely solved. Majority of users are now using Windows 2000 operating systems or later version which are fully capable of working in Hindi by using any Unicode compliant font. Therefore, without installing any additional software these computers can be straightway used for working in any Unicode compliant Hindi fonts for ensuring inter compatibility of the fonts. Even today Hindi is rendered properly only on Window XP and beyond. Linux has very little support for other languages.

Managing Kashmiri script materials is still a difficult task as no established keyboard support is still available. Perso-Arabic fonts were used for creating Kashmiri collection.

Urdu script has been successfully written using open type font Nafees Pakistani Naskh v. 2.0 and Nafees Tahreer Naskh v. 1.0

At some centres, the task of building digital collections in the Indian languages have been taken, such as the Kannada and Tamil interfaces have been completed. Efforts are also being made to develop interfaces and test digital collections in a few other South Asian languages, such as Malayalam, Bengali, Marathi and Nepali.

Suite of Softwares with Unicode support

Following are few such suite of softwares for building and distributing multilingual library collections:-

Library management software, Ahmedbad is software which has all the International Standards like MARC21, Z39.50, AACR-II, etc., manages Learning Resource Centre of any type and any size. It also has all the functional modules like Acquisition, Cataloguing, Circulation, Article Indexing, OPAC/ WebOPAC, Administration, etc. it is multiuser, multilingual and multi-currencies using Unicode technology. Bar-code and RFID options are also available.

A new feature of SOUL is its Unicode based multilingual catalogue module. The automation software has the feature of cataloguing in Indian languages.

Even Libsys which handles Indian languages/ Scripts using ISM publisher and GIST of C-DAC. Libsys also adheres to the Standards such as MARC and Z39.50, suitable for co-operative networking and resource sharing. It runs on various platforms such as Windows (95/98/NT/2000/XP) Unix (Various flavors), Linuxm etc., has various models from acquisition to article indexing system.

VTLS is the first library automation vender that has received ISO certificate in 1997. We, thus, see that VTLS is also an integrated library systems, as said earlier, known as 'Virtua' with thousands of libraries as its users covering major countries of the globe. Its support of Unicode, multilingual database, access to external tools such as OCLC, RLIN, unique data entry templates, adherence to a variety of international MARC formats are few striking elements of its cataloguing module.

The Centre for Indian Institute of Languages (CIIL) library and its regional centres in India, as we all know are unique in the sense that their information resources are on Indian linguistics languages. This is already the second digital library in India which earlier for its library automation had chosen an international software packages, i.e VIRTUA Integrated Management Software developed by M/s. VTLS Inc., Virginia, USA. Certified by ISO 9001.

With a main feature of UNICODE support to Indian languages. It all included all the library housekeeping operations such as

Acquisition – Books & serials

Circulation

Reference service

Library management – Planning and budgeting

Stock verification

Networking and Resources Sharing of RLC's libraries

Every package will have its own merits and limitations. It is the individual library to decide which software will be best suited to their requirements in the best way.

Identifying priorities of Hardware and Software Selections:

Let's us again come back to our central issue of how to create a technology plan for library automation. Once we finalize the need of assessment and identified possible approaches to meeting these needs, next logical step will be to determine which library functions should be automated and in what order of priority. It must be bore in mind that planning and consulting costs include the direct and indirect costs associated with getting started. The cost of this process may not be immediately apparent. So the planner has to be very cautious and realize that:-

- *Hardware would cover* the computer itself, disk drives, workstations, printers and other machine peripherals.
- *Software would cover* the function-specific modules that he buy, such as acquisition, cataloguing, circulation, serials, articles, WEBOPAC, and also Unicode support.
- *Network-specific hardware, software and cabling* would obviously require the design and implementation of local area network (LAN) architecture on which the system will run, i.e. the selection of appropriate wiring, network architecture, and a network operating system compatible with the system selected.

Once done, next major considerations would be:-

- *Site preparation will* indulge identifying space for the equipment and assuring proper room ventilation and, as necessary, air conditioning.
- *Staff Training* is utmost, subsequently costs to be considered when the system is first installed.

Selection (Purchase) process

Technical adviser committee the consultant works with library planners to provide specific information on the technical aspects of computerization, system capabilities or evaluation of tenders, thereby supporting the decision making process rather than making decision.

The software need into financial and technical specifications, you are ready to begin the actual process of procuring a system. If you are in a Government related institution, you are subject to a procedure of Government rules and regulations are required to purchases of this type to be offered publicly in a competitive manner.

There are basically two procedures, the 'open' procedure and the 'restricted' procedure. The open procedure requires you to place an advertisement in the National newspapers to inviting system suppliers to tender within a 30 days. The disadvantage of the open procedure is that you could be flooded with tenders, all of which must be considered during the evaluation process. Its advantages are that it is more competitive and may drive down costs. The second method is restricted procedure you place an advertisement in the National newspapers inviting suppliers to express an interest in tendering. After a short listing process you then formally invite selected suppliers to demonstrate their system function before the library technical committee.

Post-Installation Phase

Once the suitable software is procured, with close consultation and supervision of the team of computer specialists and library professionals, language specialists, each areas of library service should be customized

according to indigenous need. This means, all housekeeping jobs ought to be tailored-made. It is desirable that the Bar-Code technology may be used for circulation transactions.

We all know that cataloging module is, the most important module as it caters to the needs of database creation of library holdings. The major challenge for any library will be its retro –conversion work. This can be assigned on contract basis to the software vendor/ supplier or any other appropriate agency. What is ultimately required is a team of library professionals. One may categorizes them as one set of team working for the preparation of worksheets and eventual selection of tags for record; other team will do the entry of worksheets; an expert team will work for the verification and validation of the worksheets. A team leader should be appointed for each language from within the organization for the supervision of the work.

Once the cataloguing of the retrospective collection is over i.e information recorded for the final record is complete, the data is input in the client system to prepare the library's database and directly transported to the server. After this, the cataloguing of current resources can be undertaken by the cataloguer in the language concerned.

As said before also, at the data input stage, software must provide languages code support such as Bengali, Dogri, Kannada, Konkani etc. For language display, the user could change the language on the screen at all levels including menu tool bars. The combo box may furnish various Indian languages.

Conclusion

Every library has to embrace automation. Need of the hour is to go beyond the activities of traditional libraries. It is seen that in the present library scenario, a number of foreign as well as indigenous library automation software packages are being used in India.

India is a multilingual country and in the domain of library and information services, as the day progresses, the question of multilingual access and multilingual information retrieval is becoming a necessity.

So we hope that in ensuing few years, all library functions operate simultaneously in as many languages as needed and whose search and retrieval functions are language independent.

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Indian Journal of Library and Information Science
Volume 6 Number 3, Sept-Dec 2012

Bibliometric Anaysis of Indian Journal of Dental Research (2002-2004)

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Abstract

This study analyzed the growth of the scientific literature in the dental area, as available from NCBI PubMed, using standard bibliometric techniques. Bradford's law of scattering was used to identify core journals and Lotka's law employed to analyze author's productivity pattern.

The bibliometric analysis of the journal "Indian Journal of Dental Research Studies' (2002-2004)" showed a trend of growth in contributions, and average number of contributions was 8.5 per volume. Majority of the dentists preferred to do collaborative research and contribute their papers jointly. Most of the contributions were Original Articles/ Research (79 out of 103 articles). The institutional and geographical distribution of contributions was calculated. Most of the contributions were from Karnataka followed by Tamil Nadu. Most of the contributions were with citations. Majority of the dentists cited journals in large numbers (452), while books came second with 150 citations. 'Oral Surgery, Oral Medicine, Oral Pathology, Oral Radiology & Endodontics' occupied the 1st rank and 'Journal of Periodontology' the 2nd rank in the ranked list of cited journals.

Keywords: Bibliometrics; Bibliometric technique; Citation snalysis; Indian Journal of Dental Research; Dentists; Cited journals.

Introduction

The term bibliometrics was first used by Alan Pritchard in 1969 to denote a new discipline where quantitative methods were employed to probe scientific communication process by measuring and analyzing various aspects of written documents. Bibliometrics is a type of research method used in library and information science. It utilizes quantitative analysis and statistics to describe patterns of publication within a given field or body of literature.

Bibliometrics is a set of methods used to study or measure texts and information. Citation analysis and content analysis are commonly used bibliometric methods. While bibliometric methods are most often used in the field of library and information science, bibliometrics has wide applications in other areas. In fact, many research fields use bibliometric methods to explore the impact of their field, the impact of a set of researchers, or the impact of a particular paper.[1]

Historically, bibliometric methods have been used to trace relationships amongst academic journal citations. Citation analysis, which involves examining an item's referring documents, is used in searching for materials and analyzing their merit

Data from citation indexes can be analyzed to determine the popularity and impact of specific articles, authors, and publications. Using citation analysis to gauge the importance of one's work, for example, is a significant part of the tenure review process. Information scientists also use citation analysis to quantitatively assess the core journal titles and watershed publications in particular

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(Received on 18.04.2009, accepted on 14.08.2012)

disciplines interrelationships between authors from different institutions and schools of thought and related data about the sociology of academia. Some more pragmatic applications of this information includes the planning of retrospective bibliographies, "giving some indication both of the age of material used in a discipline, and of the extent to which more recent publications supersede the older ones;" indicating through high frequency of citation which documents should be archived; comparing the coverage of secondary services which can help publishers gauge their achievements and competition, and can aid librarians in evaluating "the effectiveness of their stock".[2]

Researchers may use bibliometric methods of evaluation to determine the influence of a single writer or to describe the relationship between two or more writers or works. Bioinformatics is a multidisciplinary and comparatively new area of science that has made a significant impact within a short period. A systematic analysis of the rise in bioinformatics literature is, however, not available.[3]

Source Journal

Indian Journal of Dental Research (IJDR) is the official publication of the Indian Society for Dental Research (ISDR), India section of the International Association for Dental Research (IADR), published quarterly. Indian Society for Dental Research (ISDR) is the only society in India totally devoted to augmentation of Dental Research. The other specialty journals do their best for clinical and specialty academics. ISDR is an affiliated national society for the International Association of Dental Research in USA. ISDR was started in the year 1987. IJDR publishes scientific papers on well designed and controlled original research involving orodental sciences. Papers may also include reports on unusual and interesting case presentations and invited review papers on significant topics.

The IJDR journal is indexed in

- Index for Dental Literature (American Dental Association)
- National Library of Medicine (USA)
- Indian Medlars Centre (National Information Centre)
- Medlar using NICNET

Objectives

The main objectives of this study were:

1. To find out volume-wise distribution & average number of contributions per volume
2. To find out the authorship pattern
3. To study the various types of articles in the journal
4. To find out the statistics of distribution of contributions according to various designations of contributors
5. To determine the geographical distributions of contributions in the journal
6. To calculate the volume-wise distribution of citations
7. To calculate the number of citations per article
8. To prepare a ranked list of journals in Dentistry

Scope

The study covered 103 articles published in the year 2002-2004 of Indian Journal of Dental Research (IJDR). These research articles included 614 cited items, i.e. citations. The study indicated, on average, a research article included about 6 citations.

Methodology

Out of 12 issues, 10 issues of the Indian Journal of Dental Research (2002 to 2004) were taken for the study, because the remaining two issues were the missing in our library. The details regarding each published

article such as title of the article, number of authors, their institutional affiliations and addresses, number of references with list, etc., were recorded and analyzed for making observation. Tables were filled by tally mark system counting one, by one reference and other data. The data calculation is represented in the tables. The study did not take into consideration how far a certain piece of information is useful or a particular citation relevant to the central theme of the citing documents. The emphasis was largely on quality forms and age of citations rather than on the subject content and the degree of its relevance to the citing documents. The citations were counted by the type of document and volume wise. Based on the analysis, a ranked list of cited journal was prepared.

Table 1: Volume-wise distribution of contributions

Year	Vol. No.	No. of Issues	No. of Contributions	Percentage
2002	13	3	29	28.16
2003	14	3	39	37.86
2004	15	4	35	33.98
Total		**10**	**103**	**100**

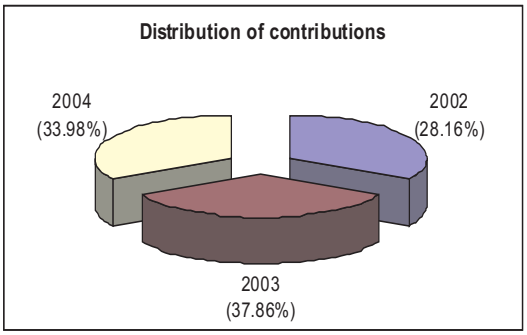
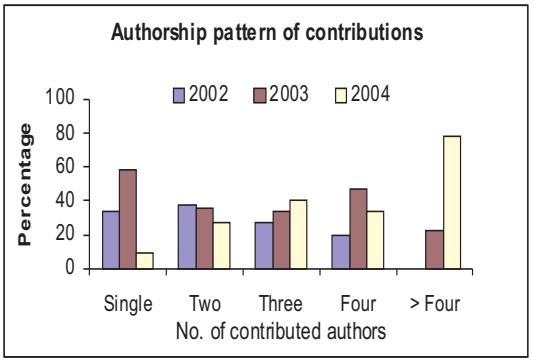


Table 2: Authorship pattern of contributions

Year	Number of Authors Contributed					Total
	Single	Two	Three	Four	> Four	
2002	4 (33.33%)	14 (37.84%)	8 (26.66%)	3 (20.01%)	-	29 (28.15)
2003	7 (58.33%)	13 (35.14%)	10 (33.33%)	7 (46.66%)	2 (22.23%)	39 (37.86%)
2004	1 (08.34%)	10 (27.02%)	12 (40.01%)	5 (33.33%)	7 (77.77%)	35 (33.98%)
Total	12 (100%)	37 (100%)	30 (100%)	15 (100%)	9 (100%)	103 (100%)



Data analysis & Interpretation

Distribution of Contributions

Among 103 contributions, the majority of contributions (37.86%) were contributed in the year 2003, next in the year 2004 (33.98) and least in the year 2002 (28.15%) (Table-1).

The Table 2 shows that the trends in authorship pattern, such as multi-authored

Authorship Pattern

		Journal	%	Books	%	WHO Publ.	%	Thesis	%		
2002	29	130	28.76	30	20.00	03	30.00	01	50.00	164	26.71
2003	39	165	36.50	110	73.33	06	60.00	01	50.00	282	45.92
2004	35	157	34.73	10	06.66	01	10.00	-	-	168	27.36
Total	**103**	**452**	**100**	**150**	**100**	**10**	**100**	**02**	**100**	**614**	**100**

Table 3: Type of Contributed Articles Guest Editorial

	Guest Editorial	Original Articles/ Research	Case Report	Advances in Orodental Research	Review articles	Total
2002	1	28	-	-		**29**
2003	1	38	-	-		**39**
2004	-	13	14	4	4	**35**
Total	**2**	**79**	**14**	**4**	**4**	**103**

papers, are lead in frequency of occurrence in the Indian journal of Dental Research throughout the study and, more interestingly, this growth is continuous which indicates about the future pattern in authorship. In multi-authored contributions, two authored and three-authored articles are maximum, compared with four-authored or more than four-authored articles.

Table 4.1: Geographical distribution – Country wise

Name of the Country	No. of Contributions	%
India	99	96.12
Saudi Arabia	2	01.94
Hong Kong	1	00.97
Nepal	1	00.97
Total	**103**	**100**

The highest numbers of contributions in the category of single authorship were contributed in the year 2003 which is 7 out of 10 (58.33%), while in the category of multi-authored papers, the highest number of contributions were contributed in the year 2004, having 34 out of 35 contributions.

Out of 103 articles, 79 articles were original research articles, and 14 articles were case reports of the patients, 4 articles on 'Advances in Orodental Research", 4 review articles and 2 Guest Editorials on topics related to dentistry. From Table 3, it is clear that Indian Journal of Dental Research gives much importance to the original research articles and also articles based on the case reports.

Table 5: Position / Designation-wise distribution of contributors

Designations of the Authors	2002	2003	2004
Professor & Head	17	21	24
Professor	5	11	6
Asst. Professor	20	13	6
Associate Professor	5	19	4
Scientist	1	4	3
Reader	6	7	9
Lecturer	6	10	10
PG Student	7	13	28
Tutor	-	-	1
Internship Student	2	3	1
Total	**69**	**101**	**92**

Table 4.2: Geographical distribution of contributions (India – State wise)

Name of the State	No. of Contributions	%	No. of Contributors	%
Karnataka	43	41.74	110	41.66
Kerala	8	07.76	20	07.57
Tamil Nadu	32	31.06	81	30.68
Goa	2	01.94	7	02.65
Haryana	2	01.94	9	03.40
New Delhi	3	02.91	7	02.65
Punjab	2	01.94	4	01.51
Himachal Pradesh	1	00.94	2	00.75
Kolkata	2	01.94	5	01.89
Ahmedabad	2	01.94	4	01.51
Saudi	2	01.94	4	01.51
Hong Kong	1	00.94	2	00.75
Pondichery	2	01.94	6	02.27
Nepal	1	00.94	3	01.13
Total	**103**	**100**	**264**	**100**

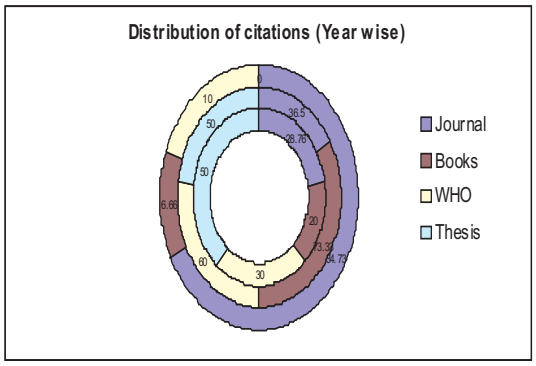
Geographical Distribution-Country wise

Table 4 shows that International contributions in the journal were very rare and merely 4 contributions were from abroad, while contributions from India constituted 96.12%, having 99 contributions out of 103. This shows that the coverage of Indian Journal of Dental Research is not very broad and its scope is confined to the Indian continent only.

Table 4.2 depicts the geographical distribution of contributions in three volumes of the journal. Out of 103 contributions, the highest number, i.e. 43 (41.74%) was contributed by Karnataka with 110 (41.66%)

Table 6: Distribution of citations (Year wise)

Year	No. of Contributions	No. of Citations	Total	%



contributors. Tamil Nadu came second, having 32 (31.06%) with 81 (31.68%) contributors and Kerala third, having 8 (7.76%) contributions with 20 (7.57%) contributors.

Table 5 shows the distribution of authors according to the various positions that they held in their institutes. According to this, most of the articles were contributed by Professors. Therefore, the quality of the article should be high.

Citation Analysis

Another major area of bibliometric research uses various methods of citation analysis in order to establish relationships between authors or their work. When one author cites another author, a relationship is established. Citation analysis uses citations in scholarly works to establish links. Many different links can be ascertained, such as links between authors, between scholarly works, between journals, between fields, or even between countries. Citations both from and to a certain document may be studied. One of the very common uses of citation analysis is to determine the impact of a single author on a given field by counting the number of times the author has been cited by others. [4]

Table 6 shows that journals occupied 73.61% citations which were 452 out of a total of 614 citations. Books were 150 (24.42%), WHO Publications 10 (1.62%) and thesis 2 (0.32%). The above figure shows that the year 2003 had the highest number of share i.e. 282 (45.92%) of the total 614 citations received during the study. The least citations were recorded in the year 2002 with 164 (26.71%) citations. Total 614 citations have been recorded in 103 contributions; therefore, the average number of citations per contribution is 5.8.

Ranked List of Cited Journals

According to the citations, ranked list of cited journals was prepared. Table 7 shows that Oral Surgery, Oral Medicine, Oral Radiology & Endodontics are the leading referred journals i.e. 91 (11.87%); the second most referred journal is the Journal of Periodontology, having almost 53 (6.91%) citations. The Journal of Oral Pathology & Medicine, Journal of Dental Research; and Quintessence International are the 3rd, 4th and 5th ranked referred journals respectively. [5]

Results and Findings

The following results and conclusions can be drawn from the bibliometric analysis of the journal "Indian Journal of Dental Research (2002-2004)".

- This study shows a trend of growth in contributions published during 2002 to 2004 and average number of contributions per volume are 34
- Majority of the dentists prefer to contribute their papers jointly.
- Most of the contributions in this journal were from India (96.26%). Only 4 contributions were from abroad.
- Karnataka and Tamil Nadu are the biggest domestic contributors to the articles published in this journal.
- Most of the contributions are with citations.

Table 8: Ranked list of cited journals

Sl. No.	Name of the Journal	Rank	No. of Citations	%
1	Oral Surgery Oral Medicine, Oral Radiology & Endodontics	1	91	11.87
2	Journal of Periodontology	2	53	06.91
3	Journal of Oral Pathology & Medicine	3	50	06.52
4	Journal of Dental Research	4	42	05.48
5	Quintessence International	5	41	05.35
6	Journal of Oral & Maxillofacial Surgery	6	38	04.96
7	Journal of American Dental Association (JADA)	7	32	04.17
8	Journal of Prosthetic Dentistry	8	29	03.78
9	Operative Dentistry	9	25	03.26
10	Journal of Endodontics	10	23	03.00
11	British Dental Journal (BDJ)	11	22	02.87
12	Oral Surgery	12	18	02.34
13	British Medical Journal (BMJ)	13	17	02.21
14	International Journal of Oral & Maxillofacial Surgery	14	16	02.08
15	Community Dentistry & Oral Epidemiology	15	15	01.95
16	Dental Materials			
17	Journal of Oral Surgery	16	14	01.82
18	Journal of Dentistry			
19	Lancet	17	12	01.56
20	International Dental Journal			
21	Indian Journal of Dental Research	18	11	01.43
22	Journal of American Medical Association (JAMA)			
23	Cancer			
24	Journal of Clinical Periodontology	19	10	01.30
25	Plastic and Reconstructive Surgery			
26	American Journal of Physical Anthropology	20	9	01.17
27	Journal of Pathology			
28	American Journal of Orthodontics	21	8	01.04
29	Archives of Oral Biology			
30	International Journal of Prosthodontics			
31	Journal of Oral Pathology			
32	Journal of Periodontal Research			
33	Journal of Esthetic Dentistry	22	7	00.91
34	Laryngoscope			
35	Scandinavian Journal of Dental Research			
36	Oral Diseases			
37	Australian Dental Journal			
38	American Journal of Orthodontics & Dentofacial Orthopedics			
39	British Journal of Oral & Maxillofacial Surgery			
40	British Journal of Oral Surgery			
41	Community Dental Health	23	6	00.78
42	Dental Clinics of North America			
43	International Journal of Pediatric Dentistry			
44	Journal Of Indian Dental Association (JIDA)			
45	Journal of Oral Rehabilitation			
		Total	766	100

- Majority of the dentists have cited journals in large numbers (i.e. 452), while books comes second with 150 citations.

Limitations

There were also some limitations to the data collected from this type of citation analysis.

- They are often incomplete or biased; data was largely collected by hand (which is expensive), though citation indexes can also be used; incorrect citing of sources occurs continually, thus further investigation is required to truly understand the rationale behind citing to allow it to be confidently applied.
- This bibliometirc study was based on data collected from volume 49 to volume 51 of the journal "Indian Journal of Dental Research". Therefore, its results may vary at different times for different journals.
- The nature of journal itself defines the boundaries of the aspects that come under its scope and coverage. Sometimes, author's designation and affiliations change which may cause a little deviation in actual results of institutional affiliations of contributions. The validity of the result depends upon the sample size; as this study was based on only 10 issues, it may not be fully representative in all the results but it gives a trend about what is happening in the publication area of dentistry.

Conclusion

The results of this type of citation analysis would appear to be of great potential value in the management of library journal collections. Measures of citation frequency and impact factor should be helpful in determining the optimum makeup of both special and general collection.

Recently, a new growth area in bibliometrics has been in the emerging field of webmetrics or cybermetrics, as it is often called. Webmetrics can be defined as using bibliometric techniques in order to study the relationship of different sites on the World Wide Web. Such techniques may also be used to map out (called "scientific mapping" in traditional bibliometric research) areas of the Web that appear to be most useful or influential, based on the number of times they are hyperlinked to other websites. The Indian Journal of Dental Research is indexed with Caspur, DOAJ, EBSCO Publishing's Electronic Databases, EMCARE, Expanded Academic ASAP, Genamics JournalSeek, Google Scholar, Health & Wellness Research Center, Health Reference Center Academic, Index Copernicus, InfoTrac One File, PubMed/Index Medicus, SCOPUS, SIIC databases, Ulrich's International Periodical Directory. The journal also has free online access through Internet. Because of all these factors, this can become a high impact journal in the world, provided it starts publishing high quality papers contributed by Indian and foreign authors.

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Indian Journal of Library and Information Science
Volume 6 Number 3, Sept - Dec 2012

Single Window Access to e-Resources at the Manipal University Healt Sciences Library

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Abstracts

E-resources have marked an impressive footprint in managing library and delivering the information services to the end-users. There are few technical hurdles such as performance of technology, timely access; user interfaces, troubleshooting, skilled manpower etc. which have made e-resources more complex in managing information and delivering services. To overcome these issues, the library and information system require an effective and efficient Electronic Resource Management System to assist the librarian in managing the e-resources. Since the last two decades, the information and communication technologies have equipped the librarian with certain e-tools to provide the e-resources services to the end-users in an effective and efficient manner.

The Health Sciences Library of Manipal University, Manipal, is a pioneer in providing services to the faculties and students of various disciplines. The library has large volume of e-resources in terms of book, journals, and online databases to cater to the need of library users. This paper makes an effort in providing the details on the ERMSS - an integrated e-resources management and search solution software which has provided for effective management of e-resources held by the Health Sciences Library.

Keywords: Internet; E-Resources; Single window access; Health Sciences Library; Library users; ERMSS.

Introduction

A library is a place where all the resources, i.e. books, journals, theses, projects, etc. are stored. Libraries now have electronic/web resources, Internet-based subscribed resources, open access e-contents like e-books, e-journals and many more. A library just can't maintain a stock of the resources if it does not make these available to the users. Until and unless the users find their desired information which they are seeking without wasting time, the e-resources available from the library portal are of no use.

E-resources have marked an impressive footprint in managing library and delivering the information services to the end-users. E-resource has crossed all geographical boundaries in providing easy and global access of knowledge to the end-users. The instant access of knowledge through these resources has not only increased the user's interest in utilizing it, but has also improved the quality of multidisciplinary research. There are few technical hurdles such as performance of technology, timely access, user interface, troubleshooting, skilled manpower etc. that have made e-resources more complex in managing information and delivering services. To overcome these issues the library and information system require an effective and efficient Electronic Resource Management System (ERMS) to assist the librarian in managing the e-resources.

Electronic resources management (ERM) is the practice and the software system used by libraries to keep track of important information about electronic information resources, especially Internet-based resources such as electronic journals, databases and electronic books. Management of e-resources has become a more challenging and daunting

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(Received on 14.04.2009, accepted on 18.04.2012)

task. As the library responds to the enormously increasing online resources and the users' rising demand for the resources, the acquisition, metadata organization and system management of e-resources becomes increasingly complicated due to various types of publishers, and online interface provider, frequent changes in available journals and its issues within aggregated databases, and the variety in the scope of fair use for each of the license agreements.

Need of the single window access to E-resources

Single window access may cater to the specific needs of a library user. It provides easy access to e-resources subscribed by the library. It makes the task of the user simpler to access the multiple resources through a single window search interface. It also provides relevant and quick retrieval of information. Integrated access solution has several advantages, e.g. the search results generated from it are more reliable. The user can access the e-resources from anywhere. The libraries can make optimum use of their e-resources.

The purpose of single window access for effective searching of e-resources subscribed in a library is for meeting issues of the library management. There are many hurdles that are faced by the librarians in order to make the e-resources available to its users without wasting their time. Single window access to e-resources could help the libraries in greater ways if the library has:

- Full text collections from any publisher
- Full text databases
- Full text electronic journals, electronic books, individual titles
- Open access linking to titles to which library does not subscribe
- Free internet titles
- Direct access to library's catalog, OPAC, databases and other e-resources

Manipal University, Manipal, India

Manipal, today, is a knowledge powerhouse and a brand name in higher education. Over five and a half decades ago, one man, Dr Tonse Madhava Anantha Pai, had a vision which ensured that everything he did then was consigned to posterity, making sure that generation after generation of students enjoyed the fruits of his labour till eternity on this lateritic plateau, and the students would, forever, have one name on their lips; Manipal.

Manipal University is a name to remember, not just across the length and breadth of India but worldwide. The fact that students from 52 countries are studying here is a testimony to this fame.

Located on the west coast of South India, Manipal was a barren wasteland, a plateau with wild animals. It was this plateau that Dr TMA Pai decided to change. His vision for Manipal covered a wide spectrum of interests because he himself donned many hats. He was a physician, an educationist, a banker and, above all, a philanthropist at heart.

However, it all started with the vision of Dr. TMA Pai, who is regarded as one of the founders of modern India, and was facilitated with Padmashri and a commutative stamp by Govt. of India. The establishment of Kasturba Medical College, Manipal, in 1953, set the platform for global education in India. This was followed by many flagship institutions, like Manipal Institute of Technology (MIT), Manipal College of Dental Sciences and many other world class institutions.

Then, in 1993, MAHE was accorded a deemed university status under Section 3 of the UGC Act 1956, by the Ministry of Human Resource Development, Government of India. Today, it has 20 constituent institutions comprising medical, dental, engineering, architecture, nursing, allied health, pharmacy, management, communication, information science, hotel management, biotechnology, regenerative medicine etc. The university offers Bachelors', Masters' and Doctoral degrees in various specialties.

At the time of receiving the deemed university status, only five professional institutions existed. Encouraged by the new status, the university grew by leaps and bounds. The emphasis has always been, and still is, on quality education, which is why the degrees offered by the university are recognized the world over. The university provides excellent educational facilities to over 17,000 students in its constituent colleges. It also has an active alumni base of over 65,000 students across the world.

Manipal University (MU) has branch campuses in Bangalore, Malaysia, Dubai and Antigua in the Caribbean Island. There is also a campus in Mangalore with a medical college, a dental college and a nursing college with attached teaching hospitals. MU has an international academic collaboration for twinning programmes in engineering with universities in the US, UK, Australia and other countries.

Manipal Group institutions are located on scenic campuses, which provide high quality lifestyle and are ideal environment for study. All campuses have excellent infrastructure for academic activities, sports and other extracurricular activities. The infrastructure includes air-conditioned lecture halls, skills lab, air-conditioned hostels, and multicuisine food court and state-of-the-art health sciences library. The latest addition to the facilities, a Simulation Lab with computer driven mannequins, is an achievement which the university is proud of. It is of considerable help to students in the field of health care.

Besides being an ISO 9001:2008 and ISO 14001: 2004 certified university, it is home to top 10 ranked institutions of India. Manipal University has won the prestigious IMC Ramkrishna Bajaj National Quality Award and International Asia Pacific Quality Award during 2007- 2008.

Manipal University Health Sciences Library

Manipal University has an excellent health sciences library, perhaps the best among all health sciences libraries in India. The state-of-the-art library stretching over 1.5 lakh square feet on five levels is a domain for information seekers, be it students, faculty or researchers.

Fig 1: Home Page of Health Sciences Library Intranet Web Page

It has the capacity to accommodate 1300 students at a time. Besides the comfortable seating and reading environment, the library is well equipped with modern facilities such as e-learning, access to Internet and web resources, including online journals and e-books. The library provides a growing range of databases available in electronic form on the campus network. All the library services have been automated on modern lines. The library has fully computerized collection which is accessible through OPAC. The library is enabled with Wi-Fi technology and security systems like Closed Circuit Television System (CCTV). There is a separate audio-visual room, computer lab, group study area and private study area in the library. The library has all the facilities for the students to learn. The Health Sciences Library is committed to providing world-class information support to its users.

The library has over 57,000 books and subscribes to 570 print journals, 34,600 back volumes of journals, 925 audio and visual cassettes, 500 CDs, 5000 theses, 2000 WHO publications, etc.

An e-resource is any resource which is accessed via the Internet. The library provides access to a wide variety of e-resources

Table 1: Subscribed e-resources of the Health Sciences Library

Names of the e-resources subscribed
Science Direct
Scopus
MD Consult
OvidSP
ProQuest Medical Library
IDIS Drug Information Database
CINHAL Plus with Full Text
Net Anatomy Educational Web Site
Online Journals of Various Publishers (Elsevier Science, Lippincott, Wiley-Blackwell, Springer Link, Informa Healthcare, Karger, Thieme, BMJ, Oxford University Press, Sage, Nature etc.)
e-Books of Various Publishers (Elsevier Science, Lippincott etc.)

Table 2: Open access resources made available at the Health Sciences Library

Names of the open access (free) e-resources
Bioline International
BioMed Central
Cochrane Library Online
DOAJ – Directory of Open Access Journals
Free Medical Journals
FreeBooks4Doctors
MedIND
Medknow Journals
Medline Plus
PLoS
Priory Medical Journals
PubMed Central
PubMed/MEDLINE

including e-books, online journals, digital collections, online databases and websites. All library e-resources can be accessed on campus. A variety of e-resources, including 9 online databases, more than 3200 online journals and e-books can be accessed from computers in the library on campus network.

The collection of the Health Sciences Library in the area of medical sciences, dental sciences, nursing sciences, pharmaceutical sciences, allied health sciences and life sciences is very strong. The library has an international examination resource centre that helps the students to take several competitive examinations that are held both in India and abroad. The library has a webpage and users can browse e-journals, e-books and online databases and other e-resources in intranet environment in the campus.

Statement of the Problem

The Health Sciences Library of Manipal University had earlier access to plenty of e-resources and while performing a search on library website/portal, a user had to browse through multiple links to access e-resources available in the library. There was no single window access to all the e-resources available in the library. As the number of e-resources continued to increase, the library found it ever so complicated to catalog these resources. Users, frustrated by having to access and search multiple databases with different user interfaces and log-in methods, were often deterred from using these resources altogether. It had become very clear that the university needed a more efficient and effective system for its users to perform fast and interdisciplinary searches across various resources from different providers.

To overcome this situation, the Health Sciences Library began its quest for a single window access solution by identifying a number of requirements, such as establishing a single point of entry to the library's many e-resources and categorizing the databases so that users could establish the best place from where to begin their search. The library began comparing available single point access solution and found that ERMSS (e-Resources Management and Search Solution) best met all of library requirements.

The ERMSS software

ERMSS is a comprehensive search solution which has parameterized search functionalities. It can perform search on titles of e-resources (e-journals, e-books and online databases) integrated with the solutions which provides integrated and mapped results from e-resources. User can access the e-resources and their content from anywhere, any place in the campus through intranet. This solution provides linking of all of the e-resources (e-journals, e-books and online databases) subscribed by the library as well as open access resources. In this solution A-Z listing has been done for all e-resources.

ERMSS is built on highly scalable and flexible technology platform. This solution is backed by online help for all users. Online help provides the complete information to use the ERMSS. Some key benefits of ERMSS are as follows:

- Provides a single window access for all library's e-resources
- Allows patrons to search any or all of the library's databases
- Provides easy-to-navigate and searchable interface
- Integrated solution for linking of all e-resources subscribed by the library as well as other e-resources available free on the web
- Customized solutions for the management and access of e-resources
- Integration with library existing web portal and web OPAC
- Enables access to favorites or specific information on specific subject areas of a user
- Link to other websites or search engines
- Frees up valuable staff time

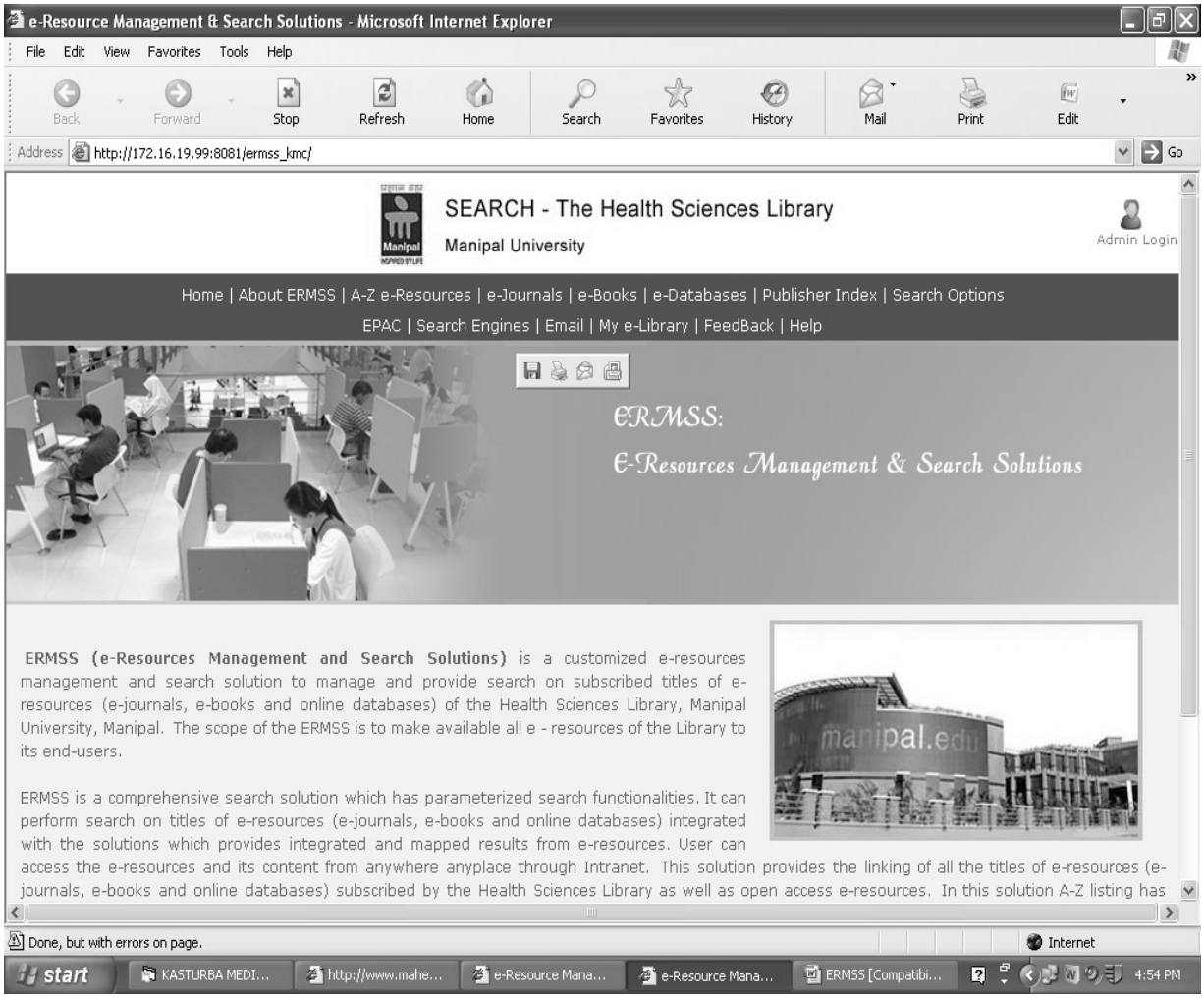
Using a phased approach, the library initially offered a small selection of its e-resources via ERMSS and then increased the number of these resources over time. Today, through ERMSS, users access almost all of the library's databases and e-resources-previously accessible only through different interfaces-via a single entry point. When entering ERMSS, the user is presented with eight collection categories, each containing the most relevant resources for a certain field. ERMSS also provides lists of databases and e-resources structured by subject areas, which enable users to create personalized, tailor-made search sets. Before the library used ERMSS, it was almost impossible for users to know where to start looking for the e-resources they needed. Now they can identify the closest point of access with ease and focus their search in the right place.

Getting Into ERMSS

The implementation of ERMSS started at the Manipal University Health Sciences Library in the month of March, 2008 and system went live in the month of June, 2008. Health Sciences Library has provided both subscribed e-resources and open access (free) resources for integration in the ERMSS.

ERMSS is composed of various modules, such as "Home, About ERMSS, A-Z e-Resources, e-Journals, e-Books, e-Databases, Publishers Index, Search Options, EPAC, Search Engines, e-Mail Alerts, My e-Library, Feed Back, Help, Admin Login". With these

Fig 2: Home page of ERMSS implemented at the Health Sciences Library, Manipal University



modules, Health Sciences Library has managed all its e-resources in one place, including:

- Full text collections from any publisher
- Full text databases
- Full text e-journals, e-books and individual titles
- Open access linking to titles to which library does not subscribe
- Library's catalog, OPAC
- Print resources (books, journals, back volumes of journals, WHO publications, etc.)
- Link to other websites, bibliographic database, search engines
- Online help to users to use the ERMSS
- Administration panel services like resource management (add/modify/edit/delete any e-resources), category management (add/modify/edit/delete any subjects), usage statistics (e-resources/databases), etc.

How ERMSS Works?

Functions of ERMSS software can be divided into the following two categories:

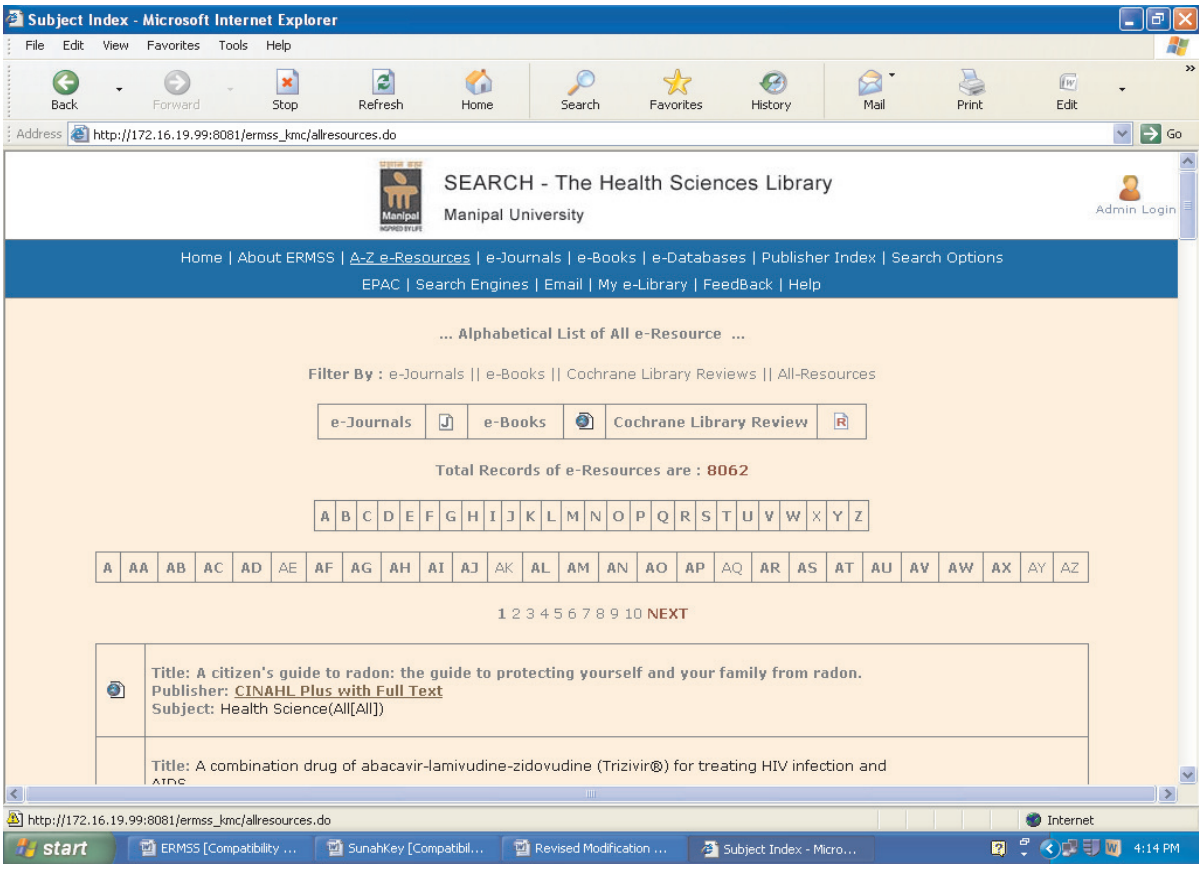
A) User panel services

B) Administration panel services

A) User Panel Services

ERMSS solution provides the linking of all the titles of the e-resources subscribed by the library and open access resources. It is useful for the library users and all knowledge seekers. They can easily view, access and search within all the e-resource contents with the same interface. User site of ERMSS is comprised of various user panel services. Following are the complete view of the functioning of each icon of the user panel services of the ERMSS.

Fig 3: A-Z e-resources



i) A-Z e-Resources

All the integrated e-resources are alphabetically arranged here. Listing of the e-resources has been provided by three parameters: Title Listing, Publisher Listing and Subject Listing. By clicking on "A-Z e-Resources", it shows/displays the alphabetical list of all the e-resources such as e-journals, e-books and cochrane library reviews. All the e-resources are symbolized differently: e-journals, e-books, cochrane library reviews.

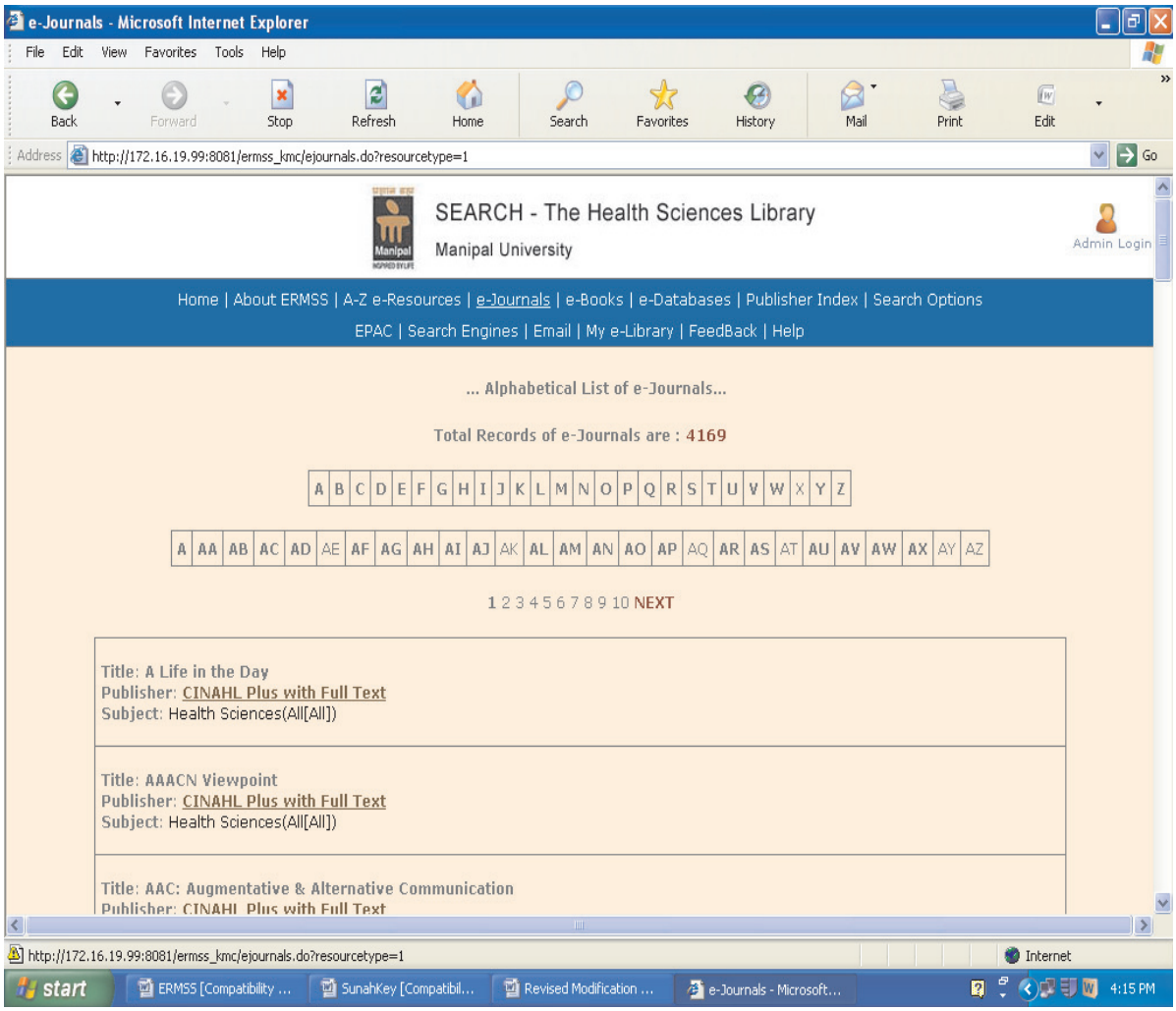
ii) e-Journals

This provides the alphabetical list of e-journals and the search result is displayed: Title wise, Publisher wise and Subject wise.

iii) e-Books

This icon provides the alphabetical list of e-books and the search result is displayed: Title wise, Publisher wise and Subject wise

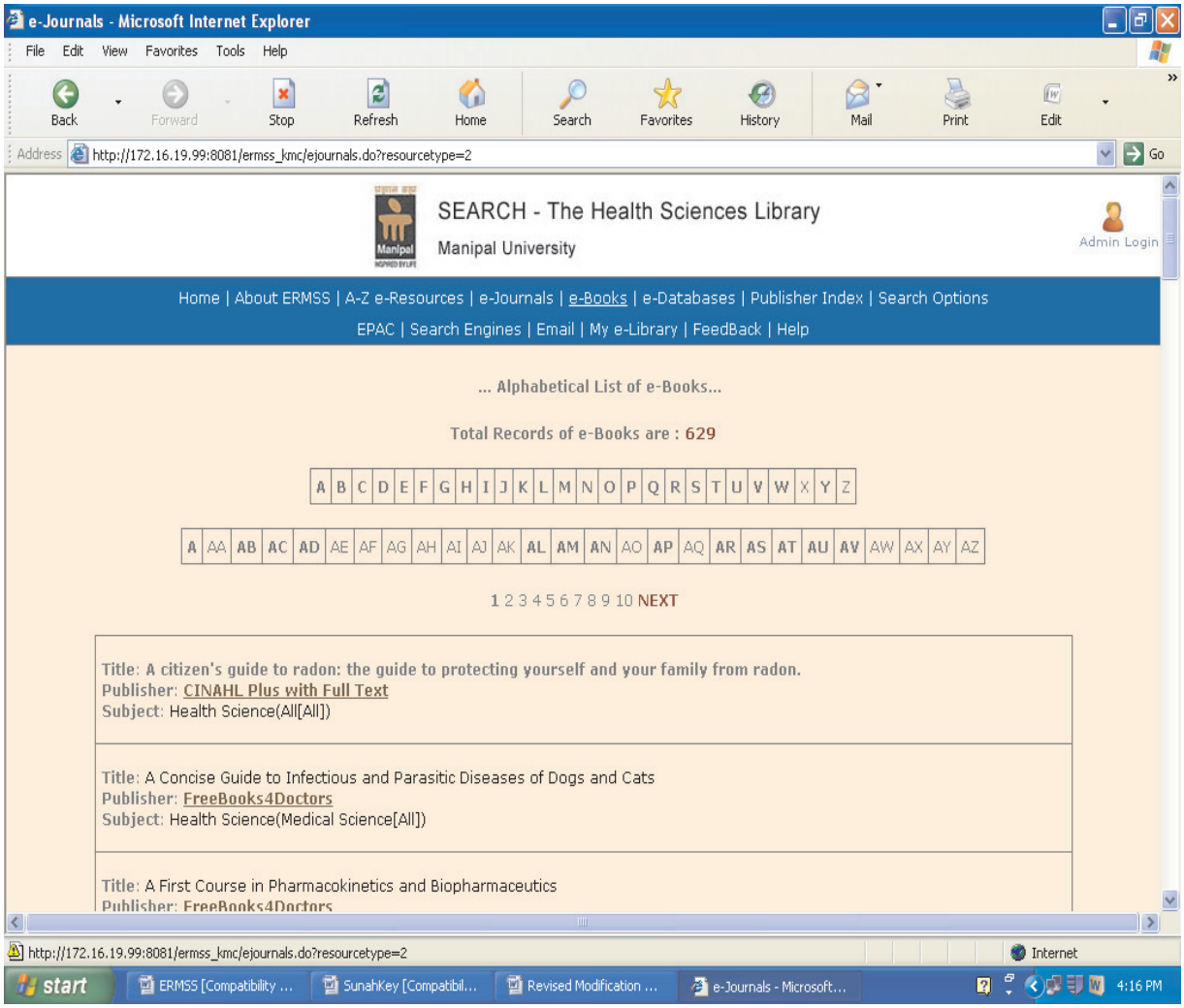
Fig 4: e-Journals



iv) e- Databases

This provides the alphabetical list of subscribed databases such as CINAHL Plus with Full Text, Cochrane Library Online, DELNET Online, DynaMed, IDIS - Iowa drug information service, MD Consult, Net Anatomy Educational Website, OvidSP, ProQuest Medical Library, PubMed/Medline, Science Direct, Scopus and open access databases such as Bioline International,

Fig 5: e-Books



BioMed Central, DOAJ – Directory of open access journals, Free Books 4 Doctors, Free Medical Journals, MedIND, Medknow Journals, Medline Plus, PLoS, Priory Medical Journals, PubMed Central.

v) Publishers Index

This icon provides the alphabetical listing of all the publishers. Some of them are American Medical Association, BMJ, HighWire Press, Informa Healthcare, Ingenta Conect, John Wiley, Karger, Quintessence, Sage, Springer, Thieme, Wiley-Blackwell, etc.

vi) Search Options (Basic, Subject and Advanced)

Basic Search provides link to full text of e-journals, e-books and online databases. User can search information in fields like journal title, publisher, subject category, etc. User can search on a single search field or multiple search parameters

Subject Search facility enables single window search to all e-resources available through ERMSS. Here, the user can find information about a specific field/subject on a single window itself rather than visiting hundreds of e-journals, e-books and online databases subscribed by the library.

Fig 6: e-Databases

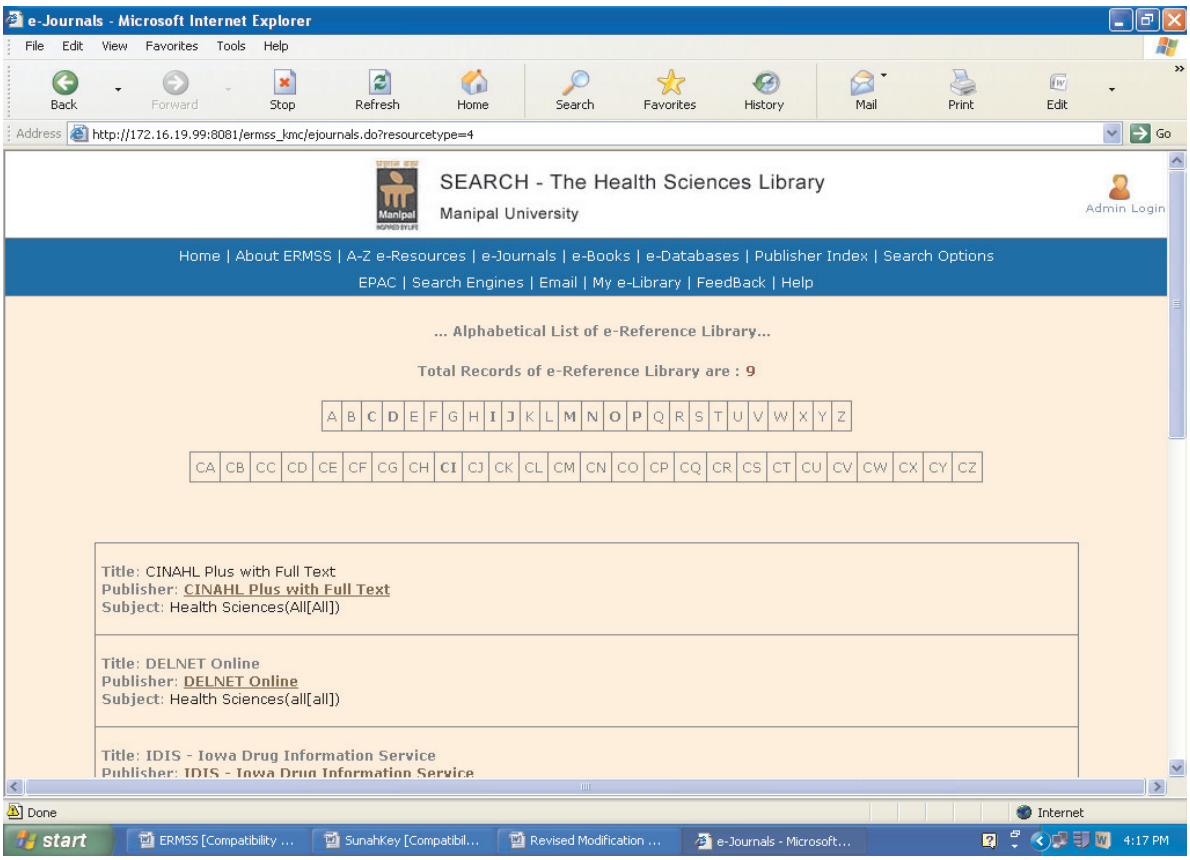


Fig 7: Publishers index

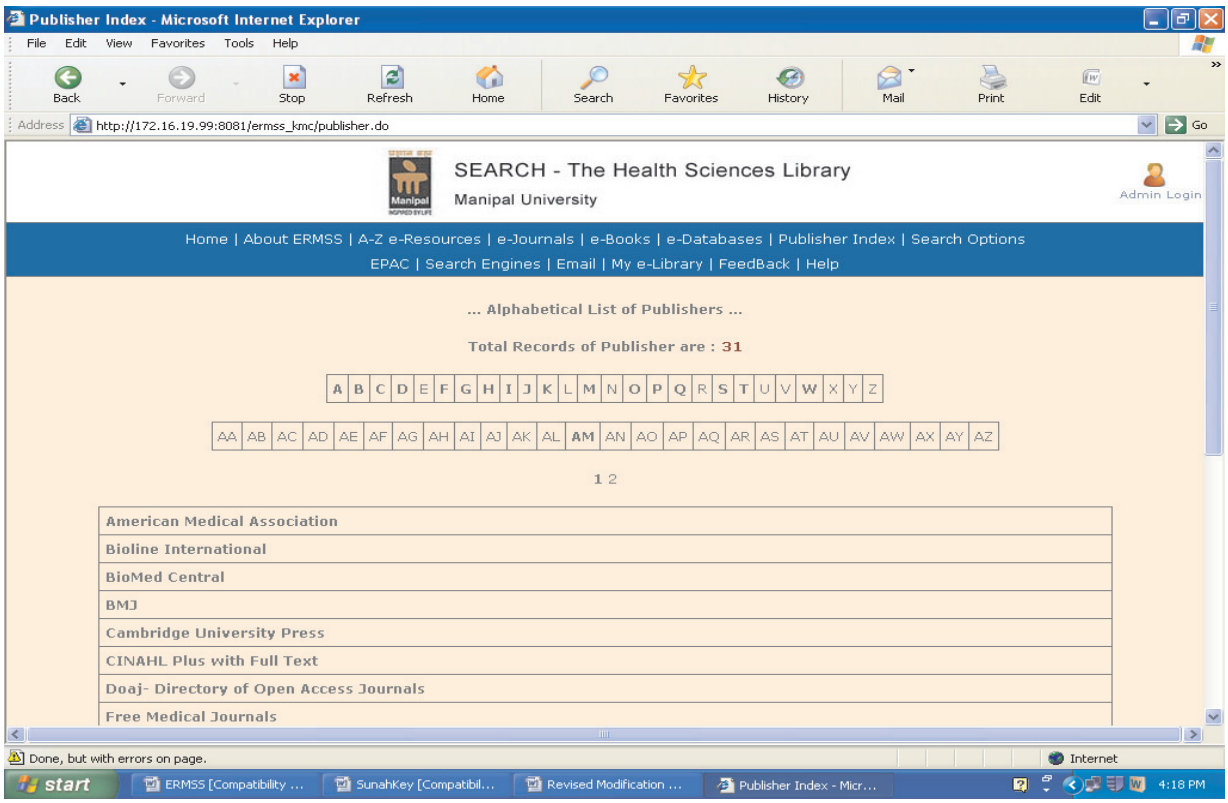


Fig 8: Basic search

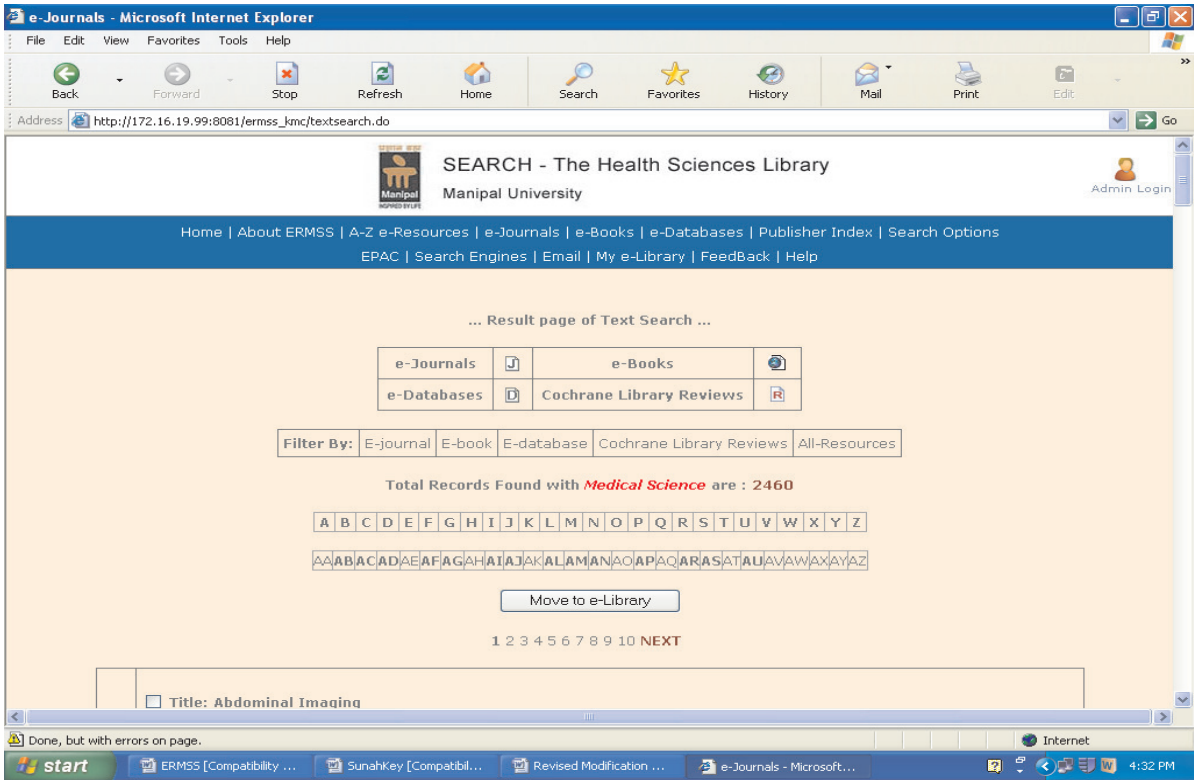


Fig 9: Subject search

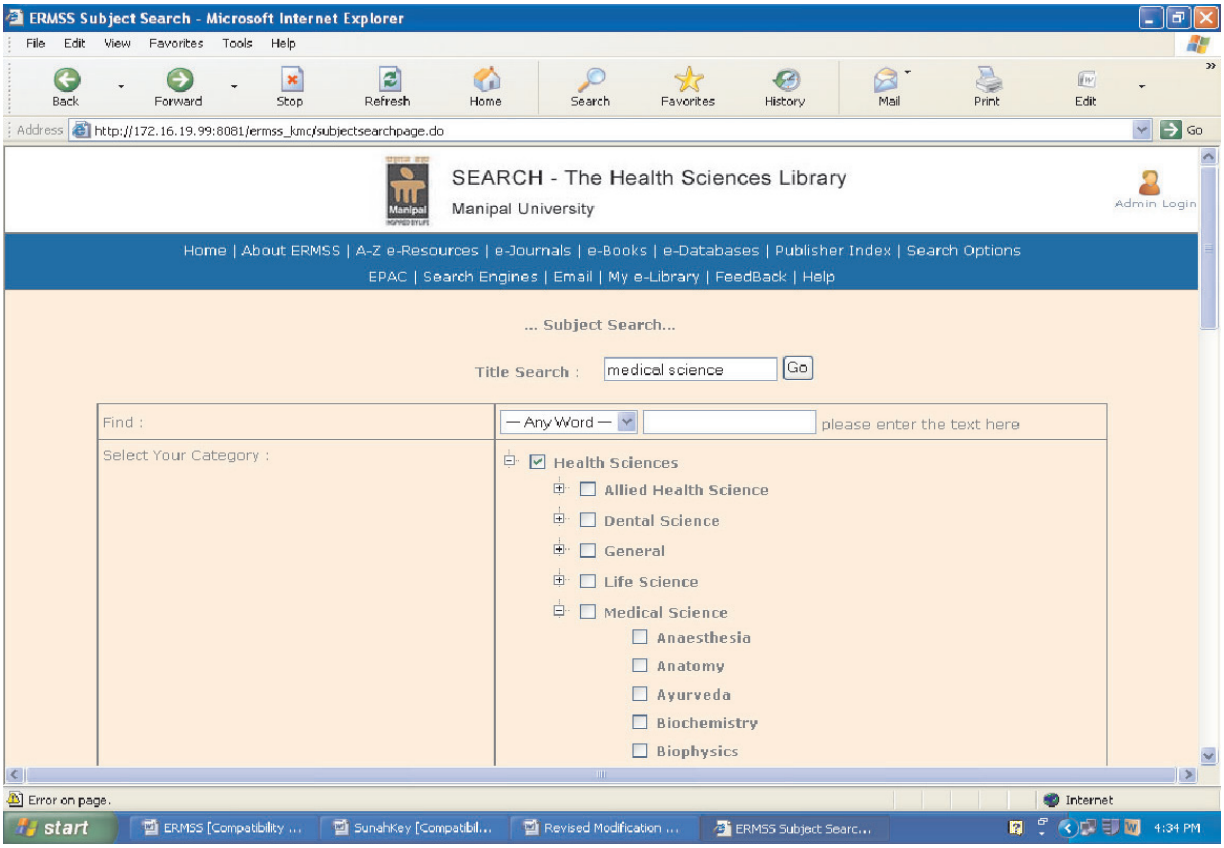


Fig 10: Advanced search

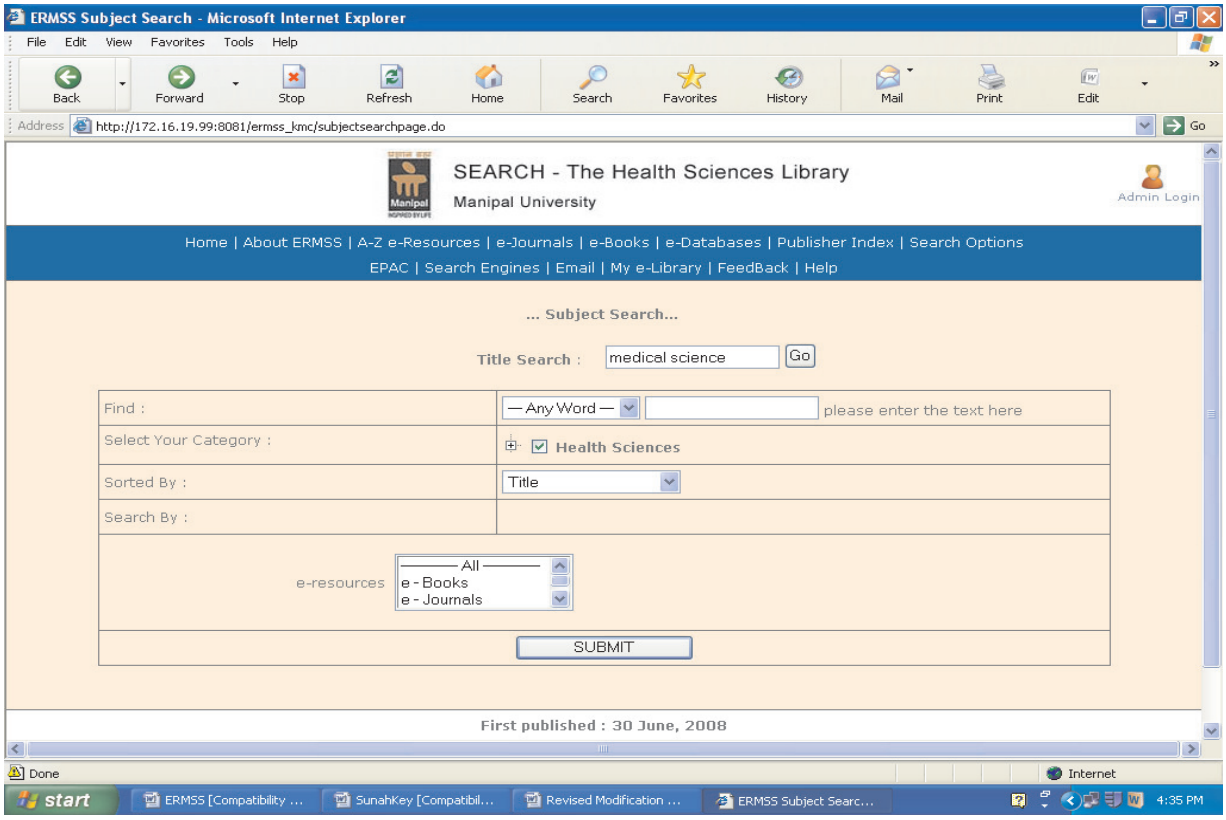


Fig 11: EPAC

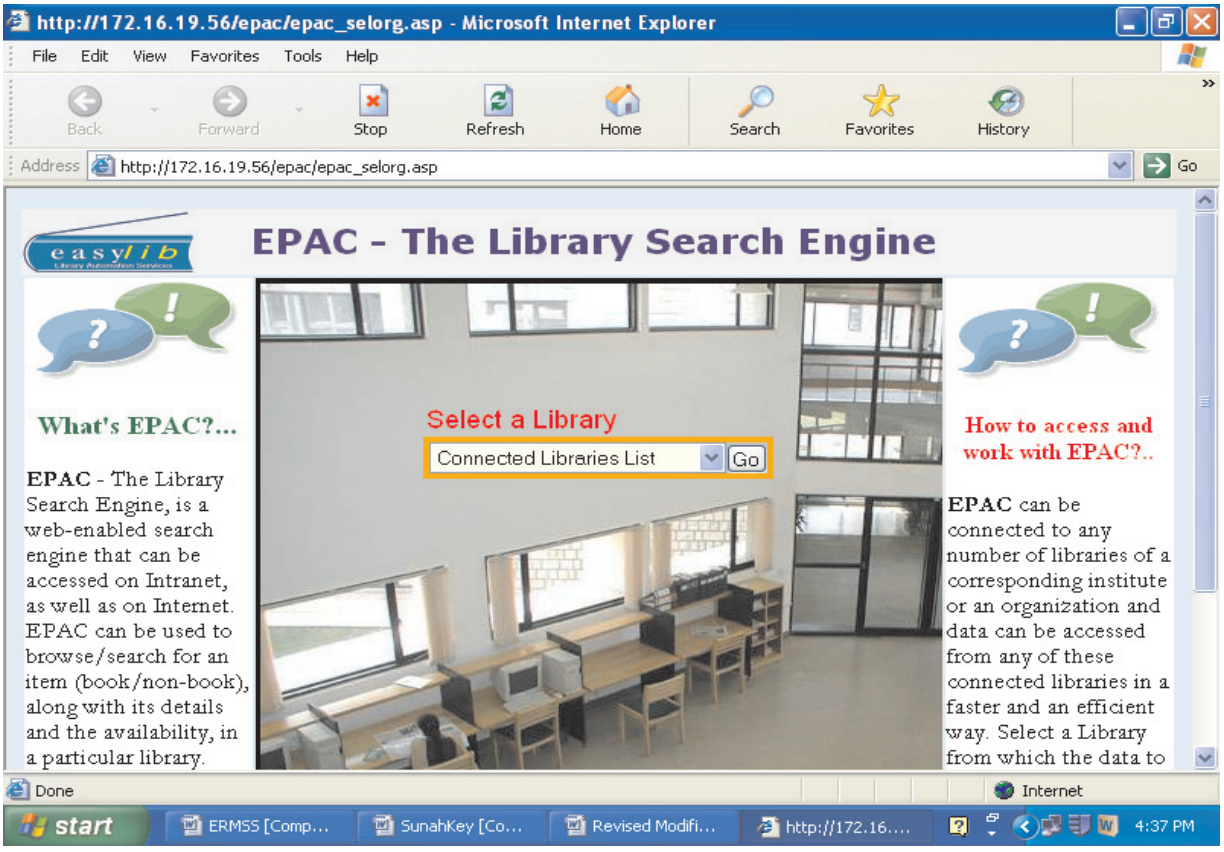


Fig 12: My e-library

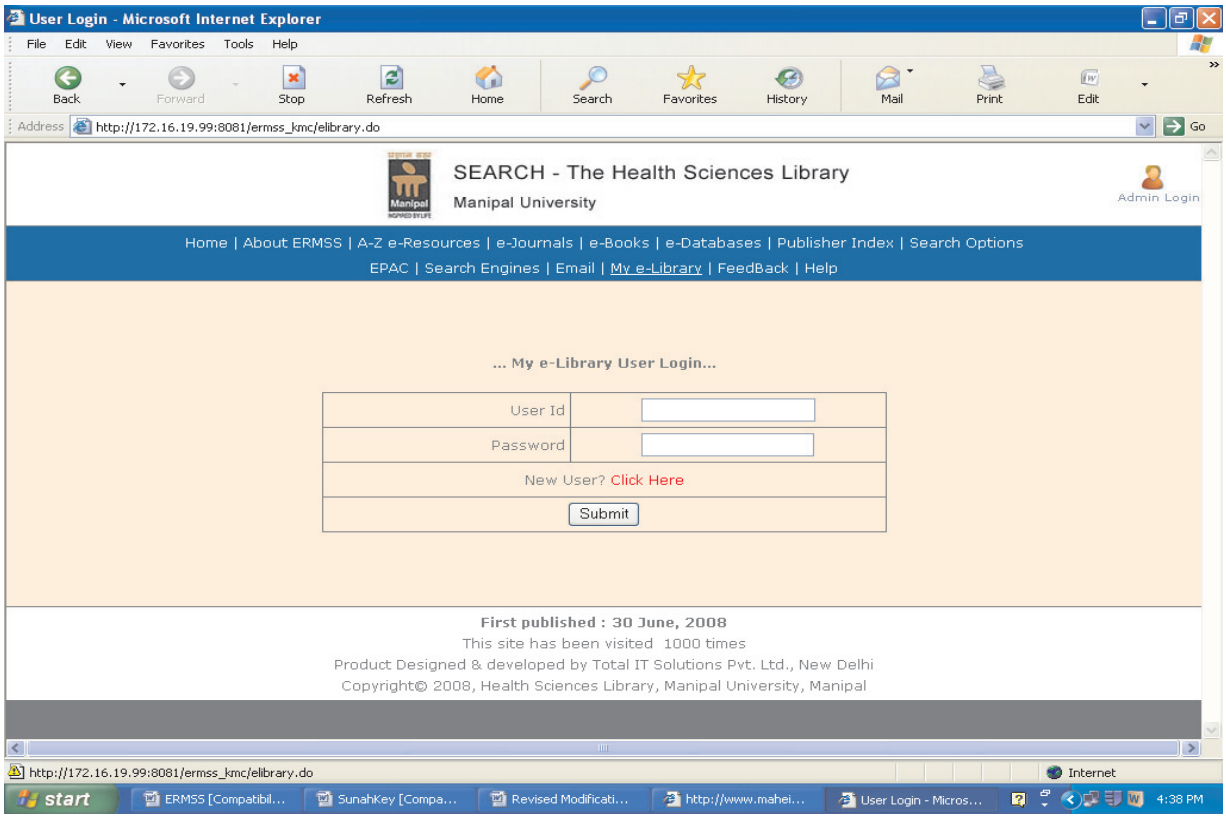


Fig 13: Feedback

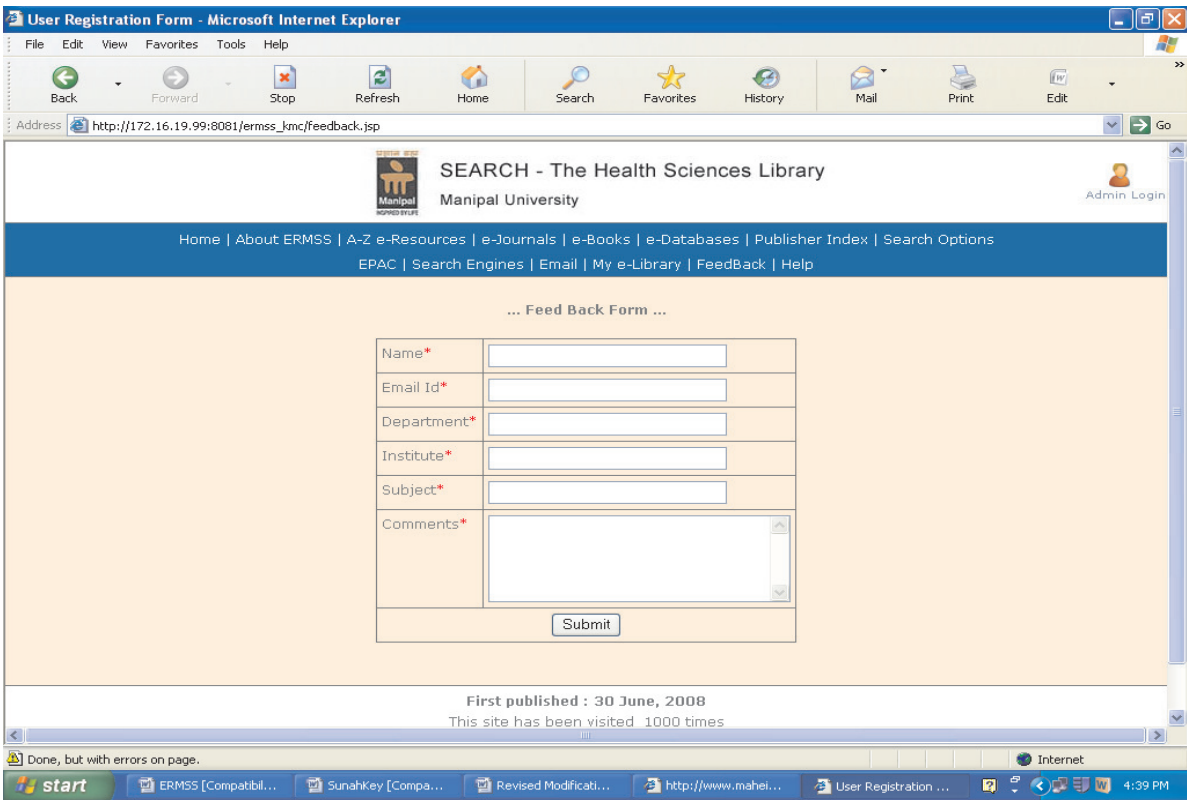
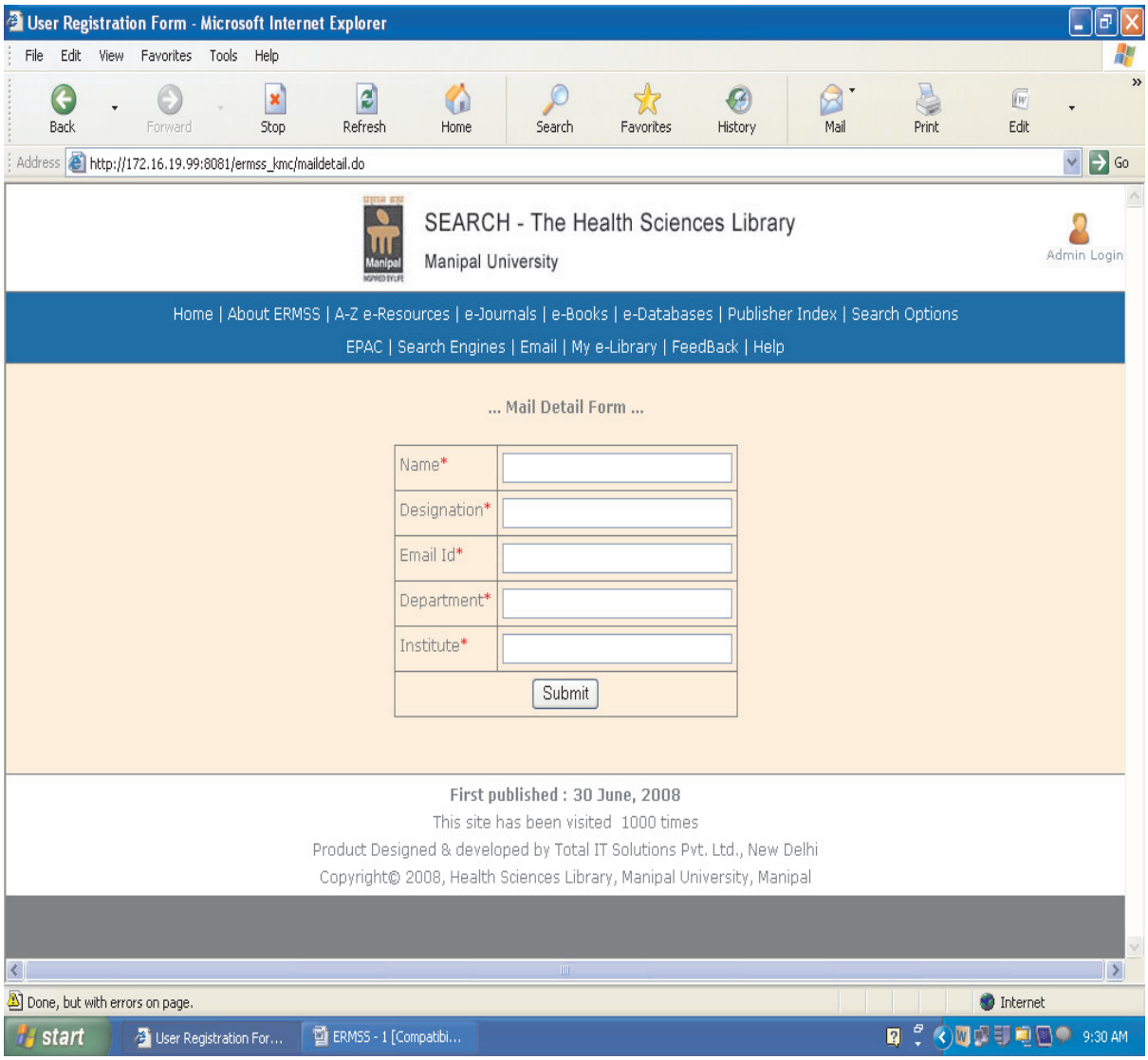


Fig 14: e-Mail alerts



Advanced Search is basically boolean search. Users can search on others fields apart from having all search facility included in basic search.

vii) EPAC

This is Electronic Public Access Catalogue of Health Sciences Library. Users can search all the print resources (books, journals, back volumes of journals, dissertations, WHO publications, etc.) of the Health Sciences Library here.

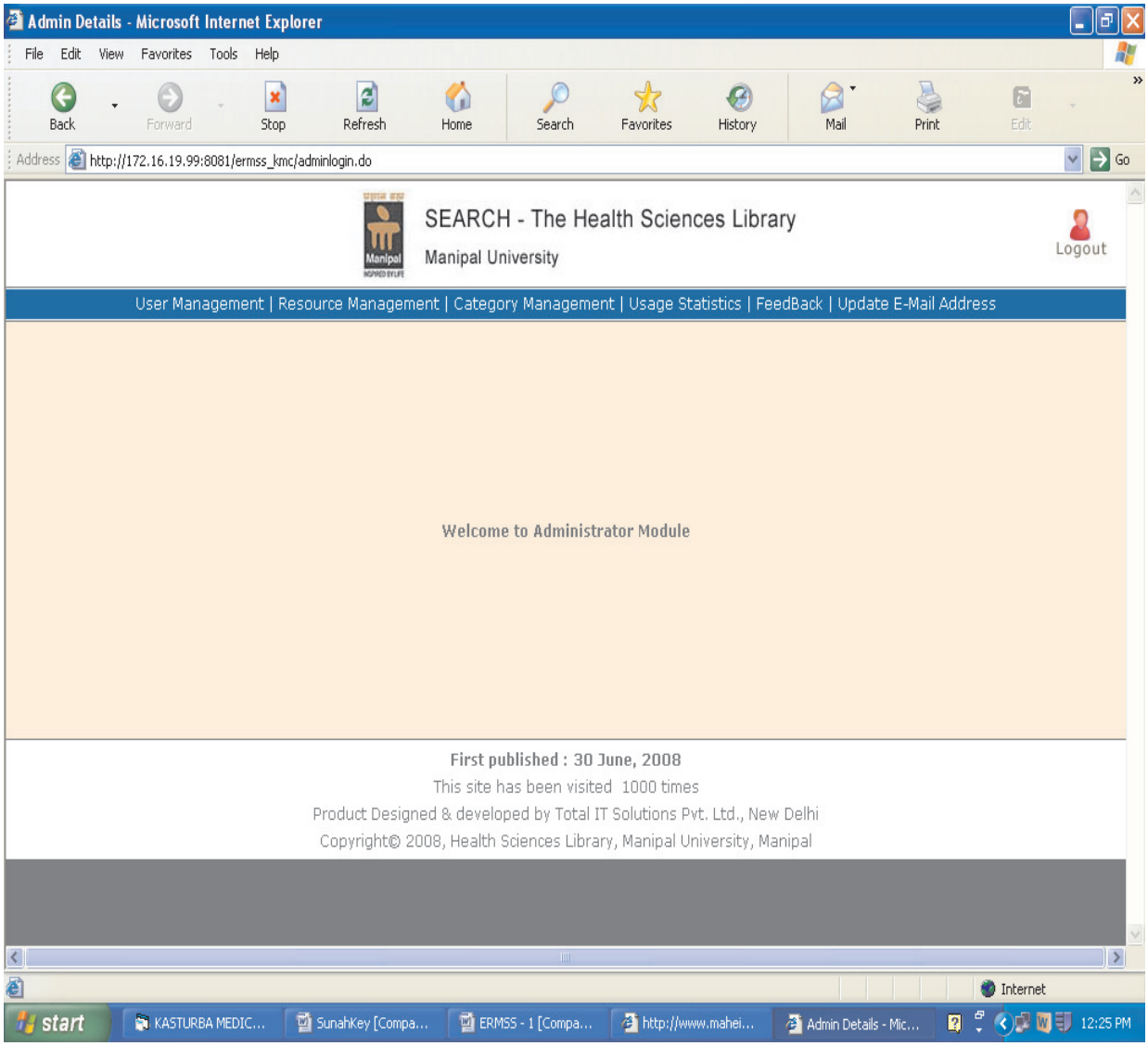
viii) My e-Library

Here, each user can create own e-library for future reference. It is like an e-mail account, wherein a user can maintain his/her own library by saving the search results of the resources which can be used in future. This would mean that users can maintain these themselves and can place information in it. For this purpose, they get an ID. So their material is safe. e-Library is same as any other account on the web.

ix) Feedback

Feedback form can be filled by the user for giving suggestions, etc. to the Health Sciences

Fig 15: Administration panel services



Library regarding the access of e-resources using ERMSS software.

x) e-Mail Alerts

This is the facility which is given to the registered users. For availing this facility, first the user needs to get registered through the e-mail alert form. After getting registered, users would be able to receive all types of insertions, updations and deletions done by the administrator/librarian.

B) Administration Panel Services

Admin site of ERMSS is comprised of various administration panel services. Following are the complete view of the functioning of each icon of the administration panel services of the ERMSS.

i) User Management

User management is used to fix the authority level of administrators/librarians. This part is composed of user group management which gives the same authority to certain user group, menu management for each user group and

Fig 16: User management

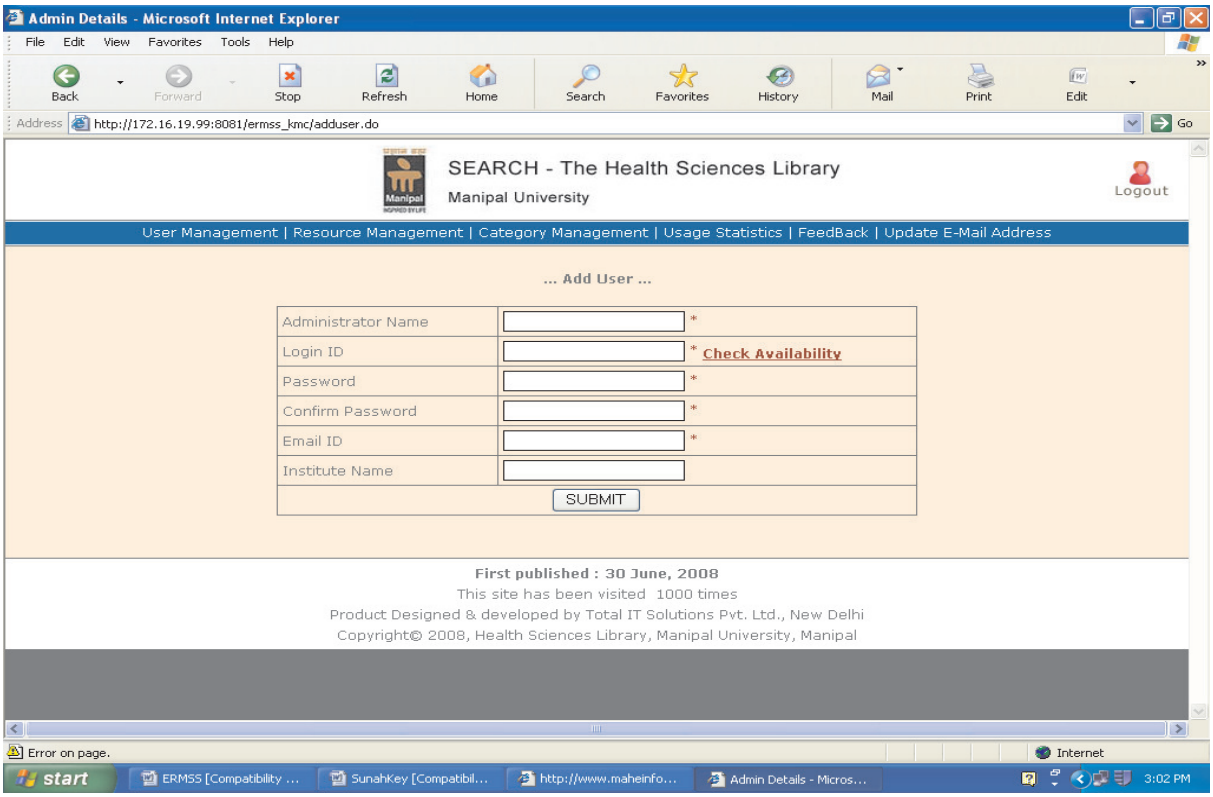


Fig 17: Add resources

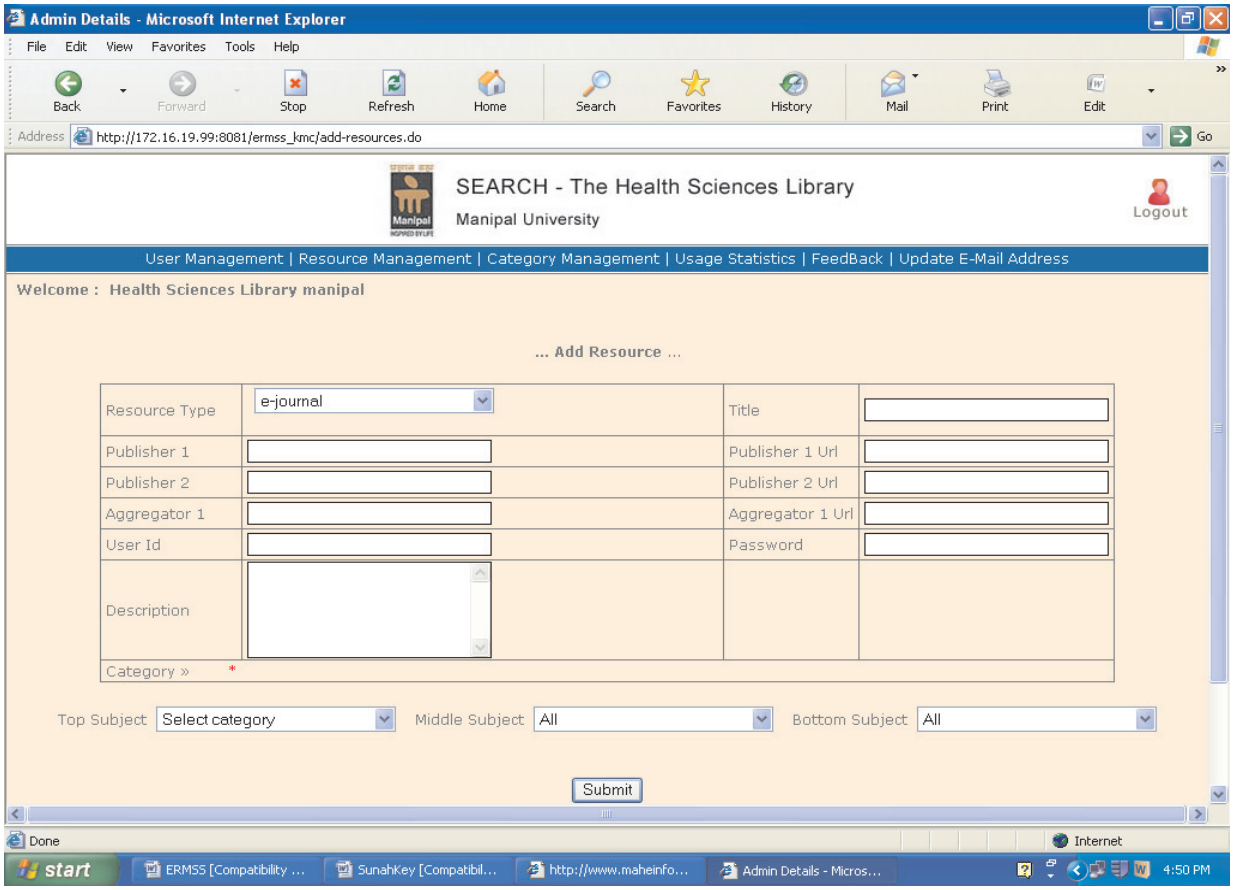


Fig 18: Modify resources

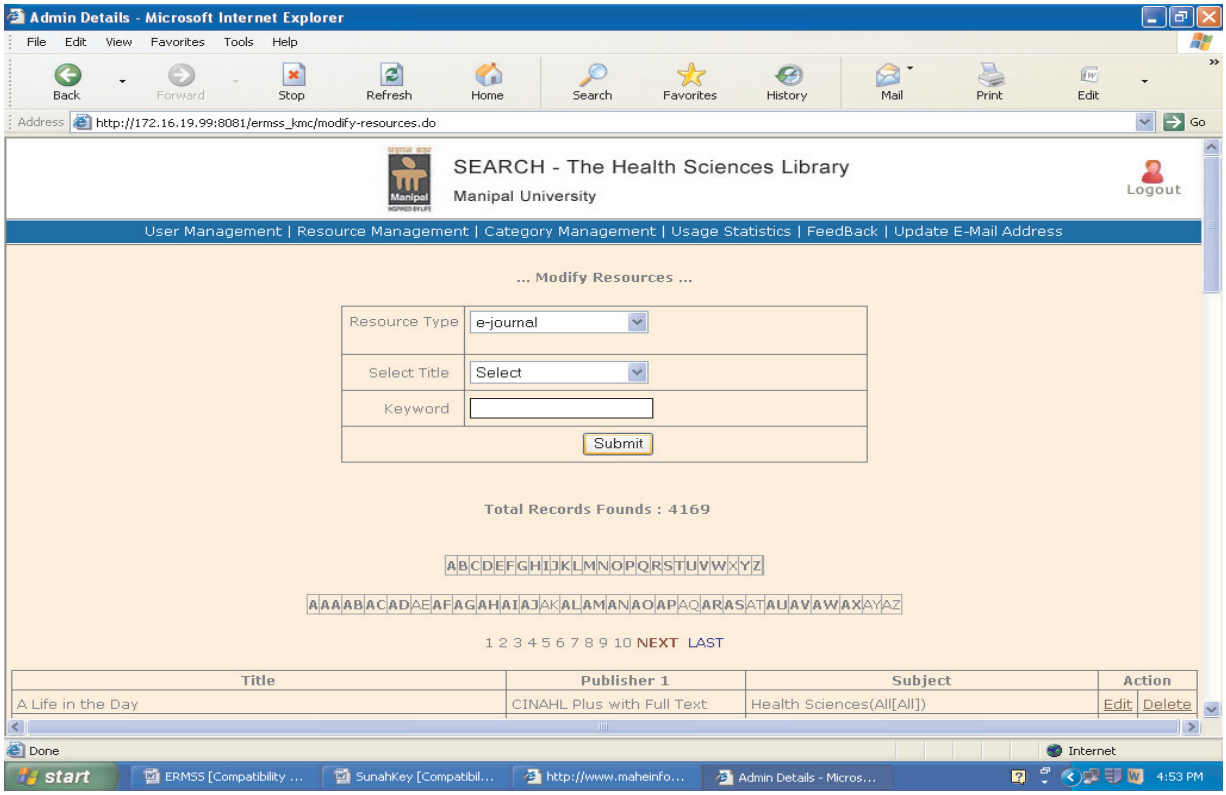


Fig 19: Category management

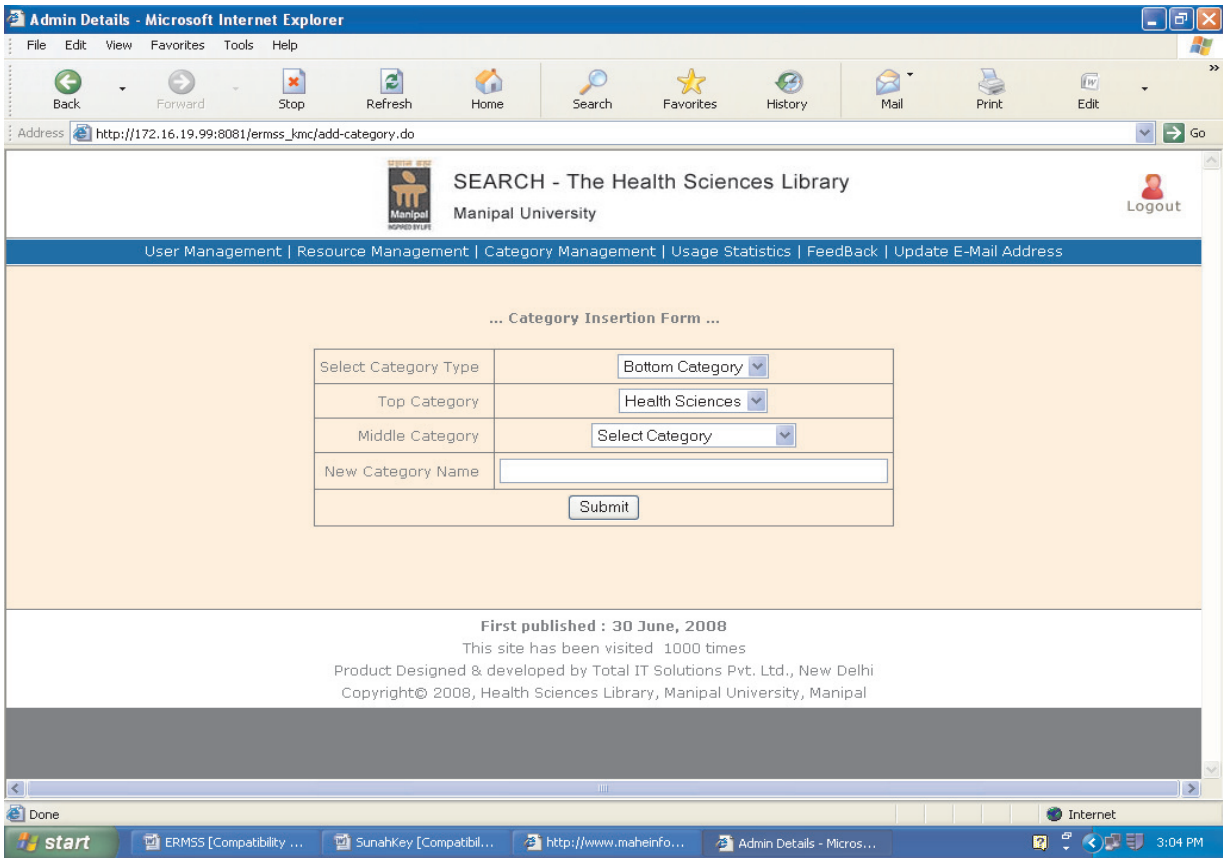
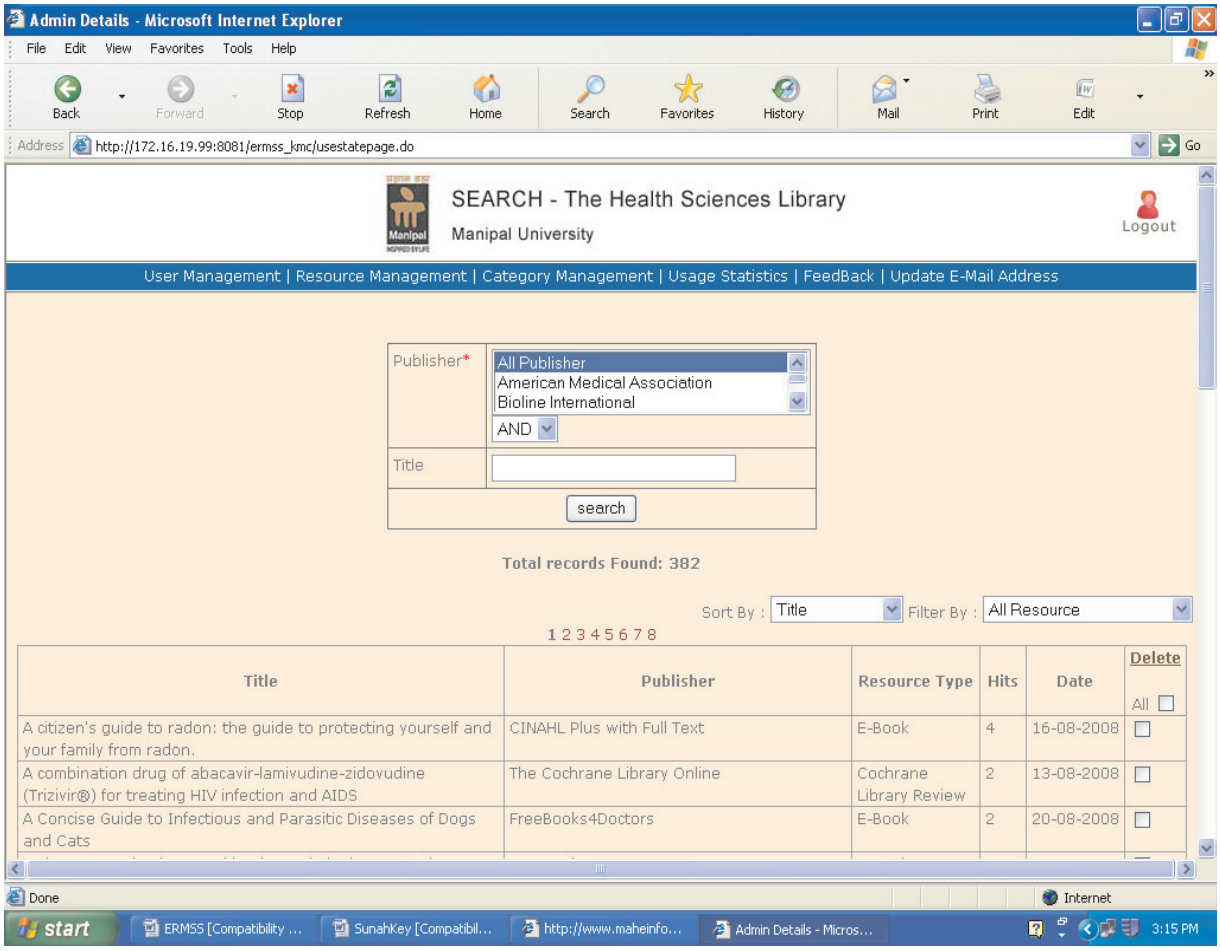


Fig 20: Usage statistics



user management to give special authority to some persons.

ii) Resource Management – Add Resources

This is basically used by administrator/ librarian to add resource whether it could be an e-journal, e-book, e-database or any other e-resource respectively with its details.

iii) Resource Management – Modify Resources

This is used by administrator/librarian to modify the details of the resources for the respective e-journal, e-book or e-database. Through this, the administrator/librarian can easily edit/delete the details.

iv) Category Management

This is used by the administrator/librarian to add, modify or delete subjects in top category, middle category and bottom category

v) Usage Statistics

Here the administrator/librarian can see the usage statistics reports for each e-journal, e-book, e-database and publisher. Usage statistics facility helps the administrator/ librarian to take future decisions.

Conclusion

The ERMSS is an effective management and search tool for the information seekers like faculty members, researchers and students.

ERMSS enables users to quickly and easily find the resource they need, whether from an e-journal or a database. Users can search and access e-resources as a stand-along content. They can easily access e-books, e-journals and online databases combined. In a single platform, they can search across the library's resources including free and paid databases such as journals and e-books and other resources.

The ERMSS linking capability has proven immensely helpful to Manipal University Health Sciences Library. Features such as e-mail alerts, my e-library, feedback form, admin login, increased customization and enabling users to choose whether to display results by relevance or chronological order will make the system even more effective for library staff and library users. Currently, allmost all the library's e-resources can be reached using ERMSS and library statistics show rapidly increasing use of those e-resources.

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1. E-Journal and e-Book Portals. Available at http://www.teldan.com/Teldan08/Templates/showpage . asp ? DBID =1 & LNGID =1 & TMID = 84 & FID = 633
2. Enabling Unified Access to e-Resources at Vienna University Library, Austria. Available at http://www.exlibrisgroup.com/files/CaseStudy/MetaLib_Vienna_University.pdf
3. ERMSS: e-Resources Management and Search Solutions. M/s Total I.T. Solutions Pvt. Ltd., New Delhi. Available at www.totalit.co.in.
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State the background of the study and purpose of thestudy and summarize the rationale for the study or observation.

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Standard journal article

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

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

Article in supplement or special issue

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

Corporate (collective) author

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

Unpublished article

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

Personal author(s)

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

Chapter in book

[7] Nauntofte B, Tenovuo J, Lagerlöf F. Secretion and composition of saliva. In: Fejerskov O, Kidd EAM, editors. Dental caries: The disease and its clinical management. Oxford: Blackwell Munksgaard; 2003. p. 7-27.

No author given

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

Reference from electronic media

[9] National Statistics Online—Trends in suicide by method in England and Wales, 1979-2001. www.statistics.gov.uk/downloads/theme_health/HSQ20.pdf (accessed Jan 24, 2005): 7-18. Only verified references against the original documents should be cited. Authors are responsible for the accuracy and completeness of their references and for correct text citation. The number of reference should be kept limited to 20 in case of major communications and 10 for short communications.

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