LIBRARIES & INFORMATION SERVICES IN THE ELECTRONIC INFORMATION ERA

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EDITOR
PROF J L SARDANA

ASSOCIATE EDITORS
M L SAINI
S M DHAWAN
S MAJUMDAR
DEV RAJ SINGH

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LIBRARIES & INFORMATION SERVICES IN THE ELECTRONIC INFORMATION ERA

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Editor

Prof J L Sardana

Associate Editors

M L Saini **S M Dhawan**

S Majumdar **Dr Devraj Singh**

Indian Library Association
A 40-41, Flat No 201, Ansal Building, Dr Mukherji Nagar
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PREFACE

We are happy to present before you the Pre-Conference Papers of the 44th All India Library Conference being held at Hyderabad, the emerging metropolitan city in next millennium. The use and application of information technology has risen so fast in India that it has indeed become essential to discuss its implications on the profession, on the users, and on the ways the libraries are going to emerge. The changing electronic environment is also influencing publishing industry, offering publications in electronic form. The new environment is also influencing their mode of distribution. Hence, to keep ourselves abreast with the developments in the subject, and to discuss the issues which confront the profession, we have chosen the theme in the right perspective.

The very essence of the theme indicates that we are entering into the Electronic Information Era. As President of the Apex Body of the library profession, I felt it my prime duty to provide our fellow professionals an opportunity to discuss issues involved in making a transition to electronic information era. In this context, the topic of the Conference "Libraries and Information Services in the Electronic Information Era" is appropriate. A thorough discussion on this subject in right perspective will help identify the agenda for the libraries in the 21st century. My sincere acknowledgments to the contributors.

For the convenience in deliberations, the papers have been grouped under 9 sections. These are:

- LIBRARIANSHIP: EMERGING ROLE IN ELECTRONIC INFORMATION ERA;
- ELECTRONIC INFORMATION ENVIRONMENT AND ITS IMPACT
- ELECTRONIC, DIGITAL, AND VIRTUAL LIBRARIES
- RESOURCE SHARING, NETWORKS AND NETWORKING
- LIBRARY DATABASES
- LIBRARY AND INFORMATION SERVICES
- MANPOWER DEVELOPMENT AND LIBRARY EMPOWERMENT
- NATIONAL POLICY FOR LIBRARY AND INFORMATION SERVICES

It gives us a great satisfaction that almost all facets, which are required to be discussed. The volume contains 81 papers which are summarised under various sections as below:

Section A :Librarianship: Emerging Role In Electronic Information Era

This section has twelve papers on diverse areas. While Ms Sundari Suresh , Shri Haridasan discuss the roles and responsibilities of the professionals, Shri H.S. Chopra takes us to the next millennium. Harpreet Walia, Sonal Singh, and Surendra Singh have shown their concern on the issue of eradication of illiteracy and the role libraries can play in this regard. Shri Kannappanavar, Shri Kherde, Shri Chopra focus their papers on adult education and the libraries . Bhatt, Rajesh and Ajay P. Singh focus their attention on neo-literates. Nithyanandam has rightly discussed the role of IT in the sensitive field of S&T . Chowdri has discussed the role which booksellers and publishers play in the development of libraries.

Section B: Electronic Information Environment And Its Impact

This section has 11 contributions. If Harish Chandra has discussed the financial resource generation in light of financial crunch, Lohia has discussed the relevance of marketing of LIS products. Rajesh Singh deals with the customer focussed approach to information services. Kalilur Rahman discusses the role of telecommunication in the electronic era. Tariq Ashraf along with Dhaka and V K Mittal discuss the new paradigms of scholarly communication. The role of IT in sports and physical education has been uniquely dealt by Usha Devi. While Dalai, Ramesh and Sahu discuss in general electronic information context. Manisha Saksena discusses the implications of emerging electronic information environment on various types of libraries, and Muneebulla Khan discusses the implications in the light of university libraries. Standardisation of infrastructure, a prerequisite for IT applications, has been thoroughly discussed by O.P. Gupta. Chitra Rao discusses a new concept of re-engineering the libraries.

Section C : Electronic, Digital And Virtual Libraries

Ten papers have been include in this section. A large number of papers relate to digital libraries.. Kamaiah and Chetty specifically deal with the role of professionals, Anuradha talks on the intricacies of information transfers, Sangam and Talwar on the services and products, and Arora and Renuka Lekhi , Venkataramana, Gangadhar Reddy on the role technology vis-a-viz digital libraries. Deverajan focusses his attention on Third World countries. The opportunities and challenges to be faced by the academic libraries in introducing electronic media has been dealt by Maheswarappa, Vijayalaxmi and Tadasad. The tools, such as Hypertext have been dealt with by

Manorama Srinath. Pharande. Discusses the problems in the digitization of rare collections.

Section D : Resource Sharing, Networks And Networking

This section also has ten contributions. While in general the importance of resource sharing has been dealt by Dhawan, Saknure has discussed it in context of information technology. Resource sharing model of Bhopal city has been dealt by Khanuja. Ahmad discusses it in respect of ICFRE libraries. In context of networking Manalan discusses industrial information network, Raina discusses LUCKNET, Maheswarappa and Tadasad discuss a network for college libraries in Karnataka. Resource networking through Internet is being discussed by Abraham. The subject heading problems have been dealt with by Chandrakar. And Ganapathi and Vaddarikere in general discuss the networking of libraries.

Section E : Internet, Intranet, CD-ROM Resources

Eight papers have been included in this section. Generally all the papers focus their discussion on the use of INTERNET. Ashok Babu and Raghavaiah discuss service part, Sasikala and Rama Patnaik discuss user education aspects. Access through OPAC by Ganesan, Ravi and Rama Reddy has been discussed. Manna focusses on Graphic File Formats and Vaidya on the Websites. Muthusamy, Thangarajan and Palanisamy discusses the impact of Internet. Siwatch generally discusses the essence of Internet. And CD-ROM as storage device has been handled by Biradar.

Section F : Library Databases

Ten papers have been dealt in this section. While Kaliyaperumal and Ramesh Babu discuss OPAC services, Jitender Sharma talks about the effective computerised information system. Dharmapurikar has thrown light on retrospective conversion process and Somasekhara Rao, Prasad Rao and Nageswara Rao on the computerised circulation system. Information products and services have been dealt by Somasekhara Rao and Nageswara Rao and importance of database creation has been handled by Tewari, Walke and Dhawan. Repackaging have been introduced by Tamal Guha and Bordoloi. Resource development in publishing industry has been handled by Accanoor and Kulkarni and Kumar on electronic resources. ECRIM model for public libraries has been made by Maheswarappa, Tadasad and Vijaylaxmi.

Section G : Library And Information Services

Ten papers are there in this section focusing on various service aspects. Dissemination of content pages has been dealt by Deb and Kar, patent information service by Padhi. Processing of information in health universities has been handled by Sharma, Vijay Kumar and Sai Babu and importance of stock verification by Gangu and Uma. Marketing research by Somasekhara

Rao. Use of IT in college libraries have been discussed by Chandran and Ramesh Babu. Acquisition process in context of university libraries has been discussed by Suseela. Upgradation and modernisation of college libraries is the subject of Narasimha Murthy. Customer care has been handled by Vinod and Muraleedharan and library services to career seekers by Jalaja and Koovakki.

Section H : Manpower Development And Library Empowerment

This section has eight papers. The process of professional development has been discussed by Vyas, Veeranjaneyulu and Ramesh and material, mental and spiritual empowerment of libraries has been handled by Siddamallaiah and Sulochanan. Empowering library employees is the issue discussed by Dabas and Gill. Instructing the users in the changing environment is the focus of Misra and Satyanarayana. Distance education is the topic discussed by Ramadevi and electronic information in students information centres is the topic for discussion by Selvakumar and Manoharan.

Section I : National Policy For Library And Information Services

In the final section three papers have been introduced discussing the various issues concerning the National Policies. While Sewa Singh highlights on the need for national policy on university libraries, Murthy focusses his attention on national policy on library and information services in general and the problem of intellectual property rights have been dealt by Padmini.

The volume has an alphabetical index of authors, titles of doucments, concepts, etc. and the same has been prepared by Sh. S Manjumdar and Sh S M Dhawan. I would like to record our deep appreciations of the work done by them in just one day at the disposal of the editors. The printer deserves special thanks for undertaking the job at a short notice and also completing the same in a record time of ten days. I am also thankful to all mu colleagues in the ILA who have helped me in more than one ways in the organisation of the Conference and the present Pre-Conference volume is just a part of it.

Delhi
20 February 1999

Prof. J L Sardana
President
Indian Library Association

8

ERADICATION OF ILLITERACY IN THE ELECTRONIC INFORMATION ERA

Adarsh N. Gokul*
K. S. Ambili**

ABSTRACT

Global technology transfer has a major role in the socio-economic development of a country. In this electronic age, user friendly technology packages, in user acceptable formats and in local languages must reach the extensive rural areas to ensure literacy. Being a professional expert in the management of personnel and material, librarians can play a dynamic role in the world of online, interconnectivity and multimedia to eradicate illiteracy. Technology is not eliminating but enhancing the role of a librarian. This paper gives a brief account of various literacy programmes of India and points out the prerequisites and steps to be taken up for successful implementation of total literacy programme. The authors urge for an exclusive and separate channel in future generation of INSAT systems for EDUTAINMENT and IGNOU, to launch the literacy programme, considering the need of the hour as reminded by our president by utilizing the IT, infrastructural facilities of DIET, public and academic libraries and services of librarians as resource persons, as it has the largest communication network in India (OPENET) and can produce very good multimedia instructional materials for the literacy programme in Sanchar Kendra.

1 INTRODUCTION

"Jai Jawan Jai Kisan Jai Vigyan", the clarian call given by our Prime Minister A. B. Vajpayee should urge and motivate us to take up the responsibility of eradication of illiteracy in the electronic era and deliver the benefits of science and technology, especially information technology for the rapid socio-economic development of our country. The light of literacy should reach rural areas of India, where 70 per cent of the people who constitute 65 per cent of agricultural work force live.

2 ILLITERACY ERADICATION–A PATRIOTIC DUTY

Our President Mr. K. R. Narayanan in his Republic Day Eve address to the nation on 25th January 1999 reminded us that eradication of illiteracy is the need of the hour. Literacy work is not just a service but a duty and commitment enjoined on the literate person, to impart his knowledge to his/her illiterate brethren. We are constitutionally committed under Article 45 to

* M. Phil. Scholar, DLIS Madurai Kamaraj University., Madurai-625021
** Librarian i/c, College of Veterinary & Animal Sciences, Mannuthy (PO), Trichur 68051

achieve universalisation of elementary education and this was to have been achieved by 1960, which still remains our cherished goal.

3 LITERACY–LEADING LIGHT TO QUALITY LIFE, NATIONAL INTEGRATION AND PROSPERITY

Literacy is a powerful tool for the cultivation of social and moral values and eliminate obscurantism, religious fanaticism, superstitions and violence. It make people aware of their rights, periodical immunization and care of new born children, eradication of child labour, prevent deforestation and motivate the people for afforestation. It makes them capable of proper utilization of the intricate machinery. Above all it will create self-confidence and scientific outlook of life and instill the hope of a bright future.

4 LITERACY RATE

At the time of independence only 14 per cent of the population was literate. In 1981 it had risen to 43.6 per cent. The literacy percentage of Indian population is 52.11; it being 63.86 for males and 39.92 for females according to 1992 census. World wide literatre adults tripled from 1 billion in 1960 to more than 3 billion in 1995. The world wide adult literacy increased from 70% of the population aged 15 years and over in 1980 to 78% in 1995, and it is expected to reach about 83% in 2010.

5 NATIONAL POLICY ON EDUCATION (NEP)

In NEP-1986 and in its updated version in 1992, priority is given to wiping out illiteracy and reducing the dropout rate at the primary level. Two major schemes launched for this purpose are

1. The non-formal education (NFE) and
2. The programme of National Literacy Mission (NLM)

5.1 Non-Formal Education (NFE)

NFE is being implemented as a centrally sponsored scheme in 10 educationally backward states and then extended to cover urban slums, special project for working children, tribal areas, hilly areas and desert tract.

5.2 Operation Black Board

Under Operation Blackboard of NEP launched in 1987, a primary school has its own two roomed building with separate toilets for boys and girls, teaching materials, play kits–in all about 22 items called the minimum essential items necessary to run an educational institution. More than 25 lakh teachers have been given orientation to familiarise them with the major thrust envisaged in the NEP 86 and to improve their professional competence. Further, to provide academic and training support to the elementary and adult education system at district level, about 384 Diet (District Institute of Education and Training) have been established.

5.3 National Literacy Mission (NLM)

Time bound, area specific, cost effective and result oriented mass compaigns for total literacy were taken up, initially in different states under the leadership of the District Collectors, who were sensitised for this purpose in a series of meetings and conferences. This compaign method has yielded tremendous results. Thirty districts have become totally literate and campaigns are going on in more than 330 districts.

6 KERALA, THE FIRST TOTAL LITERACY STATE OF INDIA–A MODEL

Aksharajyoti, the light lit by the then Prime Minister Sri V. P. Singh at Ernakulam on 4th Februrary, 1990 and handed over to Chief Minister of Kerala, illuminated the whole state of Kerala. On a colourful function at Mananchira-Maidan at Kozhikode on 18th April 1991, a neo-literate 70 year old Aysha Chelakkadan from Malappuram declared the vital event of Kerala becoming the first totally literate state of India. Kerala has shown to the country and the third world what a peoples movement led by a highly motivated army of volunteers and dedicated administrative machinery could achieve with meagre resources in securing cent per cent literacy. A three part primer prepared on IFCL model by Kerala Saksharatha Samithi was taught to the learners. The first two primers laid emphasis on language practice. The key themes in the third primer were small family norms, health and hygiene, sanitation, immunisation, womens equality, breast feeding, man and environment, man and nature, democratic institutions and civil duties for creating awareness among learners. Twenty lakhs copies of each primer were printed and distributed. Success is mainly due to effective street plays, public demonstrations, rallies and the total involvement of the people of all sections of the society.

7 EDUCATION FOR ALL

The object of 'Education for All', was conceived at the World Conference on Education for All, which was held in Jomtien, Thailand, in March 1990. Jomtien declaration of Education for all was signed by 155 member states and pledged commitment to the idea and prepared a frame work for action.

7.1 Pre Requisites and Activities for Successful Literacy Programme

1. Ensuring the involvement of the educated voluntary activists, NGO's and personnel of development departments like agriculture, health and hygiene, family welfare, etc.
2. Attracting the attention of illiterates is the most important pre-requisite for successful literacy programme.

7.2 Action Framework

All kinds of media and popular art forms have to be utilized to create a high pitched tempo and then to sustain it throughout for the continued

motivation of the activists and learners. High publicity in between the interesting programmes in TV and radio is essential for the formation of survey squads, selection of instructors, enrolment in classes, prevention of dropouts and improving the standard of instruction. The major activities of the literacy programmes are training the resource persons, collection and distribution of materials, eye testing, opening of centres, exhibitions, study visits and evaluation.

8 ROLE OF MEDIA IN LITERACY MISSION

Print materials remained as the backbone of literacy programme, as they can be read and reread according to the convenience of the learners. Radio is within the reach of the common man as it is cheap and can be used with dry cell batteries during power supply failure. Printed text with words and pictures communicate message through the sense of sight and radio through sense of sound. As films, video, television and traditional folk media are combination of both visual and auditory characteristics, they are more appealing to learners.

Television is an extremely rich, effective and powerful medium for spreading literacy. This helps learners living in remote and rural areas of the country to get the same quality of education as their counterparts in urban areas. In India Educational Television (ETV) launched in 1965 expanded only from 1972 onwards. Lack of adequate transmission facilities and dissatisfaction with the time slot available are the main factors responsible for the sparing use of television.

Audio-Video cassettes can be played and replayed for study and teaching. They can be stopped at a particular point where more details are necessary and can be played in slow motion to explain a difficult point. Without repeating the performance, video enables a good lecture to be seen and heard all over the country.

South Zone Conference on Adult Education held in Bangalore in 1993 recommended to utilize both the electronic and the traditional media for effective training as well as teaching in the total literacy campaigns.

Advanced Technology generate a wide spectrum of learning resources. The same knowledge can be disseminated by the teachers, radio/TV broadcast, computer software and other learning resources. The electronic media with its potential to reach the farthest corners of the community can be used independently or supplement each other or can be used as a mix/ blend depending upon the availability, suitability, time and place. The teacher-taught interction can now be incorporated into the Teleconference, Video conference, computer conference, etc. which can make the programme more lively, interesting and pedagogically effective. Teleconference is a virtual classroom situation, that can be created through media networks. Satellite Instructional Television Experiment (SITE), a one year experiment was launched in 1975 for eductingthe Indian masses living in remote rural

areas. Remote corners of rural areas of states like Andhra Pradesh, Bihar, Gujarat, Maharashtra, Orissa, U. P. are covered under Indian National Satellite (INSAT) service from 1983. Programme transmitted via INSAT can create a dynamic country wide class-room literacy programme and massive training of teachers.

Multimedia is a boon of IT for educating the farmers and common people, as it can convey enriched interactive information consisting of text graphics, images, video and audio in computer. Multimedia components such as graphics, animation and sound increase learning process through visualization. Animation can explain subject matter better than text. For example flying alphabets or magically appearing and disappearing numerals, talking pencil, etc. Literacy programme should be 'people oriented'. The new technologies inspite of their advantages such as immediacy, high intimacy and the ability to reach a large number of people simultaneously, continue to be shut out to remote areas by such simple problems as bad reception, poor distribution schedule, and lack of support material.

Television and video messages can be translated into different regional languages with the advent of LIPCID technology and audio redubbing facilities overcome the multiplicity of language in India and enabled to reach the farthest nook and corner of the country. Media specialist must come down to the grass root level and electronic media should be suitably blended with traditional art/folk media to give more realistic "Edutainment' approach and should telecast at times when the illiterates are free from their daily chores and wage earning activities and need some form of entertainment.

9 PUBLIC LIBRARY NETWORK FOR ILLITERACY ERADICATION

Chattopadhyaya Committee set up to formulate an action plan on the national policy on libraries and Information system has recommended the setting up of a National Commission on Libraries for generating a library movement in the country, with emphasis as envisaged in the new education policy.

The main recommendations of the committee are

1. Establishment of Rural Public Libraries
2. The Ministry of Rural Development and Department of Culture should undertake a plan for building up one community centre with library facilities on every Panchayat under the Eighth plan.
3. Every public library should have a children's section, a minimum of 20 per cent of public Library collections should be meant for children.
4. All Public libraries and community centres should have audiovisual materials and equipment for the benefit of the neoliterates.
5. Voluntary agencies should be associated with the State Public Library development programme.
6. The publications of Indira Gandhi National Open University should be

available in all local public libraries.

7. All the states and union territories should have a Public Library Acts/in some form or the other.
8. The Central Government, in collaboration with State Government, may establish at least one multilingual library in each state.
9. A National Authority of Adult Education should be set up.

In this electronic age user friendly technology packages, in user acceptable formats and in local languages must spread to the extensive rural areas to ensure eradication of illiteracy, which accelerate the process of poverty alleviation and achieve quality rural development leading to prosperity. Knowledge has to be imparted to people skillfully by creating innovative progrmmes and projects through libraries. Being a professional expert in the management of personnel and material, a librarian can play a dynamic role in eradication of illiteracy in the world of online interconnectivity and multimedia.

10 CONCLUSION

An exclusive and separate channel is needed in the future generation INSAT systems to meet the Edutainment/training needs, especially that of illiterate and neoliterate. IGNOU may take up the responsibility of launching the literacy programme utilizing the IT, infrastructural facilities of DIET, public and academic libraries and the services of librarians as resource persons, as it has the largest communication network in India (OPENET) and can produce very good multimedia instructional material for the literacy programme in Sanchar Kendra.

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9
EMERGING ROLE AND RESPONSIBILITIES OF LIBRARIANSHIP

Sudharma Haridasan*

ABSTRACT

The new evolving trends demand an expressive change in the modern librarianship. due to advancements, shifting the emphasis of information collection, processing and dissemination for the management of information utilising the technologies. As a result, we find that the requirements relating to their skill and all around needs are to be upgraded so that our professionals are apt for providing efficient services to our clienteles.

For achieving this goal the govt. also through its IT action plan promotes IT application and literacy and the emerging new scenario demands a study of the work area of our professionals so that the new role can be performed in a accordance with today's needs.

1 INTRODUCTION

The changing trends in the present information demands a tremendous change in existing situations and in future too. They actually reflect the switch over from traditional systems to non conventional systems. On viewing closely we find a vast turmoil enveloping librarianship. In fact it has been at stake with the changing ways. It is a pleasant feeling where our field is not limited to stragnancy. There is always a twist and turn going on within the profession. Today we require people with an open mind and swift in thought and action. As we are becoming more and more dependent on electronic media's and their forms and concentrating on digitizing our libraries, we definitely require sufficient change in our role of librarians and their responsibilities.

The main factor behind all this is the tremendous amount of information that is being made available due to some very effective activity viz. information explosion, increase in research, development and promotion of R&D activities, establishment of information centres and systems, impact of information technology, advanced communication techniques, satellite communication, networking, CD-ROM technology, electronic mail and multimedia Technology to be supplemented by internet services. All of which have affected the role and responsibilities of the library professionals. Tracing

* Lecturer, Department of Library and Information Science, Aligarh Muslim University, Aligarh.

out the earlier phases and the emerging phases would give a clearer vision.

2 LIBRARIAN'S ROLE

Earlier librarian was identified as the custodian or store keeper who was mainly concerned with safeguarding of the books so that they are not lost. Lless emphasis was laid on the usage .

2.1 Reference Librarian

Slowly with more people involving themselves in education and research activities the role of librarian required more of providing reference type of information. It too had a distant feature of providing books personally to the scholars in assisting them in their work. But then this was further changes according to the nature of service i.e. ready reference and long-range reference.These depended on different types of clienteles.

2.2 Documentation Officer

As the emphasis on research grew both the increased participation of the government in promoting research activities and the participation of researchers in conducting more research more of such activities ,it necessitated the scholars to get assistance in their work which was carried out with the help of . CAS, SDI Indexing and Abstracting, bibliographic etc. oth manual as well as computerized, were to be provided by specialist who were subject experts as well as service oriented. Even Ranganathan mentioned the need for service to be provided by persons who were equally qualified in their fields so that they could provide pinpointed, exhaustive and expeditions service. It actually shows the importance that was given to make the availability of the relevant information available in different sources and provided it to them soas to avail unnecessary wastage of time and labour of the research scholars, in locating documents and finding the relevant informati

2.3 Information Officer

At this stage one preferred to be called an information officers as her/ his activities centered around the provision of information. The major activity was identify the area of work of the scholar accordingly, provide relevant information. So the main objective was to organize, process and disseminate information. Since the entire work area revolved around information he/she was more aptly known as an information officer.

2.4 Information Manager

We also find a wider term Information Manger getting popular mainly as a matter of fact that, what the information officers dealt with was actually management of information. The work began with location of information in the different sources and forms and trying to make it accessible to the

users utilizing the latest technologies so that they may have quicker access to it Along with this various services were also emphasized as that would enable the proficient use of the resources.

Since the advancement in technologies also provided us with different management software it made the functioning of libraries more systematic. The entire process of the library activities was converted to a management program. In order to carry on with them , very user friendly software were,available as a result it became rather easier to manage library activities.

The changing situation put forward such a scene where information was available in machine readable forms-floppies, CD-ROMs etc. as well as online because of telecommunication and satellite communication facilities, . All this made it possible to get latest as well as retrospective information without loss of time. At the same time they together brought so much literature to the fore that the main work that was more important was to manage this information in such a manner that one could identify the required information in time. The role of information manager was thus justified and required manpower in this relation was to be cultured.

2.5 Knowledge Manager

Till now we were trying to trap information which was vital for the survival of not only of the research community but also for the learned community including teachers, students etc. in general. Thus we centered around locating, processing and disseminating information utilising the latest techniques.

But it seems even in doing so something is lacking as now importance is attached not only to the information, rather to other facts also which helps in the generation of such information viz. resources, technologies, skill. products, etc. The entire environment related to it i.e. knowledge on the whole, not just the pinpointed information and since it involves all related areas also various assets that contribute towards information areas also need to be brought to the fore. From this it is very clear that information relating to the technologies adopted. ,Its market value, different product skill involved as well as to locate information through the modern techniques has become so very obvious that anyone other than a library professional can also carry on the activities. And a role thus evolved in included within the sphere of knowledge managers who are basically concerned with knowledge management.

3 NEW REQUISITES

The skill required for these personnel is the capacity to research and acquire sound knowledge of information technology which would be sufficient enough to make them good Knowledge Managers

In this context, a study conducted at TFPL undertaken for the British Library Research and Innovation Centre, to examine the skills and competency required by employers in the corporate sector reveals three

levels of opportunity

(i) Senior Executive Level (e.g. the Chief Knowledge Officer, Competitive Intelligence Executive, Change Manager)

(ii) Information and knowledge management (e.g. knowledge team members, Knowledge and Information Managers, Information analysts and researchers, Internet content designers.

(iii) Tomorrow's information professionals (e.g. new recruits and front line staff, Webmasters and Knowledge hub members)

Even recent studies in this direction carried cut by Miachel Earl (1998) on CKO's and the CREATE (Rajan, Lank, and Chapple, 1998) on Knowledge Management reveals that the focus is all on understanding of organisational cultural, processes and technology. They are providing an asset to the profits gained through an organization. More and more of the pharmaceutical, banks, etc. would like to employ persons skilled in these areas.

4 UPGRADATION

Based on the changing role of the library professionals their responsibilities and skill need to be upgraded. With the intrusion of IT we find a tremendous change engulfing our profession. Every area has had it impact and the most affected is librarianship as a whole.

In order to step aside with the advancements one needs to adopt it fully so that we do not lag behind for the responsibilities shouldered by us, need to be reviewed and modified accordingly.

Besides the general skill required by a good library personnel the dire need of the day is the ability to negotiate, persuade, build teams, influence, provide leadership all of which are essential for good management. Among the requisites involved in providing better knowledge management would also involve:

i. Identification and acquisition of internal sources
ii Structure and condification of interal sources
iii. Identification and acquisition of external sources (resources Managers)
iv. Application of IT to integrate internal and external sources
v. Dissemination of relevant information

They all lay emphasis on creating better knowledge relating to the structuring of available sources and its dissemination using the relevant technologies.

with the government taking active participation in promotion of IT through its National Task Force on IT and software development which comprises 108 Action Points aiming at setting up of an Info-Infrastructure Drive encompassing a world class spread out of fibre optic networks, satcom networks and wireless networks for interconnecting local informatics infrastructure (LII) national informatics infrastructure (NII) and the Global Informatics Infrastructure (GII) to ensure a fast nation wide on set of

Internets. Extranets and Intranets: to promote global IT Industry by expanding the domestic IT market and export of IT software and IT services, as well as for working towards achieving the goal of IT for all by 2008 policies provided for setting the base for a rapid spread of IT awareness among the citizens propagation of IT literacy, networked government, IT led economic development, rural penetration of IT applications, training citizens in the use of day to day IT services like tele banking, tele medicine, tele education, tele documents transfer, tele library, tele info centres, electronic commerce, public call centres, among others, and training qualitatively and quantitatively, world class IT professionals, it seems a definite leap forward towards attaining better environment for library professionals.

5 CONCLUSION

In the present context it becomes essential for us to identify the skill and competencies required to suite the new surroundings. Some of the skills needed would include having sound knowledge of subject information retrieval, and communication skills. Besides, some supporting skills would include resource management organisation of knowledge, analysis and understanding of related areas. Along with them certain amount of communication skill such as influencing and negotiation and strategic work person.

To combat with the evolving scenario of the library profession we now have to redefine our present stature and acquire in few new requisites so that we may not regret not being aware of these emerging roles and required transformations in order to stride along calmly with new trends.

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10
PROMOTING READING HABITS AMONG NOE-LITERATES: ROLE OF PUBLIC LIBRARIES

Dr. R.K. Bhatt*,
Rajesh**
Ajay P. Singh***

ABSTRACT

Literacy is considered as basic human right and an essential condition for human development. Increase in literacy contributes to over all development of the society and improves the quality of life of people. Learners are classified on the basis of their literacy level, such as Illiterates, semi-literates and Neo-literacy etc. This paper deals with the role to be played by public library as an social institution in promoting reading habits among neo-literates so that they shall be able to benefit from educational opportunities designed to meet their basic needs. This paper also deals with the multiple educational requirements of neo-literates due to information-revolution and varied educational interests of the neo-literates. This paper includes how neo-literests can further improve their literacy skills, awareness and functionality through the network of public libraries.

1 INTRODUCTION

The process of education in all societies has not always been the same. In non-literate societies, the process was carried out through verbal communication and apprenticeship system. The invention of writing and the reduction of thoughts, ideas and demonstrations to graphic symbols and subsequently to writing have introduced new dimensions. It has made it possible for the individual to teach himself, to discover knowledge and truth and thus to learn at his own pace. It has accelerated the process of learning and has made it possible to formalise education. Libraries, are therefore, essential to any system of formal education at all levels. The adult or neo-literate who is engaged in improving his education is comparatively more in need of literary facilities and services. The concept of learner-centred education and life long education has further enhaced the importance of libraries. Further, literacy is an essential instrument for all social changes.

*Lecturer, Deptt. of Library and Information Science, Univ. of Delhi, Delhi
**Lecturer, Deptt. of Adult Education, Univ. of Delhi, Delhi
***Research Scholar, Deptt. of Library and Inf. Science, Univ. of Delhi, Delhi.

Increase in literacy contrinutes to overall development of society and improves the quality of life of people, and Library as a social institution has to act as inter-mediary between individuals and the storehouse of knowledge, thus, promote reading and learning habits through several print, audio -visual and oral medium.

2 TYPES OF LEARNERS

Learners can be classified on the basis of their literacy level, such as:

(i) Illiterate
(ii) Semi-literate
(iii) Neo-literate
(iv) Simple literate
(v) Functional literate

Each types of learner has his own learning needs. Before providing learning materials to the users, library has to undertake user survey and clinetale assessment.

Neo-literate is a learner who just entered in the universe of knowledge. They need to retain their knowledge already acquired and further widen the base of knowledge through the help of libraries. They have strong base through their personal experiences acquired through oral tradition and oral communication. Their socialisation are not limited only to the acquired knowledge through print medial rather they have strong base of functional knowledge.

3 ROLE OF THE LIBRARY FOR NEO-LITERATES

Neo literates special types of learners having varied learning needs. Libraries can be useful for this target group specifically in the following areas:

(i) In maintaining the literacy skills and in retaining their knowledge acquired.
(ii) The neo-literates may continuously improve their knowledge, skill, and therefore productivity and functionality.
(iii) The neo-literates may be enabled to adjust in existing social, political and economic systems.
(iv) The neo-literates may be made aware of the common citizenship, cultural heritage and social values and thus be enabled to adopt the changing roles in the life.
(v) The neo-lierates may develop their personality and full potaitial widening the range of perception, interest and skill.

Thus, libraries can be helpful in these broader areas for the neo-lierates:

(i) Literacy
(ii) Awareness
(iii) Functionality

4 PUBLIC LIBRARIES AND NEO-LITERATES

Public libraries are important social institutions because they play in indispensable role as community centres for education, information, recreation and culture. They provide free service to all without any discrimination what so ever and try to reach as many users as possible through all possible media including postal system book mobile vans, deposit centres and through various extension activities. Their role in a democracy needs hardly to be emphasized and they play a vital role in the country's programmes for development and national reconstruction, particularly in the areas such as education, spread of literacy and utilisation of leisure time in gainful activities. Their positive role in literacy programmes and programmes for neo-liteates has been well recognised and demonstrated in developing countries all over the world including India. Thus, in modern age the public library has become a community centre for social, recreational and cultural activities. Where all classes of people rich or poor, high or low congregate and enjoy the functional arranged for the purpose.

The integral connection of public library and its role for the neo-literates were realised in 1949, when UNESCO proclaimed that the public library is a living force for popular education, culture and education, and recommended its consideration and its adoption among member countries. The first systematic attempt to start a public library for adults and neo-literates was made by UNESCO, when Delhi Public Library in 1955 was established at Delhi as a Pilot-Project.

With the advent of community development projects, a provision was made in their systematic budget of each development block for social education workers looked after the circulation of books and were expected to manage small circulating libraries. The village level workers were to distribute books, with the diffusion of social educations programmes and abolition of post of social education workers in many states.

5 PUBLIC LIBRARY SERVICES TO NEO-LITERATES:

In order to develop learning habits among neo-literates, the following three steps have to be taken:

(i) to establish more public libraries or their units as information centres in rurals areas, where the maximum population of neo-lierates resides. The efforts of the Govt. of India to establish Jan-Shikshan Nilayam in rural areas is a step further in widening the base of public libraries. Jan Shikshan Nilayam is modern type of public library having strong print and audio-visual collections for their users. This service can be further in all the states.

(ii) Such information need to oriented largely towards agriculture, small scale industries and self employment schemes.

(iii) the information has to be presented in anon-book form i.e. by the use of oral, audio-visual and mass media communication in view of the high

illiteracy in the population. Posters, charts, pamphlets cen also be useful in this direction.

Thus, public library has to play a dynamic role in the promotion of radiation habits among neo-literates as:

(i) Information centre; (ii) Education Centre and (iii) Cultural Centre

6 PUBIC LIBRARY AS AN INFORMATION CENTRE

To mitigate the hardships of poverty, libraries need to disseminate such information as can be used in seeking employment, skill development or in generating self employment activities. For instance, the rural folk need to be appraised of the policies and programmes of government whereby a former is able to get money to cultivate his lands, purchase of quality seeds at reasonable prices, irregate his lands etc. The ignorance of the farmers who most of the time happens to be new-literates, is at present being exploited by the middleman.

Similarly, policies of the government relating to agro-industries need to be popularise in villages and hamlets, where a maximum number of neo-literates resides and so that a climate in favour of the agro-industries is created which, in the long run, will be able to arrest the migration of the rural population.

Similarly, public library should disseminate information among neo-literates living in the villages relating to developments activities like construction of Canals, dams, and approach roads; digging of tanks and wells for providing drinking water; construction of houses for weaker sections; establishment of colleges and village industries, etc. goes a long way in improving economic condition of the neo-literates.

Dissemination of social information relating to unhealty and unsocial practices in society, is likely to bring out the issues and rally the people to face them boldly and actively. Some such issues related to child marriage, widow remarriage, 'Sati', dowry death, corruption in public offices, consuming alcohol and gambling etc. In order to enable the neo-literates to think seriously on such issues, they should be provided information in simplified manner and of course public libraries are the most suitable agencies to undertake this task.

Scientific and technological information also need to be furnished to neo-literates so that a favourable attitude for such information is created among them. For example, live demonstration by agricultural scientists of the use of fertilisers, pictorial presentation along with a simple written description on such issues will certainly help them in attaining required knowledge in this respect. Similarly information relating to health and hygiene, child care, children's diseases etc.. will be highly profitable to all segments of the society including neo-literates.

Literature pertaining to religious aspects, legal aspects in the regional and local languages will further enhance the reading habits among the neo-

literates and public library can perform this job very efficiently.

7 PUBLIC LIBRARY AS AN EDUCATIONAL CENTRE

To eradicate illiteracy and enhance the reading interest among neo-literates, pubic libraries can provide free spece, furniture and other equipments to conduct classes, provide reading and informative literature to keep alive the literacy. All the quality tools of information relating to skill training and self learning materials need to be provided in adequate quantity. Through talks, pannel discussions, demostrations public library can invite attention to neo-literates and inculate habit of reading and learning. Public Libraries can acquire newspapers, breeze-materials and story books. Neo-literates might have varied educational interests suited to their skill and vocations. Publics libraries this should cater the local educational needs of the learners.

8 PUBLIC LIBRARIES AS A CULTURAL CENTRE:

Public library need to address itself in organising functions and get together meetings of different cultural groups to give vent to the aspirations and contributions of different cultures. Occasions like the national festivals, the religious festivals and the birthdays of national or religious leaders may be utilised to serve such and objective by providing recreative literature to neo-literates, children, adults and women, etc. Information relating to different sports, games and yoga etc. in the form of simple pamphlets etc. can be provided them to boos their reading interest.

Public library is library for common masses. It plays role in providing and developing reading habits among neo-literates. Multiple variety of literature has been prepared and produced by District Resource Unit (DRU), State Resource Centers (SRC), Mass Mailing Unit (MMU).

In order to render library and information services to the neo-literates, the public libraries are required to coordinate with the agencies involved in bringing out the literature specifically meeting the information requirements and interests of the neo-literates. Such agencies are: The Directorate of Adult Education, the State Research Centres, National Book Trust and voluntary agencies. Though very limited yet some private publishers are also doing same work in this direction through the scheme of National Prize Competitions of literature for Neo-literates. NCERT has also published a few publication under the scheme 'Reading for learning'.

Thus public libraries can play significant role in widening the educational base of neo-literates by providing them knowledge and materials for the skill upgradation and improving their cultural knowledge. Public libraries can be more meaningful and use ful in rural areas, slums and re-settlement colonies, where large number of neo-literates are living.

Most of the neo-literates are in the age group 15-35, i.e. productive and re-productive age group. Public libraries can make their life meaningful by giving them a direction. We all are aware that in the absence of true-direction,

adult neo-literates,are either involved in unproductive work or criminal activities. Thus, public libraries can retain their varied interests and can help in human resource development of the country.

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11
ROLE OF INFORMATION TECHNOLOGY IN S & T LIBRARIES

K Nithyanandam*

ABSTRACT

Role of information technology in modern science and technology library has been stressed. Various modern look that are required have been described. The capabilities of look like computers, CD-ROM have been highlighted. A look into the future of library science has been from east.

1 INTRODUCTION

In the context of information technology, information can described as knowledge in any form in which it can be transferred. In other words, information can assume any format and mode. As long as the basic requirement that a message is passed through an identified channel is fullfilled and the use of the term is justified. Information technology is an application and commodity support through which or by means of which information is transferred, recorded, edited, stored, manipulated or disseminated.

1.1 Definition of Information Technology

Information technology means the collection, storage, processing dissemination and use of information. It is not confined to hardware and software but acknowledges the importance of man and the goals he sets for this technology.

The scientific, technological and engineering disciplines and the management techniques used in information handling and processing their applications in computers and their interaction with men and machines and associated social, economic and cultural maters.

2 COMPONENTS OF INFORMATION TECHNOLOGY

The various components of IT are:

(i) Computers (ii) Telecommunications (iii). Storage technologies (iv). Databases (v). Information systems (vi) Microforms or micrographics and (vii) Expert systems(viii). Videotext and teletext etc.

Librarian, Pondicherry Engg. College

2.1 Computers

Computer is a general device for automatically processing information. Computer instructions are put on as bits of information. Devices for storing inforation are clasifed as pimary or secondary storage. Primary devices are LSI devices, i.e. memory chips, which are regarded as integral part of the computer. Secondary devices are external components consisting of floppy discs or tapes.

Input Device ——> CPU ——> Output Device

2.2 Videotext and Teletext

Videotext and viewdata are (two-way) interactive systems for transmitting text or grphics stored in computer databases via the telephone network for display on a television screen.

Teletext is a non-interactive (one-way) form of videotext, that is a method of transmitting text or graphics stored in a computer database, as a part of broadcast transmissions for display on a television screen.
Videotext and teletext systems hava a similar structure. The main components of videotext and teletext systems are as follows:

DATABASE | ————> TELECOMMUNICATION | ————> USER TERMINALS
COMPUTERS | NETWORK |

Videptext and teletext differ in the way they transmit the data and also in the way the user controls what data are to be displayed.Teletext's chief virtue is its ability to beam video images .

3 CD ROM

CD Rom stands for compact disc Read Only Memory. A compact disc is a 12cm diameter disc amde from polucarbonate substrate and a reflective metalised layer. A disc weighs 16 grammes. A typical CD-ROM can store about 650 MB data. One would get a better idea of the size of the data that a CD can hold if we say that a CD can hold about 2,50,000 pages of text (each page containing some characters) of 5,000 handling systems and services:

1. Wordprocesor
2. Reprography
3. Xerography
4. Micrography
5. Expert system
6. E-Mail
7. Videotext
8. Teletext

9. Hyper Text/Hyper Media
10. Networks

CD-ROM can store full motion video, animation graphic, text and high resolution audio. One should keep in mind that a floppy drive cannot run a CD. For running a CD one would require a CD drive. The time taken by a CD drive to find and grab a piece of information is known as acess time. This is usually in milliseconds (one thousandth of a second). The smaller the access time, the better the drive amount of data transfereed from the CD-Rom to the computer in unit time is known as transferred from the CD-ROM to the computer in unit time is known as transfer rate. The basic rate is 150 kilo bytes per second (kbps) and "4x" driver transfers at the rate of 600 (4*50) kbpsz. Today "16x" has become the normal CD drive. However, in the market "24x" is also available.

One would require more than 450 high density floppy diskettes to store an equivalent amount of information on CD compared to hard disc or flopy diskettes. Read Only Memory means that the information stored on a compact disc can only be read but it cannot be modified.

As CD-ROM stores text, graphic or still images audio and video or moving images, one would need to install a sound card and speaker to enjoy the world of multi-media that a CD-ROM offers.

The music (audio only) CDs were followed by CD-ROMs. As mentioned earlier, CD-ROM can hold a variety of multi-media information. At one point of time, it was called CD-I or compact disc interative. When read with a computerised reader, it responds intelligently to the users instructions. Of course, today such terminology has become irrelevant as almost every CD-ROM available in the market is interactive.

4 INTERNET

Internet is an internetworked system of computers that allos free flow of information from one part of the network to any other, provided the information is packaged according to certain conventions. However, as we get down to a more micro look, the details are astounding.

5 INFORMATION TECHNOLOGY

The combination of the following concepts are ideally be involved the information technology based information updated contineously for large viewing audiences. It can provide users with the most current information on a range of subjects and is easily accessible. Because it is broadcast rather than based on the telephone, teletext is also less expensive than videotext which requires users to pay for the telephone service and for each individual frame accessed.

Teletext has its disadvantages because of its limited database size. To access information user have to wait until the specific page they are seeking cycle by giving the decoder time to read, decode and display the data. The

wait time becomes excessive when the database exceedes 100 pages or so. Thus teletext is severely limited in the amount of information it cancarry efficiently.

Some of the examples of videotext and teletext systems developed in various countries are:

- Prestel (British Videotext system)
- Antiope (French Videotext and teletext standards)
- Teledou (Canadian Videotext and teletext standards)
- Captain (Japanese Videotext system)

6 MULTIMEDIA

Currently, S&T Librarians are eagerly interested to adopt multimedia technology due to variousfactors as mentioned below.

1 Computer and communication development
2 Need for information integration
3 High information overload
4 Digital libraries
5 Distance Learning
6 Manpower training
7 Information presentation
8 Need for users orientation

6.1 Uses

1 User friendliness
2 High quality media system
3 Video graphics, animation
4 Learning more easy
5 Video game like
6 Users attraction

7 CONCLUSION

The potential of information technology for information services from a Library and Documentation Centre is enormous. The increasing application of the latest developments in information technology is redically changing the information scenario. Earlier Gutenberg revolution brought in the book and journal as a predominant media for knowledge communication. Today electronic storage and telecommunication media are a playing important role in the transmission of information. It has been predicted that by the year 2000 formal communication in science and technology will be almost eclusively electronic, and that a substantial move to machine-aided informal communication will also have occured.

Neelameghan has mentioned that information technology application in library, information and documentation work can be grouped into following operationbs and products:

1 Catalogue and catatlgue production
2 Indexing and production of indices
3 Union catalogue generation
4 Lists and bibliographies
5 Directory preparation
6 Thesaurus construction
7 Local data base creation
8 Online access to remote data bases
9 Use of external data bases on local computers
10 Circulation control
11 Document Acquisition
12 Serials control
13 Computer-assisted information
14 Data communication and networking
15 Management information services, Computing, Tabulation, simulation, graphics, statistics, reports.

The electronic media can store very large quantities of information in very compact forms and enable retrieval much faster. Also the storage cost per unit is far less. Personal computers, telecommunication facilities, emergence of videotex technology, teleconferencing are definitely to bring anout a sea change in the function of Library and Information centres of the future. Electronic filing system and Computer Assisted Retrieval (CAR) are gaining ground.

To sum up information technology and continuous advancement in this field will shape the future information retrieval processes and they can't be any escape from it.

12
ROLE OF BOOKSELLERS AND PUBLISHERS IN THE DEVELOPMENT OF LIBRARIES

Bhupinder Chowdhri*

ABSTRACT

Stresses the importance of books in the overall development both of society and individual. Defines the role of librarians in the promotion of books and discusses the problems of book trade and argues for better coordination among the book sellers and librarians so that better services could be provided.

1 INTRODUCTION

Just talk to anyone who makes a habit of reading and to another who does not, and you will know the difference as to what makes or mars a good personality. For good books are the purest essence of a human soul and by reading them one converses with some of the best minds that ever lived. They are the "precious life-blood of a master spirit embalmed and treasured up on purpose to a life beyond".

It is the "life beyond" that constitutes the bottomline and the difference is evident between all that a man of letters and a man-of-the street have to express in similar circumstances. The former is logical, analytical, thought-provoking and knowledgeable. Those who wish to learn from him are attracted to him like iron fillings are to a magnet.

Though Giani Zail Singh former President of India hailed from a rustic background and was not well read, he was knowledgeable. His secret lay in the fact that he would invite well read people to spend time with him to learn first hand what was being discussed in newspapers and magazines.

Former Prime Minister IK Gujral is a part of a group called "the thinkers club", who since a long long time and even today meet on a particular day of the week at the India International Centre to interact on the current problems that face our society. We would not be today where we are but for the growing contribution of the written word in our day-to-day life. Today, any developing country can simply not move forward without literacy, without education i.e., without the Book. All around us there is a gloomy scenario that threatens to engulf us, if we continue to keep our eyes shut to the

President, Federation of Indian Publishers & Bookseller, New Delhi.

menace of growing lawlessness and decline of morals. We need to sit up and think.

New developments in the means of transmitting the written word have also added to its importance. Now we do not have to depend only on the print media-books, newspapers, magazines for circulating the written word. Its effectiveness has been increased with the introduction of DTP, CD-ROM and INTERNET which has given rise to on-line publishing. A new era of paperless publishing is beginning. It is free not only from the problems of scarcity and rising price of paper but also from the difficulties of sending books and other printed material from one place to another and storing them.

As we step into the 21st Century it is all the more relevant that as the literate members of the literate world - the Librarians, Booksellers, and the Publishers should take this challenge in the true sense of the word and help in the process of "Nation Building" through the medium of books.

Libraries serve as a barometer of the progress in any country. They have a pivotal role to play so far as development of education is concerned. It is of course another matter that the Libraries are again classified and sub-classified as public libraries or special libraries, in any particular field. The service in both the instances are of a very very specialised nature which demands absolute professional touch.

2 ROLE OF LIBRARIES.

With growing need for research and development there is greater onus on the librarians to place the latest tools such as books, journals, CD-Rom etc., in the scientist's and the scholar's hands. It is in this respect that the role of the professional Librarians and his expertise comes into play, for it is the librarian who uses his wise discretion in not only selecting but also identifying what is truly needed in his ibrary. The readers are dependant to a very large extent on his expertise on the subject.

3 ROLE OF LIBRARY SUPPLIERS

While the Librarians are well equipped with the necessary tools to identify and place orders for the relevant material, it is the library supplier who has an equally important role to play in this exercise. While the library supplier is a business-man out to get profits the out of services rendered , there is an equally important responsibility on his shoulders to provide absolute professional service to the library with which he deals. Making easily available the latest catalogues and other information that come his way, greater efficiency in the entire exercise is what is desired. While by and large the librarians, can to a great extent, identify between the serious and non-serious supplier, it is again the librarian "who calls the final shots".

4 ROLE OF THE TRADE ASSOCIATIONS

The Federation of Publishers' and Booksellers' Association in India

being the nodal body of the trade with over 6,500 members spread over the length and breadth of the country constantly play the role of a "watch dog" to draw the attention of its members to follow standard ethics expected of their noble profession. While by and large most of our member's services have been appreciated by our librarian friends, we would not shirk to accept the responsibility that there are a few "Black Sheep" within us who are out to exploit the situation for their selfish ends. We have a watch dog in the name of 'JOINT ACTION COMMITTEE' who have been entrusted with the most difficult task of identifying such members and bringing them to book. At this point we need the absolute support and guidance from our librarian friends to put their foot down and not accept any deficient services - be it in the form of supplying remainders in the name of new titles in the case of books and again deficient services in the case of Journals by way of total non-supply to delayed supplies and non-supplies of missing issues etc., etc., We totally support the slogan of the father of the nation Mahatma Gandhi "Customer is King, Customer is always right".

The Federation has taken upon itself the task of preparing an uptodate Indian Books in Print, which was strongly desired both from the ibrary point of view and the export point of view. We thank Mr. S.C. Biswas, former Director, Central Secretariat Library, New Delhi for his whole-hearted co-operation and guidance in this first ever venture undertaken by the book trade. We hope to publish this both in hard copy form and CD-Rom, by the end of the year.

5 FASTER ACCESSIBILITY OF BOOKS AND JOURNALS

In the past books and journals used to come to India by sea freight which took 3/5 months. Today it goes to the credit of our trade members who through their perseverance and alertness to the library needs of today, have worked out arrangements by which all the materials are imported by airfrieght without charging anything extra whenever possible to the libraries for this special service.

In this respect it would not be out of place to draw the kind attention of our librarian friends to consider the above special service in the light of the recent move of some libraries to place orders for foreign Journals directly with the foreign publishers. The subscription agents, who have been rendering this very very specialised service for over four decades, work on a meagre profit of not more than 5 to 7%. But because of the huge quantum of annual business, a very large number of employees working in this sector face immediate loss of their jobs if this decision to go direct gets through. Moreover the country stands to lose precious foreign exchange as well. In case of placing direct order to foreign publishers, the process of ordering hundreds of journals needs special expertise, cost of postal and Bank Charges will be paid by the libraries. Supplies will come invariably by sea mail. Who will supply the missing issues? These are some of the important questions that

need redressal. Therefore it is our to be addressed to ourselves appeal to our librarian friends to see reason and if need be, discuss the pros and cons with the trade for the stakes are quite heavy for the book trade.

5 UNIVERSITY BOOK SHOPS

While the noble purpose of meeting the requirements of students is appreciated but to use this project for meeting the Library requirements and getting higher discounts does not appeal. However, if these Book-shops are run as Co-operative Stores duly registered under the law then it is a different matter. But till then second thought should be applied.

6 BOOK PIRACY

There are two types of book piracy - one is where the unscrupulous people pirate by printing the best sellers in order to make an extra buck. This piracy affects the common readers in the market. A small percentage of piracy, however, also creeps into the library system as well for which a little alertness on the part of the librarians would help to curb this menace. The second type of book piracy is where the entire text books are photocopied within or outside the university or college premises. Piracy in India is viewed in not too pleasant terms by the World Organisations on Piracy. Piracy is an offence for which we have already sought and obtained an assurance from the Chairman of the University Grants Commission who has promised to alert their library systems throughout the country to be aware of such a malpractice. A little co-operation and watch from the Libraries would strengthen our hands.

7 GOOD OFFICES COMMITTEE

After enjoying a wonderful innings of over 22 years, GOC, as you are aware, came in for a rough weather. It was more the undoing of one of our trade members who played a key role in this. However, it took nearly 3 years to bring it back on the rails, thanks to the serious efforts by our leading librarians stalwarts together with the senior members of our trade. We are not only happy and proud of the fact that GOC which has been getting wider acceptability in the country today, stands on a platform where everyone around look to it for guidance. There are matter which need discussion and resolution and I can assure you that today the trade would walk step-in-step with each of you.

It is for the first time that the GOC meeting has been organised outside Delhi. The aim is obvious i.e., to reach out to the librarian friends and the book trade community in the south and to instill in them the confidence of supporting a uniform system of purchasing books - a system which has stood the test of time and is here to stay. We realise our responsibility and the role that GOC has put on our shoulders. We are determined and yet confident that we will pass the test with flying colours.

It was Leo Tolstoy who explained "I like three things in life : BOOKS, BOOKS AND MORE BOOKS".

1
LIBRARIANSHIP: THE EMERGING ROLE AND RESPONSIBILITIES

Sundari Suresh*

ABSTRACT

The impact of electronic informationhas been all pervading. However, the largest impact seems to have been made in library and information service. It has changed the way we perceive of and disseminate information and has even threatened the traditional approaches to library and librarianship. In this paper, a brief overview of the role and responsibilities of librarian in the electronic information era is presented.

1 INTRODUCTION

The information society has exerted various compulsions that have revolutionized the traditional role of a librarian. These include explosive condition of information generation; geographical scattering of sources of information; the urgent demands for information transfer and its use in the industrialized world.

The profession of "Librarianship" has become a subject of international attention. Librarianship has grasped the public imagination as a serious and important field of endeavour. The recent developments in technology—computing, new communication technology etc. have had a profound impact upon the education of librarians. Librarianship must explore new approaches and methods applicable to the various aspects of this discipline; these new approaches will require imagination and originality, based on strong and proven provisions that are to be objective and carefully analysed.

The concept of "Librarian" or information scientist being the person who classifies printed documents, so that these documents are stored for easy retrieval of information related to any specific topic is fast disappearing. Computers in conjunction with storage media are going to be the most important devices for storing and retrieving information.

In a country like India, which is not very well developed in certain areas but is quite advanced in scientific research, and the professional librarian holds on to the concept about his role as a person who classifies, catalogs, shelves and issues books, and if the information scientist contin-

* Librarian, Guru Shree Shanti Vijay Jain Vidyalya, Vepery, Chennai-600007

ues to believe that his job is to identify the source of any needed information, or to bring out publication such as bibliography of current reports, or to render selective dismentation of information (SDI) service, the working scientists, most of whom have fairly good expertise in the use of computers, will join together and devise their own ways of getting the information that they require, thereby reducing the role of a librarian to nothing but a storekeeper of a godown where books, reports etc., are stored. If this situation is to be avoided, there is no time to be wasted in improving the quality of education that is impaired to library and information scientists.

Library professional owes certain obligations to the library's public and its books, the library professional organisation and to himself. It is necessary to integrate the professional know-how with the behavioural skills in librarianship to maximise quality in both direct and indirect library service to its clients.

Dr. S R Ranganathan says "Librarianship is a noble profession.Service for mind is its mott". The great success of the service basically depends on the "Human relations." A standard conduct is based on courtesy, honour and ethics which guides the practitioner in his human relations with clients and colleagues.

2 ELECTRONIC INFORMATION ERA

Our world suffers from information overload and we can no longer handle it unaided. The term IT in its simplest form encompasses the world of computers, microelectronics and telecommunication to process, store and transfer data in the form of pictures, words and numbers. The information revolution is a product of the rapid development of both computers and telecom technologies, the integration between the two has made it possible for the users of data to access it throughout the world.

Electronic medium provides for the effective use of the "Sight" and "Hearing" senses. Electronic media has impact on education, entertainment, information, supply social, cultural and behavioural aspects.

Various compelling conditions have necessitated the application of technological and managerial expertise in information systems, and networks, previously unknown to library professionals. The role of traditional librarian in the profession of information science requires to be objectively reassesed and reasserted.

When the term "Documentation" had replaced the term "Librarianship" then too, it was believed by some authorities that Documentation has grown up as an independent subject, but authorities like Ranganathan, Shera, Otlet, Bradford etc. had emphasized that it is only an extension of Librarianship. There should be no doubt that information science has its root in the librarianship and is not a discipline independent of librarianship.

3 ROLE IN CHANGING WORLD

Librarianship from Physical handling of books has reached a stage where we are more concerned with the storing and retrieval of information with the aid of sophisticated machines. Technological revolution has influenced every discipline in 21st century but whether use of sophisticated machines in any discipline can change the very nature of the discipline?

In this new world, the librarian's role will be that of a continuous learner, an alert user and expert consultant, all rolled into one.

The library professionals had never been exposed so much in the past to the changing information scenario as they are being exposed now. Today, the walls of a library have very little meaning except for security purpose, because the library is getting shaped on the INTERNET and the different networks around the world. This scene is going to grow quiet fast in the 21st Century and the librarians have to face the challenge of this changing scene or otherwise they can get replaced by the professionals who are able to disseminate information through the INTERNET and other electronic sources.

3.1 Present and Future Role

The Kothari Commication observes "a collection of books, even a collection of good books does not constitute a library. Given enthusiastic teachers who teach with books and librarian who can co-operate with them in converting the library into an intellectual workshop even comparatively small collection of sensibly chosen books by the librarian may work wonders in the life of students." This is an another important observation about the importance of librarianship.

There was a time when knowledge was the monopoly of the elites in society. But through industrial revolution and the concept of welfare-state, knowledge and know-how have to reach largest number of persons in a modern society where technology has become the greatest benefactor of the human race.

In India, in a matter of few decades the profession of library and information science has obtained the status and privileges of an academic. If India is to be converted into modern society, it is obvious that the most important roles will have to be played by the librarians.What is needed on the part of librarians and information personnel is to do continuously a great deal of introspection as to how and to what extent they are using their efforts in making people acquire more knowledge and better know how.

Modern librarianship had to wait on the creation of a society where man's need for intellectual resources was so grteat that private libraries could no longer meet the demands by themselves.

4 ROLE OF COMPUTER IN LIBRARIES

The application of technology has had the most profound influence in making information science into an inter disciplinary field. These developments have compelled the traditional librarian to appreciate, understand and apply new technologies which could help towards the achievement of the objective of effective and efficient transfer of information. Computers and telecommunication technology has made information networks possible, without which international communication of information could not have been possible. Computers have also been found to be extremely useful for improvement of organising of resources and services within individual information centres too.

Electronic media has pivotal role in information transfer, education, culture, environment, health, politics, commerce etc. Electronic media is helping libraries to increase their efficiency and effectiveness by providing information in all its dimensions and colours. Unlike print medium, Electronic media do not always require knowledge of script, comprehension and cerebral coordination on the part of users. Just understanding of the spoken language, access to the media, and very little training are enough to use many services in electronic media.

5 RESPONSIBILITIES OF LIBRARIAN

The Librarian in the 21st Century is going to work more as a :

— Disseminator of digital information rather than the custodian of information;
— Trainer in information technology rather than a passive learner;
— Researcher in information technology to compete with the rest of the professionals than a user of age-old library techniques;
— Promoter of extension activities in regard to the creation of MSS, publication of multimedia and other documents than simply a user of published documents; and
— Master of the contents of the world resources than a librarian of a single library.

6 ADULT EDUCATION

The society has a responsibility to increase the number of literates and educated people through appropriate programmes. The adult education drive is geared to this end. The aim of adult education "is to create an educated mind among the adult illiterate".

Adult education activities include such as night schools, lectures, groups discussion, film shows arranging talks on topics of interests to the different section of illiterate people, organizing reading, holding exhibition and presenting educative themes through films, radio, TV etc. They are to be

provided with picture books, books with bold letters, films on health, family planning, agriculture, industries, insurance and other aspects of rural development so that the illiterates can be pushed to realise their defects.

Aim of adult education programmes is to educate the illiterate and to continue the education of the people who had left their formal education. Well equipped libraries with modern scientific technologies can contribute tremendously towards the adult education programmes.

The Government has spent a great deal of time and money on adult education programmes. But what is the result? Where have we gone wrong? This question requires deep thinking. A major setback for these adult education programmes is the fact that the people who are associated with it, have of late, realised that unless the villages themselves realise the importance of education, nothing can be done about it. This factor has reduced the enthusiasm of the new voluntary social workers to a great deal.

Our adult education programmes should be of the following nature:

— Making the illiterates, literate;
— Making the literate a reader, and from reader to real user; and
— Converting a user into a creative writer.

Libraries should make efforts to make an ordinary reader a real user of the library.

Dr. S R Ranganathan had said that until the village children and adults are not given books of their liking, and until books are not provided regularly to them, till them the prosperity of our country will be below expectation.

6.1 Importance of Adult Education

Adult education is larger than literacy. It must aim at enabling the common man to live a richer life in all its aspects social, economic, cultural and moral. "Education is a life long process, its aim being to make possible for the individual to develop to the fullest stature."

Adult education will differ greatly from country to country according to its history and traditions, the range of its economic, social and educational development. Hence, it may not be possible to look for principles of universal validity always and everywhere.

Adult education should be carried on in a spirit of free enquiry, for it is only by having the power to choose between alternatives that the adult becomes a mature and responsible person. Public libraries help the saverage man, woman and child to acquire this knowledge through self-culture. In education, man must be the subject and not an object.

In the world of today, adult education is needed to promote international understanding , mutual sympathy and tolerance of different points

of view.

It is through adult education that the deficiencies in earlier formal education must be made good. Indeed,adult education has to supplement formal academic education.

Adult education has a special concern to see that in a society there are not only trained personnel to meet the needs of that society but also socially active citizens to equip themselves to play an effective and creative role in the social life. Women need help, through adult education, in understanding and fitting into the new order of things.

It has been found that 10 or 15 years of full time education in schools and colleges in all countries is inadequate equipment for 50 years of adult life. What the adult of today learnt at school is partly out of date and certainly needs to be supplemented. This will be even more true of the next generation. Adult education alone can meet the needs of our situation and it must be accepted as a normal and necessary part of the sum total of educational provision, and that is the role of adult education in a changing world.

7 CONCLUSION

The librarian in the digital world would become the guardian of information and would be the vehicle to preserve democratic access to information. His role will be increasingly towards offering consultancy to the users in their efforts in navigating through the web of documents that span the global library. He/she would be the integrating link between the computer scientists and the information seekers and he would require a common language that links the language of computer scientists and the users. He/She will be the embodiment of an information broker who would ensure that the wares that he has are used effectively and with ease.

Library and information professionals should respond to the opportunities and challenges of the development in information technology with a high degree of enthusiasm and professionalism.

Librarians have to adapt to the new digital order as they did with the developments in the past, in order to improve the library services and to introduce newer ones.

It is imperative that the library professionals have to upgrade their professional skills in order to exploit the opportunity and be able to use the libraries for the benefit of the local user community.

Traditionally, librarians have performed a number of functions in the maintenance and the intellectual access to information. Using the Internet and its resources for providing information services only requires re-orientation of traditional skills of librarianship.

The obligations of librarians towards the world, towards the country, towards the institutions, users and themselves for playing positive roles as the library professional place the challenge before them in a wide variety

of contexts.

In this whole enterpise of "librarianship" the main job is to serve the users with appropriate information without loss of much time. As the scope of the library becomes universal, the librarian has to face a greater challenge.

Library is not a godown of books but it is a most hallowed heaven of enlightened activity. What constitutes the core of that hollowness is the committed role of the librarian and his team. Commitment in creativity which grows out of the interaction among the young heads in league with the illumning ideas as recorded in 100s and 1000s of books in a library. Librarians are the guardian spirits of the library. They have to channelise the insatible thirst of the aspirants who visit the libraries in a vibrant way. The lasting zest for living is rooted in our unflagging zeal for learning. The librarian need not be a jack of all trades but there is no wrong to expect up-to-date information with regard to the latest development in a particular branch of learning.

2
LIBRARIES AND LIBRARIANS IN NEW MILLENNIUM

H. S. Chopra*

ABSTRACT

The focus of this article is on how and why libraries and information centres are finding it necessary to change direction and diversity in order to adapt to the threats and challenges posed by latest and highly advanced computer technology.

Change is the law of nature. The advent of the Internet, Globlal information structure. PC based hardware and software development, e-mail, e-books, CD-ROMs, DVD's etc., has absolutely changed the scenario of libraries.

It is now an age of electronic documents, changed publication media, publishing on networks, publishers and on-line booksellers, new electronic market, electronic commerce, new communication scene, electronic journals, Internet and the World Wide Web, database producer's use of web interfaces, newspapers on Internet etc.

There is little doubt that this face of the libraries is changing everywhere. The libraries all over the world are passing through different phases like polymedia library, digital library, electronic library and virtual library.

India is emerging as a powerful country in the field of computer technology. In comparison to other developed countries India is producing maximum literates in computer science in the world. Librarians should be ready to understand the new technology only then they could disseminate information to the users. The libraries are making a struggle for survival, therefore, the librarian should not be reluctant to learn the new technology.

Information schools need change in their curriculum otherwise information science will decouple from the library science. It will be possible only if the faculty members have deep understganding of latest computer technology. Without a rapid response and fundamental change Library and Information Science education is likely to go the way of the pandas: cute, well-loved, coddled and nearing extinction.

1 INTRODUCTION

Change is the law of nature. The professional or the institution which does not alter with the passage of time always lags behind and goes into oblivion after some time. Now the danger is lurking over the heads of the librarians because of the advent of highly advanced technology. The advent of the Internet, Global information structure, PC based hardware and software development such as faster, multi-tasking end-user work stations and friendlier point and click graphical user interfaces, e-books, e-mail, CD-

* Deputy Librarian, Guru Nanak Dev University, Amritsar (Punjab)

ROMs' DVD's etc. has compelled the librarian to face the new situation.

Is it a survival struggle for the Librarians? Yes, If the librarians remain reluctant to learn the new technology they should keep it in mind that information handling skills are no longer the territory of the information professional alone. Improved personalised communication and workstation technology, as well as the increasing availability of information delivered in electronic format directly to the end-user, are other reasons why the information professional is involved in a survival battle.

2 POLYMEDIA LIBRARY

The present domain of the librarian is to provide information to the users from paper-based to multimedia. The present phase is of Polymedia which denotes the use of several different, independent media for the storage of information and knowledge-paper, microfilm, compact disc, and so on. Essentially, such libraries will therefore be similar to conventional libraries as we know them these days.

Librarian of today in the college or university is well aware of the basic computer functions regarding different sections of the library. As computer technology is changing day by day because of new developments, therefore, the educational institutions should help their librarians to be aware of the same.

Our librarians should be aware of the fast development latest trends which are to follow. An electronic library is deemed to be one in which the low process of the library become basically electronic in nature. Obviously, the most important way in which this is likely to happen is through the widespread incorporation and use of computers and the various facilities that they are able to make available, such as on line indexes, full-text searching and retrieval facilities, automated record keeping and computer based decision making. In addition, within an electronic library system there will be a conscious movement towards the more widespread use of electronic media (both digital and analogue), for the storage, retrieval and delivery of information. Such libraries will be in an active and will have extensive computerisation programme.

3 DIGITAL LIBRARIES

The next phase for the librarians is of digital libraries. Information may reside on different storage media such as electronic memory or magnetic and optical disk. However, the users will not see too much difference between them.

Obviously, in order to access digital information it is necessary to use either special purpose, multimedia reader stations or some form of computer system. The information can also be accessed remotely via telephone modems or by means of computer communication networks. This information

can be shared at a very low cost. Therefore, while a conventional library might only hold one or tw3o copies of a book, a digital library could generate an unlimited number of copies at the touch of a button.

4 VIRTUAL LIBRARY

Virtual library is the next phase where systems depend for their existence upon a rapidly maturing area of technology known as virtual reality or Vr. VR is generally described as ultimate multimedia experience the simplest form of which is known as telepresence.

Although some virtual library systems are available in the form of packaged CD-ROM products, the most advanced systems exist only within the sophisticated computer systems that are supported by advanced telecommunications equipment, to facilitate remote access and sharing. In such libraries there is facility to browse system without actually having to physically go to it.

5 ELECTRONIC DOCUMENT

Computer technology has made possible the creation of many new types of document. Such documents exist only inside a computer system in digital format.

Documents of this sort are created using an appropriate authoring tool, stored in a computer's memory system and subsequently displayed using suitable audio and/or visual display technologies.

Electronic documents are acquired in computer format and published by releasing them to a central database. They can then be distributed by floppy disk, CD-ROM, or communication link. Such documents can be browsed quickly using a computer. Such documents can embed text, static pictures, sound animation, motion pictures and various tactile modes of communication. These can be easily transformed, processed by computer, and transferred from one location to another by means of communication networks.

6 PUBLICATION MEDIA

The librarians are witnessing the change in publication media also. Obviously, the medium upon which any given document is published will vary considerably from situation to situation. In general the choice will depend upon a variety of factors like cost consideration, equipment availability, the frequency with which a document has to be updated and the types of media element that it employes. When it is necessary to embed substantial volumes of video material, CD-ROM is probably the best medium. The future may be of DVD's.

7 INTRANET AND INTERNET PUBLISHING

Over the last few decades, computer networking facilities have grown to a position of prominence as a mechanism to facilitate the effective and efficient communication of electronic data and information. These days, computer networks play a key role within virtually all organisations, within both the public and private sectors. Such networks form the basis for both in house intranet services and globally accessible public networks like the Internet and World Wide Web.

8 PUBLISHING ON NETWORKS

There are various ways in which a document collection can be made available via a computer network. The particular approach that is employed will depend upon whether the library documents are to be made publicly available or whether they are needed only to service the needs of a closed user-group. In both cases, documents will be mounted on a server, but the purpose of the server will be different. For example, we can see the large-scale dissemination experiment which is intended to study the problems of distributing learned journals in electronic form and publication of Hyper media conference proceedings on an Internet server. Another example is of a network publication based upon our own work using an Intranet facility.

9 PUBLISHERS AND ON LINE BOOK STORES

Even the publishers expolit the use of network. They are providing teleshopping facilities via online bookstroes whereby books can be ordered directly using interactive electronic order forms.

10 NEW ELECTRONIC MARKET

The librarians should know that information is seen a resource when evaluated or compared to any other resource such as water, industry or human resource. As information is a resource therefore, it should be seen as an essential product or commodity for what can be descibed as an electronic commerce. Within any economic system, electronic commerce should be evaluated in the context of markets, that is, places of exchange.

This information processional's potential role in any electronic partnership will, without question, diminish, and will eventually be reduced to being merely the keeper of paper based documents.

10 INTERNET AND WORLD WIDE WEB

Knowledge of Internet and World Wide Web is essential for the librarians. They should know or learn to search the Internet (including WWW, FTP, Gopher and Archie sites). The traditional online systems permit timely

retrieval of information from large actually located bibliographic databases. the latest internet-based storage and retrieval tools permit access to decentralised resources. In a single session only one vendor is accessed and an online search is thus limited to the databases of that vendor alone. In the case of the Internet the connection is recticular, because it (the Internet) consists of a constellation of interconnected nodes in which in one network session it is possible to execute a search for information that can move from one node (system) to another.

11 DATABASE PRODUCERS TO WEB INTERFACES

Because of the extraordinary success of Internet, the database producers are now opting for the use of Internet. The end-user will be an important target group, as current friendly search engine technology is already a familiar application for the serious as well as the casual end-user.

Technology advancement is so fast that even the traditional online database searching by information professionals continues to be in a deep decline; it may be the least valued service in the next few years.

12 NEWSPAPERS ON INTERNET

Generally a library of university or college cannot subscribe to a large number of newspapers because of financial constraints. With the help of Internet one can have an access to a number of newspapers, news in brief, detailed photographs etc. Irrespective of all the available specialized alerting and real time services, the complete Internet newspapers are also gaining ground.

13 NEWS COMMUNICATION SCENARIO

One may divide the scholarly communication into informal and formal (published). Electronic mail, electronic conferences, and electronic bulletin boards (list serves) can be considered as informal sectors. Formal communication, an essential part of the structure of scholarly communication, is also effected by new electronic means.

14 ELECTRONIC JOURNALS

In the 1996 edition of the Directory of Electronic Journals, Newsletters and Academic Discussion-lists a total of 352 scientific Web Journals are listed. Web journals are typically complete entites, not mere collection of articles. They may already include the complete details of subscription information, instructions to authors and readers.

15 LIBRARIANS: EDUCATION, TRAINING

Information science programmes should be framed keeping in view the new challenges so that the future information professionals can do justice to

an extremely demanding profession.

The Librarians who are on the verge of retirement may not be inclined to learn about latest technology. But the others should be aware of the latest developments in the electronic information environment. If they want to be re-engineered and thus survive, they should further their skills via good quality continuous education programmes such as refresher courses, conferences, seminars, short courses as offered by some institutions and practical training. It will assist the professional in moving from the traditional outlook to the new electronic phase.

The new generation of librarians and the new entrants of courses of library and information science are experiencing information anxiety as they don't know a lot of things. A librarian should not be hesitant to have knowledge about the latest information technology. Computer education is becoming a common thing in our schools.

Information science education finally needs to decouple itself from the library concept. Abstraction, reduction, and the creation of new knowledge to address new information problems are essential for the information professional to adapt to new demands.

Initial reluctance of the librarians is dwindling day by day. Almost all the universities, are in the process of computerising their libraries. Most of the research and educational institutions have an access to Internet. Even Private and Public schools in urban areas are competing with one another in having computers and Internet facility.

Infact the education and training of the students (future librarians) should be based on such curriculum which is based on the latest computer technology. It will be possible only if the faculty has knowledge about this field. Library and Information Science teachers will also have to change their outlook and get training in the latest computer technology.

Without a rapid response and fundamental change Library and Information Science education is likely to go the way of the pandas; cute, well-loved, coddled and nearing extinction.

16 CONCLUSION

India is emerging as a powerful country in the field of computer technology. In comparison to some other developed countries India is producing the maximum literates in computer science in the world. Government of India, University Grants Commission/INFLIBENT etc. are paying attention to this sphere. Some states are interested in imparting computer education from the primary level. Librarians should not lag behind in adapting themselves to the latest information technology.

Whether the library of the future will be without any collection of its own. If it would be a mere switching centre referring users to potentially appropriate points in the vast network of resources accessible through the

Internet of its successors. However, library cannot save it self as a switching centre. To justify its existence in the electronic world, the library must continue to perform one of most important functions it now performs in the print on paper worlds to organise the universe of resources in such a way that those most likely to be of value to the user community are made most accessible to the community, physically and intellectually. Library must act as an information filter. For libraries to stay in the game, they will not only need to become learning centres and make their collections and stock available electronically over the World Wide Web and other on line service to people who want to get their information and knowledge from their office or home, but they will also have to contend with documents in new media.

There will be a new role and skill for library and information staff, who will need to investigate the future of library and information services and develop new need to investigate the future of library and information services.

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3

ROLE OF LIBRARIES IN THE ERADICATION OF ILLITERACY

Harpreet Walia*

ABSTRACT

Libraries have ceased to be static institutions inviting learners to visit them but they have started moving out to meet the learners where they are. From repositories of knowledge they have started assuming the role of disseminator of knowledge. In the present paper, the author has discussed how effectively the libraries can play their role in eradication of illiteracy. What programmes they should undertake to motivate the rural people. What is the role of public libraries in this age of information explosion. What are their problems. Need for a change in the outlook of policy-makers with regard to public libraries. Suggestions have been made as to the steps that should be taken at various levels by all the concerned people.

1 INTRODUCTION

It is a specialised world that we live in. To solve one problem, so many have to joint hands. To cure a person of a disease a number of physicians, specialists in their own fields go into a conference. But till recently chronic national ailment of illiterarcy has been tackled alone by the social education workers. The Libraian's help has seldom been seriously ought in the eradication of illiteracy. He has just been ignored, Libraries can play a very effective role in the eradication of illiteracy. Libraries are instruments of non-formal education and literacy and adult education are nothing else but non-formal education.

As early as 1888, Melvil Dewey, the father of Library Science rightly called Public Library as People's University, meaning thereby a place where people of all age groups can come and acquire knowledge or supplement their knowledge either themselves or under the guidance of able librarians in an unbiased personal way.

Padam Shree Dr. S. R. Ranganathan assigned the Public Library with new functions such as:

1. To read out books for illiterates
2. To give their substance by word of mouth by the personality of the

* Dy. Librarian, Department of Correspondence Courses, Punjab University, Chandigarh 160014

person who gives the substance

3. To present wll pictures and Charts representing the new and the latest facts and the ideas.
4. To arrange of discussion among the literate and non-literate.
5. To arrange for drama by the illiterate and non-literate.

Thus, the need for public library is most urgently felt in view to remove illiteracy and ignorance among the masses.

2 ROLE OF CENTRAL STATE LIBRARY, CHANDIGARH

Central State Library, of Chandigarh situated in Sector-17 has taken many steps in this direction. It has number of Branch Libraries which cater to the needs of people living in far off sector (city of Chandigarh divided into various sectors). These libraries have been planned in a way that the old people, housewives, little children do not have to cover a distance of more than approximately 2 km to quench their thirst for knowledge. Some of these libraries are dual-purpose libraries which serve the needs of school children for half the time and for remaining half time these are public libraries.

There branch libraries have been working in the peripheral rural areas of union territory, i.e. in Manimajra, Burail and Badheri (See Table-1). The accommodation for the library is free and is provided by the Panchayat of the village. People seem to be very satisfied with the opening of these libraries.

Besides, these branch libraries, ventral State library has a mobile-library. Mobile library has a collection of nearly 10,000 books. About 2500 books are kept in the Mobile Van at a time. Rest are kept on a separate floor in the Central State Library. It serves the needs of 24-25 near by villages of union territory. Mobile Van visits 4-5 villages every day. In every village mobile van stops at particular points like near a school, a Dispensary or near a local bus stand. Card system is used for issuing and return of books. Two books are issued at a time for 14 days and 10 to 15 persons borrow books every day in each village. Subscription is Rs. 15 only.

3 ROLE OF PUNJAB UNIVERSITY ADULT AND CONTINUING EDUCATION DEPARTMENT

In Punjab University there is a separate department of Adult and continuing Education. It is implementing its programmes for Adult literacy under the scheme "Jan Shikhan Nilayan".

It has 60 nodal centres under it. In each centre a library is provided Rs. 10,000 . But for books only Rs. 2,000 are spent. One or two magazines are also kept in the library. A person who works for the library is known by the name *Prerak*. Only Rs. 200 are given to him as an honorarium. This is a very meagre sum. From 3 p.m. to 5 p.m.The library is open for women and from 5 p.m. to 7 p.m. it is open for other adults.

4 NEED FOR INTEGRATED LIBRARY SYSTEM

If the library have to play their effective and proper role, there is every need that there should be an integrated library system for the entire country. But such an integrative system cannot be brought into being, nor can it be properly run by a mere executive action without a proper legal sanction behind it. In the absence of legal sanction, the system if introduced will be on the mercy of bureaucracy, which may be on occasions favourable but more often hostile. There is an , urgent need for Library Legislation in all the States and Union territories where it does not exist at present.

5 DEPOSIT CENTRES FOR VILLAGES

The best unit to serve the village is a deposit centre well-knit into the library system of the country. The system has been described in the draft report of the Planning Commission's Working Group on Libraries.

Each village should have a small library and a reading room in the school or Panchayat Ghar or any other building readily available.

The library should arrange for its own supply for newspapers and periodicals out of Panchayat or other funds, but the books should be supplied from the Block Library. Books should be changed as frequently as warranted by local needs.

The library should be managed by the village teacher or a member of the youth club or any other Public spirited person. Before taking to library work this village Librarian should have a week or ten days briefing at the block library, where he should be instructed not only in routine methods of issue and return of books and enrolling of members but also in the methods of maintaining statistics, which may be helpful in accessing the progress of the Literacy-Mission.

6 ROLE OF BLOCK LIBRARIES

We cannot realize the dream of self-contained village library in any conceivable form. It is therefore important that care should be taken to establish Block Libraries on sound footing. The librarian at the block level should be a trained graduate assisted by a suitable number of staff. He should be given an orientation course of at least one month duration at the State Central Library or District Library to give him a slant on rural education. The Block Librarian should not be burdened with routines like Classification and cataloguing. His main function should be to carry on the human side of library wok. He should frequently visit the village level libraries, study local problems and offer solutions. He should established personal contacts with village Panchayats and social personalities and seek their cooperation. The block library should not have two collections of books. One central collection to serve the local population and the other to feed 100 odd villages at a time. The block library staff must visit the village libraries frequently for supervision and collection of statistics. The block library should have a suitable transport.

Various modes of transport can be used depending on local conditions and resources available.

7 PROGRAMMES TO BE UNDERTAKEN BY THE LIBRARY TO MOTIVATE THE READERS

Half of literacy-battle is won if the illiterate develop a will to become literate .

1. Libraries equipped with audio-visual aids can carry on successful motivation through charts, pictures, films and television shows and through various social education activities.
2. Libraries can prepare annotated bibliographies for all grades of pupils and organise book exhibitions and thus help the teacher in selection of right type of reading material.
3. Libraries can select, stock and serve easy to read materials for the actual work of literacy and serve the follow up reading materials to those who have picked up functional literacy.
4. Libraries can function as a co-ordinating agency for the departments of the governments and deliver information about the programmes of the government to the people.
5. By supplying the teachers and organisers of the literacy compaign with books on latest techniques and reports on researches methods, and policies, they can prevent the teacher on knowledge and techniques from going stale.
6. Library and book publicity techniques including organising book fairs more frequently should be adopted at National, State and local levels.

8 SUGGESTIONS

1. Govt. must change its policy towards public libraries. Public library is assumed as an agency that meets the recreational needs of a small segment of the society. Policy of the government should be based on the premises that public library is a centre for the community to support comprehensive development of the community.
2. A trained and qualified librarian should be appointed as the Director of public libraries. Generally Director of Public Instruction is the Director of public libraries, with an advisory committee. But members of the advisory committee have little say in the matter.
3. Specialized courses like, the library and the adult reader, should be included in the curriculum of library science training schools. Till such time that such courses are introduced in the library schools on regular basis short term course of three to six months duration may be started by the Indian Library Association or State Library Associations of the country.
4. Regional branch libraries should be connected with each other. At present in many states these are functioning as independent isolated units, there is no provision of centralized classification and cataloguing. Inter- library

loan services also do not exist in these libraries.

5. There should be coordination between national Adult Education Programme Policy makers and the librarians.
6. As we are aware of information explosion and information culture, library should become community based centre for information culture.
7. Library profession should be committed to its task of serving the community. At present there is a wide gulf between the community. The community does not possess skills and attitudes to use the library. This condition of mutual sufferage should be altered. It should give place to mutual support and enrichment.
8. There is need for innovations in this field. The librarian's role is more as a teacher. As he opens the contents of the books for the reader. He should have thorough knowledge of adult psychology if he has to play his role meaningfully in the society.
9. There should be cooperation between state level library associations and National Library Association.
10. The government should identify the library as a vital element for promotion of socio-economic and cultural development of the society. Therefore it should make adequate budget allocations to built up a network of public system.

TABLE-I

BRANCH LIBRARIES
CENTRAL STATE OF LIBRARY, CHANDIGARH

Year 1997-96	Manimajra	Burail	Sector 27	Sector 47	Badheri	Mobile	Reading Room
Books Stocks.	13682	9305	12971	3562	3908	9482	—
Magazine Subscribed	32	27	36	30	33	—	11
Newspapers subscribed	16	14	13	8	11	—	12
Members	1247	870	441	340	867	2180	—
Daily Visitors	400	50	70	80	80	90	—
Daily Issue Return/ Consultation	100	50	37	75	80	90	—

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4

ROLE OF LIBRARIANSHIP IN ERADICATION OF ILLITERACY

Sonal Singh*
Surendra Singh**

ABSTRACT

Brings out the relevance of eradication of illiteracy in a country like India which is one of the largest democracies of the world. Explains the meaning of literacy and mention its status in the country the . Discusses adult education programmes and the role of public libraries. Emphasises the role of the public libraries in eradication of illiteracy and adult education programmes.

1 INTRODUCTION

Librarianship is a noble profession which deals with dissemination of knowledge. Library is an indispensable part of society. Libraries help to inculcate social virtues, social responsibilities and social duties among the readers and try to make them worthy citizens. Librarianship is subject to the general laws of social development, of economic and cultural progress. Librarianship is an exalted profession which enhances and broadens vision, increases the sphere of knowledge and the depth of friendship amongst human beings. The very essence of librarianship is the service before self. Library provides information, inspiration and recreation for the enlightenment of the personality of the individual at the vital, spiritual and mental levels. The intellectual development of the society is possible only through libraries. The modern world is adding a lot to the welfare of man. The man can enjoy them only if he is knowledgeable and well-informed. An ignorant man is not in a position to enjoy the comforts of life. Librarianship helps in developing social consciousness and social responsibility among the people. It also helps in making them aware of their rights and duties.

Democracy is the best policy. Democracy is a way of life in which every citizen is enabled to participate to the best of his capacity on a footing

* Lecturer and Head, School of Studies in Library and Information Science, Vikram University, Ujjain (M P) 456 010.

** Librarian and Head, Department of Library & Information Science, Sandipani Postgraduate College, Ujjain (M). 45 6010

of equal dignity and parity of opportunities. Democratic process requires that all those who participate in it should be willing to follow the rules of the game, to listen to various points of view, to give a fair opportunity to the opponent, to raise issues through constitutional methods, to accept the judgement of the majority even if it is adverse, to have a healthy respect for authority created by democratic institutions and to adhere to the rule of law. Democracy is by definition a government of the people, and this means that the people must contribute both through the electoal process and by intelligent, articulate opinion to the task of exercising political society, a real democratic society with hundred percent literacy is of prime importance. Success of a democratic country depends upon literate public so that they can understand their duties and powers and may utilize them.

India, seventh largest country in the world covering an area of 22, 87, 263 sq. kms. has a literacy percentage of only 36.23. Excluding 0-4 age group, 58.56% of the population is illiterate. Sexwise 46.49% of men and 71.50% of women are illiterate. India is a country of villages. Conditions of an Indian villager is very poor from every point of view i.e. from the viewpoint of education, economic, cleanliness, medical and social facilities and castism etc. Seventy five percent public of India lives in villages. It means unless the villages are developed, India cannot develop. Even after fifty years of independence, the Indian villages are undeveloped. They are encircled by economic backwardness and narrow mindedness. Illiteracy, which is the root of all these evils has captured the villagers. India being the biggest democracy in the world it will be necessary that masses should be properly educated not only for proper functioning but for its very survival. Thus, the first demand of every village is educational development through literacy.

2 LITERACY

The meaning of literacy differs from culture to culture and country to country because the needs and conditions differ widely on the globe. Thus, there is no universally accepted definition of literacy. In 1951, UNESCO committee proposed the following definition for census purposes. "A person is literate who can with understanding, both read and write a short, simple statement on his everyday life." This definition sets the standard of literacy at a very lowest acceptable level. Any literacy statistic based on this kind of definition which had no unsound and unscientific background must be viewed with caution unless actual tests have been conducted, which is not either laid down in the census act or in a tradition with most of the developing or under developed nations of the world.

The educators have one common approach to define literacy by relating it to a certain level of formal education or to base them on attendance at adult classes. Definitions of this kind are not adequate as they completely overlook the widely observed fact that a person can attend classes and

even pass tests and yet be unable to make independent use of it.After his formal training is over and also that even when a man has become literate, he can lapse to illiteracy after some time.

Gudschinsky says: "That person is literate who, in a language that he speaks can read and understand if it had been spoken to him; and can write, so that it can be read, as anything he can say." It lays emphasis on understanding and clears the question of the language in which literacy instruction should be given. Thus, a literate person is one who is able to read with understanding a book on any topic that is familiar to him. His reading ability is not limited to the content or subjects covered by the books that were used in the process of his learning to read.

Literacy must be related to the practical needs of the learner and his community. Keeping this point in mind, UNESCO Committee in 1962 adopted the definition, "A person is literate when he has acquired the essential knowledge and skills which enable him to engage in all those activities in which literacy is required for effective functioning in his group and community, and whose attainment in reading, writing and arithmetic make it possible for him to continue to use these skills towards his own and the community's development." Here literacy is intimately involved with the individual's own life and with his place in his community. It also recognizes that the requirements of literacy will vary from society to society.

It has been recognised that manpower of any society constitutes the human capital of that society and economic development will take place only when human capital acts upon the material capital in a scientific way and in some definite proportion. It is thus essential that for the development of human capital, at least in developing nations, the ignorance must be done away with so that the individual develops to his fullest capacities and becomes a potential for contributing his full share to the economic development process. In this regard, about Indian scene, M. A. Gode writes, "Literacy programme unrelated to the working and living conditions of the workers to the challanges of environment and the developmental needs of the country cannot secure an active participation of learners, nor can it be an instrument of development and progress. Thus it is the prime necessity to remove ignorance"

Illiteracy is a serious impediment to the individual's growth. Illiteracy is a hinderance in the way of a country's socio-economic progress. Educationis not co-terminous with schooling, but takes place in most work and life situations. Learning, working and living cannot be separated and each of these acquire a systematic meaning when co-related with each other. Democracy can flourish only when the people are enlightened with the power of education. Thus, ignorance needs to be uprooted and illiteracy should be done away with. The poor and the illiterates can rise to their liberation through literacy, dialogue and action. Indian Government is running National Literacy Mission (NLM)which aims not only to educate

students but to make the whole country literate. This is possible only through adult education.

3 ADULT EDUCATION

The essence of adult education is on adult learning, irrespective of the skills or attitudes to be learnt; the place or time where learning takes place; or the methods and techniques used. Adult education can certainly pave the way of obliterating social barriers and eradicating such out moded attitudes. Adult education for democracy can be a potent instrument in accomplishing the great object of building a better life for the common people. Universal adult education in a democracy would bring about greater justice—political, economic and social, and would usher into an era of greater equality, freedom and dignity for every member of the human family. Adult education embraces all forms of educative experiences needed by men and women according to their varying interests and requirements. It denotes the entire body of organised educational processes whereby adults develop their abilities, enrich their knowledge, improve their technical or professional qualifications and bring about changes in their attitude and behaviour. Without adult education and adult literacy, the qualitative, economic and social development is impossible.

It is not desirable to give the adults a tailored programme of studies as they would go in for education with intrinsic merit i.e. education which serves their recognised needs. They will always go in for such activities voluntarily and in greater number which solve their life or occupational or educational programmes.

As the largest democracy of world, India's greatest assets are its enlightened citizens. What armed forces can not achieve the people can. They are our permanent resource. Therefore, citizenship education is the sheet anchor for our democracy to thrive.

Most of the illiterates are found in the age group of 15 to 44. This adult group constitutes a very important part of our social structure. It has got voting rights and it plays an important role in the agricultural, industrial and commercial development of our nation. The ultimate aim of adult education is to spread knowledge among illiterates. Library acts as an appropriate agency for providing life long education to illiterates and neo-literates. Thus, library is an essential ancillary service to the functions, activities and operations of adult education agencies.

4 LIBRARIES AND ADULT EDUCATION

Libraries collect and organise knowledge for maximising the flow of knowledge and information so as to promote the education process in the society. The individual can contribute to social progress through self education which can only come from access to the record of the society's public knowledge and cultural heritage. Preservation and communication

of social public knowledge is essential for progress of society, culture and world civilisation. Libraries are the store house of knowledge. They keep the knowledge safe by preserving it in an organised manner and provide it to the users according to their need. Quick dissemination of knowledge is of the prime importance. In the words of Barbara Kyle, Libraries preserve knowledge so that nothing is lost; libraries organize knowledge, so that nothing is wasted; and libraries make the knowledge available so that none may be deprived of it. Thus, libraries are the essential ingredients of civilised society, which acquire, store, arrange and process knowledge for its easier, quicker and beter use. Knowledge is only meaningful when it is translated into social action. Libraries accelerate the translation of knowledge into social action and enable the individual to obtain spiritual, inspirational and recreational activity through reading and, therefore, the opportunity of interacting with the society's wealth of accumulated knowledge and to preserve the cultural heritage and effect the transfer of knowledge from one generation to the next.

Libraries are essential to any system of formal education at all levels. The adult who is a wage-earner but engaged in improving his education, whether at the remedial, functional or higher level is comparatively more in need of literacy facilities and services. The concept of learner centred education and life long education has further enhanced the importance of libraries.

Library is an active centre of mass communication. Both, library science and adult education, are concerned with the process of continuing education and the facilities for promoting life-long education. The aim of library is to sustain intellectually the modern man and woman through continuing education. Adult education is an activity concerned with the education of a person who has attained adulthood. Such adults are supposed to be wage earners occupying a functionally producing role in the society. Libraries participate in all kinds of adult education programmes i.e. fundamental, vocational, remedial, formal or liberal adult education. In order to play the effective role in adult education programmes, the libraries must function as cultural centres, providing media, material and services needed by their respective communities. Library multiply the ability of the existing resources and is thus make it economical. It has the potential of having the quality of multiplying the use of newly created resources and thus has a vital role to play in the development of educational facilities for the adults as well as children.

The modern concept of libraries as media resource centres, cultural and information centres, meeting all the information and intellectual needs of its existing public is needed to be put into practice in developing countries. If a library is to be effective as an intellectual resource centre, it must include records on the culture of the people it serves.

3 PUBLIC LIBRARY

Public library is a democratic institution, operated by the people and for the people. The public library is truely a "University of the people" and is open for free used by all members of the community, regardless of occupation, creed, class or race. A public library is expected to perform the functions of providing information for recreation, inspiration and education. Development of public libraries is essential for all-round prosperity, health and happiness of all our people. Unless books, good books and information are fully and freely available, no effort to secure improvements in health, in economic and social conditions, in cultural and intellectual matters can ever be fully successful. A democratic government will depend for its ultimate success upon the education of all the people and upon the widest diffusion of knowledge. Knowledge is the power and libraries are the power houses. They are supposed to be a vital part of the recreational and educational system of the community. Democracy, to be safe, must restore the intelligence and co-operative spirit of its individual citizens. One thing essential for the library to develop citizens is that it must reach the people. The library must have a central position in adult education. Public library and its extension programmes are supposed to be the best form for mass contact. The term library extension work is also used to designate activities designed to publicise the library. These are exhibitions, displays, radio talks, book reviews, work with cables and societies. Those may be organised in the library itself or in some other institution or by co-operation and co-ordination of each. The role of extension activities in public libraries is now becoming centres of educational and cultural activities. Modern public libraries are now designed to include theatres, exhibition halls and lecture rooms. Public libraries are now centres of popular learning and culture.

Thus, libraries are concerned with providing the society with facilities for continuing education, for obtaining knowledge or information that may improve the health, economic and technological potentiality of the society. They also offer avenues for recreational and cultural activities for the masses. Thus, libraries play a unique role in adult and continuing education. The libraries also allow its clientele to borrow books for use in the library and for home reading. Such groups who cannot come to library are served through mobile library vans visiting rural areas or schools at regular intervals or through book box schemes to groups, adult education classes, hospitals and prisons. In addition to it, libraries also play an important role in recreational and cultural developments of adults, through non-book activities, lectures, discussion, film shows, concerts and such activities as are held outside the library.

In the advanced countries libraries have been running adult education classes of their own and participating in all kinds of adult education programmes i.e. fundamental, vocational, remedial, formal or liberal adult

education. In order to participate effectively in adult education programmes the libraries must function as cultural centres, providing media, material and serves needed by their respective communities. In addition to books, pictorial books, charts which are of use to villagers, book exhibition related to village life and the tools helpful in farming can be arranged. Audio aids such as lectures, seminars, tape recorders and radio are very helpful in mass communication. Audio-visual aids such as television and cinema which communicate important messages in a very attractive and powerful manner are of immense value. Television a composite of verbal and visual presentation is very helpful in bringing changes in the mental development. It possesses the capacity to reach an audience of unlimited size, simultaneously for all viewers. It also possesses the capacity to transit programme content immediately from the point of occurance to the point of reception.

Thus, library plays an important role in eradication of illiteracy. In order to make the literacy programme a success and also to inculcate the habit of reading, the library service is being extended to the village panchayats. Many of the village panchayats have now established reading rooms in villages wherein local news papers and journals are placed for the masses. The government is now coming forward to assist such panchayats, to establish and organise library services to the local people. It is expacted that soon India will have a network of public libraries in villages which is bound to boost the adult education programme in a bigger way.

4 CONCLUSION

Thus, library is an active centre for the extension of democratic ideas among the people. It is an informal school of education which provides life long education to all the members of community. Library is helpful media in finishing illiteracy. It helps in personality development, social development and national development. We cannot imagine a society or country without library in modern times. This is true specially in India where illiteracy has very deep roots. The storm of library movement will definitely uproot this tree of illiteracy and our country will surge ahead with literate population carrying the message of peace and happiness through out the world.

5

ROLE OF PUBLIC LIBRARIES IN ADULT EDUCATION AND ILLITERACY ERADICATION

B. U. Kannappanavar*

1 INTRODUCTION

The public libraries are an important social, cultural and educational institution serving the society in several ways. It is a center for lifelong self education for one and all. It helps to fulfill the educational and cultural aspirations of the community and providing information to the public at large. Public libraries play a vital role in the overall development of the society. The public libraries of yesterday opened its doors for the world, but the public libraries of today not only opens the doors more widely but also has moved out of its four walls to reach larger target groups. The majority of the population to the Country are illiterates. In order to eradicate illiteracy public libraries should be restructured in order to meet the needs of the large mass.

2 NEED FOR RESTRUCTURING OF PUBLIC LIBRARIES (PLC)

Govt. of India is trying to restructure the rural areas in all five year plans. The result of the plans shows that there is an improvement but it is not as expected as in the plans. There are many factors involved in restructuring the rural communities. Among them is to establish the libraries at rural areas to provide right information information to the right person at the appropriate time. The other factors are:

a. The present working of PLS is to be restructured immediately; and
b. The present financial limitations do not allow the existing PLS to gain rapid growth. This demands improvement in financial resources.

3 INTEGRATE DIVERSITY OF RURAL LIBRARY SERVICES

Funds for Adult Education and Illiteracy eradication without being united with PLS in Karnataka lapsing into illiteracy of neoliterates are proving as important a problem as dropouts in elementary and secondary education.

* Librarian, Sahyadri College, Shimoga, (Karnataka)

The rural library services and the slum development services of urban areas, assume a very important role. Fund scattered, without building a base for continuing education for neoliterates, is a defect of planning. In fact the social movement of Adult Education and Illiteracy Eradication could be built around the Public Library System, combined with use of Radio and T.V. The audio-visual aids are now a days prove a lot in educating the public at large. So such facilities should be easily accessible in public libraries in general and rural libraries in particular.

4 OBJECTIVES OF LIBRARIES

The following are the objectives of the libraries:

1. To infuse awareness among rural people on the sources of information and encourage them to make use of information which are available in the library;
2. To take care of economic, educational, social, cultural and informational needs of the local people;
3. To convert uneducated/illiterate and neoliterate into potential users; and
4. To provide information on all aspects such as agriculture, financial, public hygien, family planning, legal masters etc.

To achieve all these, the PLS should co-operative and co-ordinate with other social organisations and institutions in the community and create a comprehensive collection of reading and graphic materials relevent to the rural community.

5 SERVICES OF LIBRARIES

The public library should provide timely, accurate and reliable information services to the community. It should provide the informational services on:

1. Local history, commerce and industries,agricultural product and industrial products.
2. Funding agencies for housing, commerce, agriculture and industries.
3. Career development information.
4. On employment opportunities.
5. Information about population.
6. Guiding and counselling on all matters such as agriculture, public health and hygiene, family welfare, legal matters, etc.
7. Audio-Visual materials should be provided to the illiterate and childrens.
8. Exhibitions should be arranged on proper time, such as festivals and fairs.

6 SCATTER OF RESOURCES

The resources are scattered among Punchayat Libraries, Block Development Libraries, Municipal Libraries etc. for the same cause, and achieve only in duplication of reading materials. The very fact that they could not meet the needs, nor grow adequately can be improved only through

state acts.

7 CONCLUSION

The restructuring of the PLS and to satisfy all the objectives mentioned above which helps to improve the socio-economic conditions of the rural communities is an important issue. This in the long run makes the rural people habitual reader of the library. They realise the value of libraries, and develop library culture and create discipline in them, which is very much the need of the hour for the success of the five year plans, thereby takes an effective action in nation building activities. But integration of finance adult education illiteracy eradication, Panchayat Libraries, Block Development Libraries, Municipal Libraries, etc. when pooled, an impressive RLS will emerge

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6

ROLE OF LIBRARIES IN ADULT EDUCATION

Mohan R. Kherde*

ABSTRACT

The progress of the nation mostly depends on the rate of literacy of that nation. Higher illiteracy rate is the main cause of poverty, growth of population and many other problems of our country. In Indian families the adults have the dominant position where they take most of the decisions regarding their family. So we can very well say that adults play an important role in the development of the nation. Society is run by adults who make decision. The decision made by them directly affect the nature of our life in the present and also in the future. Therefore, the adults should be educated or atleast should be literate. Taking this into consideration, the concept of adult education comes forward. In this paper author has discussed the concept of adult education. Also the need and importance of adult education in the development of the nation has been discussed in detail.

Library is a service institution. The purpose and the objectives of the libraries have been the storage, organisation, retrieval and dissemination of information. According to their functions libraries are divided as national, academic and special. These libraries are meant to serve some particular users. Public libraries have to provide their services to all kinds of users without any discrimination of caste, sex, economical status etc. of the persons. Public libraries have to play vital role in increasing the rate of literacy of the nation. Therefore, besides providing the regular services, it is also to act as adult education centre. In this paper author has thrown light on the responsibility of the libraries as well as the librarians and their staff towards the implementation of adult education programme.

Considering today's problems of the public libraries in the implementation of adult education programme effectively, author suggested few points, for improvement and achievement of this goal.

1 INTRODUCTION

The progress of the nation mostly depends on the rate of literacy of that nation. Higher illiteracy rate is the main cause of poverty, growth of population and many other problems of our country. In Indian families the adults have the dominent position where they take most of the family decisions. So we can very well say that adults play an important role in the development of the nation. Society is run by adults who make decisions. The decision made by them directly affects the nature of our life in the present and also in the future. Therefore adult should be educated or atleast should be literate. Taking this is to consideration, the concept of adult education comes forward.

*Librarian, College of Rural Services, Amravati. Maharashtra 444 603

2 ADULT EDUCATION

The education that helps adults to become aware and make use of the possibilities of their personal growth and development with the potential enrichment of their social and collective life is adult education.

In India, it is true that, extermination of illiteracy has received priority in adult education programme. To change the out look of the people, to develope people to become self-reliant, responsible citizons, capable and willing to participate effectively and with knowledge and understanding in the building of the nation and to upgrade the social status of the people, are some of the objectives of the adult education programme.

Day by day knowledge is growing very rapidly. Due to such explosion of knowledge, the knowledge acquired by the person during their education life becomes absolete very soon. It is not exaggerate to say that today's knowledge will become obsolete tomorrow. Under such circumstances. adult education programme should also be organised for the educated people. To keep abreast of new knowledge, the continuous revision of it, is very essential. Otherwise educated adults will become, into uneducated ones. As nation is run on the decision of adults, the continuous replenishment of knowledge become essential for them. It can be achieved only by organising the adult education programme for educated people.

Women are also playing vital role in developing the nation. Educated woman makes her family educated and once families become educated, the continuous progress of the society and ultimately the nation can be obtained. For this, conducting the adult education programme for women is also essential.

Library is a service institution. The purpose and the objectives of the libraries have been the storage, organisation, retrieval and dissemination of current and nascent information. According to their function libraries are divided as National, Academic, Special and Public.

These libraries are meant to serve some particular users. Public library is an institution for the public and of the public. It has to provide the services to all kinds of users without any discrimination of caste, sex, economical status etc.

Dissemination of uptodate facts and information on any subject to all types of users is the main objective of the public library. However providing the relevant information to the users is not only one aim of the library. It is a repository of knowledge. It is a storehouse of our cultural heritage. It is very essential to introduce the users with the repository. It should be done by the public library.

3 ROLE OF PUBLIC LIBRARY

Being a social institution the public library has to play vital role in adult

education. It should act as an adult education centre. Under this it should provide the following services to its users as well as to the people.

1 Reading materials should be made available for various types of users. Current information is required by some persons. It is useful for them to keep themself abreast of time. Information useful for housewives should also be made available. Care of neo-literate users should be taken, while selecting the reading materials. These should be such that the reader can strengthen, stabilise and apply literacy skills.

2 Lecturers should be conducted on various topics. Selection of topic is again a very important task. Topics like human rights, panchayati raj system, necessity of adult education programme, fundamental rights, topic related to farming, family planning etc. should be selected so that people will be attracted to attend the lectures.

3 Documentary films on adult education can be prepared, illustrating the advantages of education, how literate person can take his own decision, how literate mother can plan better living in limited resources. Such types of films should be shown to the illiterate people so that they will get inspiration from it.

4. Most of the persons are not interested to visit the library for gathering the information. In such cases libraries have to take care of these persons. Mobile library services can be started for them. In mobile library books as well as audio/vedio cassetts on various subjects and topics should be provided.

5 Book exhibition should be organised at village level in which all types of books especially useful for rural people should be displayed.

6 At many places Government is running Adult Education Classes. Library is the heart of any type of education system. Therefore library has to play an important role here by providing the appropriate books to the adults who are admitted to such classes to sustain their interest.

7. Clubs for adult women, adults should be established at village level. This will serve as good forums for exchange of ideas for mutual benefits. Various related programmes can be arranged there. These programmes can be sponsored by the public library.

Apart from this public library can run many aother activities as and when needed on local level to make aware the people about their responsibilities and rights. In this way library can suport the adult education programme run by the Government.

Considering today's problems of the public library in the implementation of adult education programme effectively, I would like to suggest some points through this paper for improvement and achievement of this goal.

1. Financial position of all the libraries are not so sound. It is very difficult to provide the minimum required services to the users in the available fund. In such situation librarian or library management can not think of

running adult education programme or even support it by providing the extension services which are listed above. As library is a perfect place for conducting the adult education programme and as adult education is very essential for developing the nation, it is the upmost responsibility of the Government to provide the sufficient funds to the libraries. Once the standard of the libraries are enhanced, automatically the standard of the nation will be upgraded. Therefore adequate funds should be made available to the libraries for implementing the adult education programme.

2 Apart from inadequency of monetary funds another crucial problem is that of untrained and insufficient staff, at the disposal of the library. Without skilled and trained staff one can not think of extending and providing effective services to the users as well as the public. Even trained and qualified librarians are not appointed in the maximum public libraries. Again the scales of pay are not so attractive and not even fiexed for the post of librarian as well as other staff of the library. Therefore qualified persons are not interested to work in the public library. If the quality of the public library is to be raised then first of all requisit qualifications and better salary of the librarian and other staff of tghe library should be fixed. Moreover the appointment of such qualified and trained library staff should be made under Government control.

3 As Library has to play outstanding role in the adult education programme, the librarian should be aware about the concept and necessity of adult education. For this, short term compulsory courses should be organised on regular basis for librarians. As far as possible, Library Associations should come forward and organise such courses. If possible atleast one unit on adult education programme shoule be incorporated in the syllabus of BLI Sc.

Appointing qualified staff with attractive pay scales and providing adequate funds is not sufficient for implementing the adult education programme effectively. Administration of the librarian is equally important. He must have the quality of leadership. He should motivate his staff by applying various motivational techniques. When the staff of the library is satisfied, then they can do their job very forcefully, effectively and efficiently, which result in improvement of the library services.

4 CONCLUSION

Among the agencies of adult education, public library is one of the best centre through which the Adult Education Programme can be run successfully. Public library can encourage individuals to use their leisure effectively. It can provide materials for individuals to increase their vocational competence, to acquire new skills. It can aware the individuals about their responsibilities towards the development of nation. But the limited resources such as reading materials, furnitures, equipment etc. and its existent situation

is not permitted it to do this job.

Government should take initiative to upgrade the existing position of public libraries by providing adequate funds, appointing trained staff, organising various short term oriented courses on adult education.

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7

WHETHER LIBRARIANS CAN HELP ADULT LEARNERS AND NEO-LITERATES?

H. S. Chopra*

ABSTRACT

Traces the History of education and libraries in the ancient, medieval and post indeoendence period. Discusses theaims of adult education and the role of librarians of public libraries. Government and NGO's and other voluntary organisations in adult education programme.

1 INTRODUCTION

Problem of adult education is still continuing in countries of low economies. According to UNESCO India will be the country of most illiterates in the World in the next decade.

Persistence of illiteracy in India is because of a number of historical reasons. Caste system, foreign rulers, foreign languages, their personal interests deprived the Indians of basic facilities like education. Scheduled castes, scheduled tribes and people of poor economic condition continued in the same condition for about 2,000 years. Although education and libraries were in India since long, only the privileged class consisting of families and children of upper castes, rulers, nobles, big landlords, rich persons, etc. were allowed to take benefit of the same.

After 1947 our government started a number of programmes to remove adult illiteracy. Proper adult education can make a person aware of his civic, political, economic, cultural and social rights.

NGO's and educational institutions are also trying their best to eradicate this problem.

2 ROLE AND RESPONSIBILITIES OF LIBRARIANS

Librarians should not be silent spectators of this serious problem of their society. They should follow the example of William Alanson Bordin who started a public library movement for almost every citizen of the State of Baroda.

Public libraries in villages, cities, towns, districts, etc. can also help the

* Deputy Librarian, Guru Nanak Dev University, Amritsar (Punjab)

adult learners and neo-literates. Importance of public libraries for the purpose of adult education has even been recognized by United Nations. A public library can function as an educational, recreational, informational and cultural centre. Like public libraries, academic libraries can also help the adult learners with the help of audio-visual equipments, sophisticated electronic devices like projectors, films, radio, television, modular methods of preparation of instructional materials, computer-aided instructions etc.

Undoubtedly, association of the librarians will greatly support the cause of adult education.

The term 'Adult Education' was coined for the first time in English language in 1851. This problem of adult education was solved by the now developed countries (almost 22) during the 19th century. Persistence of illiteracy in India who, is in low income economies group is because of many historical factors.

3 EDUCATION/LIBRARIES IN ANCIENT INDIA

India is an ancient country with history of writing dating from the times of Indus valley civilization and establishment of libraries even prior to the birth of Jesus Christ. Universities at Kuru, Panchala, Videha Matsya, Usinara, Taxila, Kasi, etc. were known for educational process by Sruti-Smrithi.

During vedic period education was imparted through the word of mouth and was concentrated mostly among the upper classes. Because of caste system educational system was concerned more with the skills during 1000 BC to 200 BC. Taxila university which was in existence since 700 BC was having a rich library and the monks were always anxious to develop its collection. The great grammarians Panini and Kautilya were known to be the students of Taxila. During 200 BC - 500 AD education in formal institutions started but that too for the elites. Nalanda University Library which was housed in three grandest buildings during fourth century AD has a large collection of manuscripts. Incharge scholars of this library were held in great esteem, who were always ready to help the students.

In the earlier times, education was imparted to the priestly class only. But later it spread to the other two classes i.e. Kshtriya and Vaishyas. The scheduled castes were denied this privilege and this trend continued during Ancient, Medieval, Mughal and British periods.

Undoubtedly, the libraries during the Ancient and Medieval period had librarians who provided information to the students.

Education remained the privilege of the elite for about 2000 years in India during the rule of different kings. During the Mughal period there were continued efforts by the rulers to encourage education and writing of manuscripts but this was confined to only a small segment of society.

3.1 British Period

During the British rule condition remained almost the same as Lord

Harding favoured recruitment for service of those Indians who had education in English medium schools. Thus debarring all those who had indigenous education.

The Britishers tried to create a class of persons 'Indian in blood and colour, but English in taste, in opinion, in morals and conduct. According to Howell, the Britishers first ignored it (education), then violently and successfully opposed, then conducted on a system now universally admitted to be an erronous.

3.2 India After Freedom

In a free India concept of adult education underwent significant changes. It was not only due to a variety of socio-economic and political developments within India but also the overseas influence which played no less significant part. A number of developed countries and organisations like UNESCO, UNDP, UNICEF and Commenwealth bodies contributed a lot.

Generally the people who come under adult education are scheduled castes, scheduled tribes, poor people of urban and rural areas. Their lack of interest in education is because of their poor economic condition. After independence the Government of India stated paying attention to the deplorable plight of the scheduled castes and scheduled tribes who constitute about 20 crore i.e. (16.33 + 8.01) per cent or 24.34% of total population.

Before 1976 education was exclusively the responsibility of states, but in 1976 a constitutional amendment was made by which Central Government also became responsible for education.

4 AIM OF ADULT EDUCATION

Purpose of adult education is to create necessary motivation enabling people to become not only functionally literate but also learn the necessary skills, take advantage of the scientific and technological developments and to improve their productivity and living standards.

In order to improve the quality of life and standard of living of disadvantaged people, it is essential that the citizens are made aware of their rights and responsibilities as enshrined in the constitution of their countries. But in order to do this people should be provided knowledge about the civic, political, economic, cultural and social rights alongwith their responsibility.

Normally a literate should know regional language, number (mathematics), living skills (science), civil and social studies, vocational training, civic and family education, community development, cultural pursuits and individual interests. Knowledge of all these aspects can be gained by neo-literate from the nearest library.

5 ROLE OF PUBLIC LIBRARIANS

During the British rule, William Alanson Bordin, an American librarian

tried his best to popularise the public library movement in Baroda state. He opened public libraries even in remote group of huts. Following this example, a number of local kings also established public libraries in their states. Public library movement if properly organised from the village level to state, can greatly help in popularising education among the masses. Special stress should be given on village libraries, as public library is a living force of popular education. It is capable of extending its services and usefulness to all groups of persons of the society without any discrimination of their age, sex, religion, economic status and profession. A public library can function as an educational, recreational, informational and cultural centre. Even United Nations emphasized the importance of public libraries in eradicating illiteracy.

A developing society should take care of all round development of its citizens. Public librarians can convert each neo-literate as a potential consumer of the knowledge and can prove an asset to the Indian society. However, the role of public libraries is yet restricted one.

6 GOVERNMENT PROGRAMMES

Consistent efforts are being made by Central Government through various policies, plans and programmes. National Policy on Education (NPE) ensures free and compulsory education to children in order to achieve UEE (Universalisation of Elementary Education). DPEP (District Primary Education Programme is also meant to eradicate the problem of illiteracy. NPEP (National Population Education Project (NPEP) is also aimed at educating the clientele of adults regarding the benefits of small family. NOS (National Open School) policy is also very beneficial. Government of India aims to educate 100 million illiterates by 1999.

There has been no dearth of funds for adult education, the outlays of adult education have increased from Rs. 5 crore in the First plan to Rs. 1807.64 crore in the 8th Five Year Plan.

State Government should activate these programmes in order to achieve total literacy. Proper vernacular literature on different subjects should be supplied. NBT (National Book Trust) and NCERT (National Council of Educational Research and Training) are publishing books which are very moderately priced.

7 ROLE OF NGO'S

Voluntary agencies are also helping the cause of education. At present more than 600 voluntary agencies are implementing the programme by running about 50,000 adult education centres. Similarly, Jan Shikshan Centres (Nilayams) are helping this cause. Lakhs of students of educational institutions participate in the mission when asked for.

8 CONCLUSION

Librarians in primary (deputed ones), high and higher secondary schools in the villages as well as in urban areas should help the concerned instructors,

so that adult learners may visit the libraries for reading, getting books and for having their enquiries satisfied. Neo-literate farmers, agricultural labourers and artisans can get latest information from the library.

Librarian of any type of educational institution should not be a silent spectator to this grave problem. According to UNESCO India would be the country of most illiterates in the next century.

Librarian of any type of institution, can maintain the learning spirit of the neo-literates to continue, so that they should encourage their children also to get benefitted from education.

The librarian should help the illiterates with the help of audio-visual equipments, hardware and sophisticated electronic devices like projectors, films, radio, television, audio/video cassettes, teaching machines, micro teaching, modular methods of preparation of instructional materials, computer aided instructions, etc.

The university libraries have almost all the facilities. Therefore, without any additional burden the neo-literates/adults can be aquainted with the development of the world of which they are unaware. The librarian can guide them about their rights, functioning of Panchayati Raj, current scenario, implications of their profession, history of religion, history and geography of regional state as well as their country.

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STANDARDISATION OF INFRASTRUCTURE: A NEED FOR ELECTRONIC INFORMATION DISSEMINATION

O P Gupta*

ABSTRACT

The paper is an attempts to focus the need for preparing policies and programmes to meet with the challenge of the electronic revolution. The standards for the equipment have to be laid down. The acquisition policy for electronic gadgets, preservation environment, competability with future machines or with the machines used on the different networks have to be decided. The advanced search techniques and operation of specialised equipments are new development. Alongwith these advancements library professionals have to work in boundary less libraries and they have to establish link with the users and professionals who are qualitatively prepared in the use of the computer and other communication equipment. The advancement has invited attention to the dissemination of information instead of preservation only.

1 INTRODUCTION

Over a period with the advancement of multidisciplinary subjects, information is increasing and turning to variety. This has invited attention of the Researchers, Managers, Policy makers and those who use information to improve their work. Information on a given field and for a given time is consolidated in libraries and information centres and they make use when it is needed. To retrieve efficiently it is analysed and recorded into various formates which are designed to meet the requirements. Information records and processing centres have their limitations in providing updated information. To overpower some of the problems the machine like computers have been accepted by libraries to support the traditional systems of library services.

2 GROWTH AND ADVANCEMENT

The literature flow and electronic media has time and again focused that the present age is witnessing revolutions in many filed especially in medicine, science and technology. Even then in this speedly growth and advancement world human being are in search of peace and humanity

* Library Information Officer, UGC, New Delhi. 110 002

throughout the world. For this reason to provide necessary information to several million people who are under privileged, multi social, multi religious, multi cultural, economically weak, not in position to access to the sophisticated costly infrastructure which have been implemented by the developed countries of the world for using the information. Not only this the basic structural change of the society and fast changing technology and its increasing application is guiding the progress. Socio economic and cultural transformation have great impact. As a result Information Technology (IT) is in great debate these days. The application of technology for information use is welcomed more and more and with this advancement library services has received further importance.

Now it is the period when library policies pertaining to acquisition of book, journals and non book materials have to be reviewed. The policies have also to be framed to create better telecom infrastructure, internet nodes and access to other networks. Data base creation and linking with other agencies requires compatibility with certain items for smooth communication. Guidelines to access different type of information are again the demand of the time.

3 A NEW APPROACH IN INFRASTRUCTURE

An acquisition and storage is the main function of the libraries to creation environment where new knowledge can be generated. It should have consideration of many important factors such as

- capacity of the infrastructure
- quality of the human resource or technical personnel engaged
- speed of the machine when it is required to be linked with the users
- expected expansion of the knowledge collections
- specialisation/requirements of the users
- relations or exchange programmes with other allied organisations
- the projected areas of services
- the objectives of the host institution if any
- objectives of the library or information dissemination centres and so on.

4 MODERN ERA OF PROGRESS

The present day library services are greatly influenced by the technological applications and advancements in electronics and communications. In future there may be a electronic library within the library. having links with other libraries through networks. These will be having specialised database and CD-ROMs. The library systems will undergo to a drastic change. The libraries will be required to keep very selected data to store in the form at which may be accessable to users in less time. The priorities of the library operations are under change. Now emphasis is on access instead of acquisition of the information. For this very reason the libraries should be equipped with standard hardware and software.

5 COMPUTER APPLICATIONS

Information technology use is in progress in all type of libraries in the country. The subject has been debated at priority. Good number of schemes to initiate computer application has been formulated at different level. Separate satellite have been arranged to meet the growing requirement, the Government is preparing to provide an infrastructure of worth Rs. 3,000 crore to keep the students and teachers aware about the newer developments in the area. In addition to it ten Indian Institute of Information technology (IIIT) in different parts of the country have been proposed. There is also a proposal to put IT as compulsory component in all discipline curricula. IT application activities have been developed at libraries as centralised facdilities should also be extended to departments and faculties so that these may equip themself to meet the challenges of the time. In various schemes through different sources computer and other periferies are installed in the academic institutions to accept the benefits of the technology.

6 STRONG LIBRARY SYSTEM

Strong Library system requires well defined infrastructure which must have conventional collections, documents of instructional nature, reference guides, self learning aids, multi media packages etc. The availability of all these will certainly change the very out look of the life. This basic structural change of society and fast changing technology has opened new direction of work and progress. Indeed the change is required to make masses active and effective participants at every storage of the advancement. The Frontiers of knowledge are extending. The education has close impact of media revolution, globalisation and liberalisation. New areas of studies have emerged, with economic liberalisation an era of competition has come in force, job oriented courses are in great demand all over the country. Specialised self financed training institutions are imparting education to create human resource of export potentialities. The visual projections of the cultural heritage are creating more curiosity in evaluating the greatness of the past achievements and also in advancements of others for the well being of the posterity. To meet with wide range requirements within a short period IT and communication. Links have become most important requirement in all types of libraries.

7 INFORMATION TECHNOLOGY

Before IT application , the institution's objectives should be clear. In IT objectives one should have clear moto that an IT is to achieve efficiency, widen information resource, specialised use, minimise expenditure, become member of network, create IT infrastructure to become link for future or for better utilisation of resources pooled for advancement of knowledge. Present status should be first outlined to know the potentialities and constraints in carrying the services in progress, cultural life of any society

has a very close relation with information flow in it. This was the reason probably, the human being since their inception are searching more effective means of communication. All arts and cultural activities are the direct effort to own the achievements of each other. With the advancement of printing technology the thinkers took lead in communicating to posterity. In present century electronic media has further strengthened the approach. The reading and writing is under the influence of viewing. Inspite of all critical circumstances about 50,000 books are added by the Indian Book Industry above. In addition to this a large number of researchers, writers working in various Institutions are also generating a large number of valuable documents. This added information has to be analysed and repackaged in the formate of machine application to achieve efficiency and accuracy in library services.

Educational instructional programmes are deeply influenced by the technology. The significance of technology application for institutional programmes has increased at all levels of teaching. Even computer projector devices are in use. To create computer culture at University and college level teaching the UGC has propagated a good number of programmes such as opening of computer centre, computer course paper in selected disciplines, grants for purchase of computers in various scheme. National Information Centres, INFLIBNET, special grants for computerisation, suggestion to create automation committees to speed up computerisation programme in the University and college campuses. With this preparation data communication linkes with the institutions with similar objective will be possible in future. Such intiatives have also been taken by other departments like DST, Deptt. of Culture and so on. The professional organisations are deeply thinking to create a strong work force which can make efficient use of all shofisticated equipment coming to Libraries and Information Centres.

8 INDIAN INITIATIVES

India had a old cultural heritage. The Indian cultural diversity is unique and it is the spirit of Indian society. Indian glory can be seen in its achievements allround. The people who contribute to the glory are immortal and kept alive in the libraries for the generations. In other marrites India is a country of rural base marching towards competitive world economy. In planned efforts after independence it has mainly witnessed green revolution, white revolution, economic liberalisation and electronic revolution etc. to integrate these advancements or revolutions for the well being of the man kind systematic work programmes or studies have always been conducted by the scholars. These efforts of scholars works as a tourch to the future generations. Keeping in view result such developments are systematised by the libraries in their subject occurence to generate new knowledge or to support the process of knowledge advancement.

Inspite of all variation in communication documents uses are provided information in various forms such as books, journals, reports, monographs

and electronic, formates. With modernisation formates for network and for availing, networks facilities are in progress. The number of such developments is constantly increasing. All such developments of one country requiresco-ordination at one place.

To over power such a situation resources are shared. With application of modern communication infrastructure in libraries local, national and international networks are in progress. Education to access these networks is one of the training area and education for the library professionals and for the students and users of the knowledge is urgent requirement. The advancement of technology, application of computer use of advanced communication links and improved skills level of users has created new area of work for the library managers. The librarian of the future has to learn more techniq ies of access to the information through resource sharing process. He has to be more selective in collection development of a modern library. The modern library collections should be selective and specialised to meet the requirements of specialised users. The data base for such areas in which the associated users are interested should be created. The library should collect the CD ROM etc. in the subject and also have proper access arrangement with the networks containing information in the discipline and other allied areas reach strategies and techniques are to be supplemented with every arrangement the acquisition policy should take care of quality of printed documents as well as non book materials.

Advancement in communication has added newer techniques such as Fax, Image transfer, text transfer and repackaging of data to meet the requirements. To prepare work force for newer environment updated syllabus is another important need .

9 LIBRARY AND INFORMATION SCIENCE EDUCATION

As per the document Hand Book of Library & Information Science 1947, a AIU Publication Library and Information Courses are conducted by 79 Universities and out of which 67 are offering post-graduate courses, full time Ph. D. is offered by 32 Universities and seven universities are giving part-time courses. Apart of it a large number of colleges throughout the country and Library. Associations are offering certificate and diploma courses. Short term courses to update professionals and to train them in computer application and in use of networks etc. are available round the year. In imparting education by distance mode application of media has further widen the work area. Modernisation approach, use of technology and inclusion of newer study areas in the discipline has opened debate to review the existing syllabus. To review the syllabi the UGC constituted a Curriculum Development Committee under the leadership of Prof. P N Kaula in 1990 which has suggested that Curricula must have modern management techniques, IT developments, network operations and communication strategies. In another regular effort, subject panel on LIS

education has been reconstituted to look into the matter with more seriousness and to suggest the steps to be taken to make LIS education suitable to present day need. Further more, the UGC has invited attention by holding meetings with the Chairperson/Conveners of Board of Studies and Dean of concerned faculties to update syllabi and assess implementation of the UGC CDC Report, 1992. The existing curricula has the component of information management and machine application. Inspite of all there is a great need to teach subject like information system approach. The courses are required to cover component like repackaging of information and creation of indigenous IT products. This will promote Indian culture and Indian way of thinking. To include these advancements, faculty has to be updated, programmes like BLISC, MLISC, MCA, BCA, etc.should be meaningful and purpose oriented.

10 RESOURCES

The resource crunch is another important issue in debate since last many years. There is no control on creation of new centres and publication of new records. The nawer devices are introduced very frequently in the markets. Publication of new journals and creation of database, linking of databases at different level is again is growing speedly. In such a situation no agency, volunteer or Govt. can claim to satisfy all the demands as a result in some areas like professional education, Engineering, Medical, Management self financing scheme is introduced to create infrastructure to cope with advancement. Similar techniques can be very well introduced in libraries and for select dissemination of information. Since the users are seeking information for selective purpose and are also reimbersed by job seekers will appreciate the services. On the other hand specialised database and search technique generated by these centres will speed up the knowledge growth.

11 CONCLUSION

Application of new techniques has opened the doors of newer studies. The library and Information workers are suppose to know computer application, electronic presentation, Access process with other networks, multimedia applications, database control, search strategies, and communication link operations. The library managers should be well acquinted with modern management trends. In addition to these newer areas there is a great need to review existing services and practices to integrate the newer responsibilities with their degree of priorities. Since the library boundaries are expended the library managers have to create flexibility in their rules and guidelines so far developed with the intention of preservation of the information.

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ACCEESS TO INFORMATION SERVICES IN ELECTRONIC ERA : A CUSTOMER-FOCUSED APPROACH

Rajesh Singh*

ABSTRACT

We have entered the electronic information age. Increasing recognition of information as marketable commodity has changed the customer's perception about accessibility of information services. The reasons for changing perceptions of today's customer's ease of access to information services is the biggest challenge witnessing by present day library managers. The time has come when we must adopt customer-focused approaches while providing information services in changing information environment. For that, we have to emphasise on 'customer groups' and have to base the design and delivery of information services as far as possible on what the customers want, not what we happen to have available. Some guidelines have been suggested for embracing customer-focused approches in information services. The need for a positive professional response has been stressed as that is the only way to delighing the customers while providing them ease of access to information services.

1 INTRODUCTION

Today, we are living in the'age of information'. Countries are moving from an industrial society to 'information society'. The challenge of coping with the changes in social, technological, economical and political environments has forced the LICs to change their time-honoured old practices to satisfy the complex and ever-increasing information demands of their customers. Hence, at the end of this millennium, with emerging information technologies and virtual realities, we have reasons to ponder serious thoughts on the issue of 'customer-facused approaches' in the wake of accessibility of information services.

2 WHY CUSTOMER-FOCUS?

So why is the subject of customer-focus coming to our attention only now? Why have libraries and other information services practitioners not thought about customer-focus earlier than nows, and why have words like

* Junior Research fellow, Department of Library & Information Science, Lucknow University, Lucknow -7

'customer' and 'client'begun to replace the library's user, 'patron' and the charmingly quaint (or so it seems now) 'reader'? The answer would seem to have to do with following changes in our society in recent years.

2.1 Information A Strategic Resource

Information is now recognised as a 'power'. Growing recognition of its role as a vital input to the economic, cultural and sociological progress of a nation, is causing more and more attention to be paid to methods of information access and use resulting in the development of an industry in its own right. It is considered as essential ingredient for the decision making, making process and production processes of all kinds, which means, availability of right information at right time to right customer in right manner will become more important than ever. It means the managers, responsible for informtation services will have to become more attuned to their customers, need and wants for information. Infact, they will have to promote information services and products in a proactive manner, predicting information use before - or certainly as it is needed.

2.2 Electronic Information Age

We have entered the 'electronic information age'. Easy availability of information due to a variety of IT products and services such as CD-ROMs, Internet and Multimedia etc. have resulted in an 'information explosion', where were are finding is difficult to cope with the sheer volume, variety and range of information available. At the same time, the advent of electronic information age have raised user's expectations of information in terms of both quality of service and speed of service. Hence, to succeed in the endeavour of satisfying the complex and ever-increasing information expectations of their users, libraries will have to focus on developing customer oriented information products and services.

2.3 Competition form Profit-making Information Industry

Today, LICs are facing serious competition from the 'profit' making information industry, which has seen the potential of an ever-increasing 'information service' sector. They study user groups, training their marketing message(s) accordingly. The implications for LICs are direct and unqeuivocal. Unless the library message is clear, unless the library can deliver what it claims, it will be bypassed in favour of others that can do so. Hence, to be forerunners in the information business, LICs must meet their intensifying competition is sophistication, clarity and timeliness by adopting 'customer focus' approach. The times are changing rapidly, libraries must change.

2.4 Changing Profile of Customers

Todays's information customer is a much different person that the patron of just a few years ago. Advances is IT have raised their expections of

information to a great extent than ever before. He is fully conscious of his right to get quality of information products and services and even ready to pay for that, if they have value for them.

Dunckel identifies the following demographic criteria, which affect customers' expectation abour customer services:

1. The general population is becoming more customer-oriented and at an earlier age than ever before in the history.
2. People are healthier and living longer, we are consumers for longer.
3. Customer are more sophisticated. They not only have more disposable income, but they are better educated, more informed, have higher expectations, and are aware of their rights and options in the market place.

These are very basic, very pragmatic reasons for looking at information services in terms of customers service. Pressure is coming from the customers themselves.

3 THE CHALLENGE : ACCESSIBILITY OF INFORMATION SERVICES

Keeping the above scenario in mind, just realise how important is it for information services practitioners to commit to principles of customer services? In a word : Vital. The message is notably clear that if you want to survive in a competitive environment, then you wil have to provide information in a way that suits alomst all need and wants of the present day customers. Generally speaking, today's inquirers are not interested in bibliographic instructions, in being educated how to find the information, and all else just gets in the way. In today's society, which is already being defined as the 'age of information', the foremost challenge witnessing by library managers is how to provide the easy and quick access to information products and services thereby satisfying the customers' ever increasing products or services is an important consideration for customer satisfaction.

4 ADOPTING CUSTOMER -FOCUSED APPROACH

The concept of 'customer focus' is market driven. Contemporary marketing is customer focused, which reflects the change in approach to customer service which has taken place during 1990s. Customers are now becoming accustomed to good customer service in many aspacts of their lives. At one time, the aim was to have "happy"customers. Then we were expected to have "satisfied" customer, but now we are exhorted to "delight" them.

4.1 Emphasis on Customer Groups

Delighting customers involves a lot more than just meeting their information needs, and ensuring that all aspects of their experience of dealing with the LIS are at or above a standard which they have helped to set. This involves use of the customer-focused marketing techniques of

segmentation which enables us to understand the need of groups (or segments) of customers in the required depth. Without it, we are likely to treat all customers the same, which is a sure way of not satisfying - let along delighting - a number of them. There will be definitely some customers whom we will find more valuable than others, and/or whom we can serve more effectively. In order to decide who they are, and how we serve both categories and others, we need certain key information:

* Who are they?
* What are their characteristics ?
* What triggers their decision to use LIS?
* What service do they want now?
* What service will they want in future?
* What are their perceptions and expectations?
* What benefits are they looking for?
* What are their buying factors?

In commercial term, this will enable us to decide how big the market place i.e. customer base is, how much of it we want to capture and what services we are going to offer in order to achieve that.

4.2 Customer - Oriented Service design

Having identified the target customer groups, we have to design and deliver the information products and services in a manner that suits almost all needs of our customers. What this calls for, in terms of information delivery, is a clear understanding of users' preceptions and expectations about information services. That means we have to base the design and delivery of our services as far as possible on what the customer want, not what we happen to have available, which justify the availability of right information at right time to right customer in right format.

5 SOME GUIDELINES

Following are some guidelines which must be taken to implement customer-focused approaches in actual practice in the information services field, for which we have to:

(a). establish clarity about mission of information services by making them customer-oriented, bringing the customer in picture

(b) set up a 'customer service' or 'customer care' unit in LICs to look after customers' needs and wants for information

(c). adopt marketing techniques to indentify the market, i.e. the customer-base in internal as well as external environments

(d) identify the needs, wants and demands of the customers, i.e. to develop a user-profile by conducting user's survey

(e). look at the information products and services through the user's eye;

(f) identify, design, package and promote tailor-made information products and services affordable to the pocket of customers to satisfy them

(g) be alert with the competitiors in the information business

(h) add value to information in terms of ease of access, quality of service and speed of delivery
(i) train, develop and empower the staff to work for the customer;
(j) listen, understand and respond to the customers
(k) develop a unique relationship with the users and treat each one as someone special and
(l) use problems as opportunities to demostrate just how good the information services unit can be.

These steps will not involve much expense, only the sheer will to execute them in organised manner will do them happen in reality, as that is the only way to delight the customers.

6 CONCLUSION

So, the call is going forth. The message for information services managers is notably clear. If information services professionals are going to offer effective information services in future, they must give a positive reponse to the customer's complicated and ever-changing milieu in which information services exists. It is not easy, and it requires new paradigms which create, store and disseminate information in all its many formats. The bridge of course is the user, the customers, and it is with customer that all information services management must begin and end.

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RELEVANCE OF MARKETING OF LIS IN ELECTRONIC INFORMATION ERA

J. S. Lohia*

ABSTRACT

Marketing of library and Information Services (LIS) are not only important but also inevitable due to definite resource crunch in all libraries small or big state or regional. Today, the marketing concept has been penetrating in the LIS. Finance which is a dynamic factor of all policy and services have forced the modern libraries to adopt and enact various useful management techniques, tools and experience of Marketing Management. Systematic marketing plan will certainly destine to cost-effectiveness and efficieny in the library. The concept of global marketing supported by skilled communication and with the induction of new information technology in our country during late twentites, the marketing of LIS will become an ever most desired component for the resources mobilization. The article deals with the important role played by the marketing of LIS and seeks satisfying exchange reaAtionship with library users in a electronic information environment through a deliberate PR program and marketing techniques, promotions, pricing, products/service and ideas.

1 INTRODUCTION

Marketing is dealt with a task of finding and stimulating buyers for the organizations output. The main functions of marketing is product generation, pricing, distribution, promotions, marketing tools. Library managers of today can make their library more responsive and service oriented towards users needs and wants to improve their users satisfaction with library. Libraries as non-profit services industry developed their key product called information. To create a positive image, library must demonstrate the marketing approach in such a way that it observed efficiency and effectiveness in LIS. In the process of getting cost effectiven ess and achieving efficiency, many of the technique and tools of marketing hve been penetrated into the library and information centres. Librarians and information professionals must harness marketing concepts and techniques to their other very considerable powers if their services are to survive and prosper[1]. Today marketing of library and information services (LIS) are inevitable due to limited budget in all libraries irrespective of size and region. In the age of electronic information it is necessary to sells the library services in order to achieve and support economic and technical back up of library. Marketing offers a great potential

* Documentation Officer, CHS, J. N. U., New Delhi

to libraries to survive and grow their services.

2 MARKETING CONCEPT FOR LIS

The concept of marketing is studied under the discipline of Management Science. Library Managers may need to know the tact and traits of marketing. Library and information centres that apply marketing concept tries to disseminate its services to satisfy users needs through pre-determined well defined co-ordinated plan and activities. In marketing concept customer satisfaction is the key point. In other words, the core of marketing concept is user-oriented. Therefore, marketing and its techniques if applied to LIS can help in vital to fulfill the expected needs of information seekers. The non-business organizations recognized their marketing roles, they will turn increasingly to the body of marketing principles worked out by business situations[2]. The nine concept for effective marketing management by Kotler[3] is:

2.1 Generic Product

A non-business organisation like a library has recognised the importance to provide a broad definition of their product/service. Library must emphasizes the basic needs of customer's to be served. The basic product of LIS are information not the physical form of books, journals, electronic disketes etc. Therefore, library must define their product such as information, knowledge, ideas and services in such a way that maximum and frequent exploitation can be achieved. Library and information centres are such an organization whose product are measured on the basis of quality of library services offers to a targeted community. Following are some of possible product/ services offereed by any type of library and information centre:

(i) Physical Information Product/Services
[Ci. e. Books, Journals, Bibliographies etc.]
(i). Electronic Information Product/Services
[i.e. Diskettes, CD-ROM etc.]
(iii) On-Line-Information Product/Service
[LAN, OPACS, INTERNET-NET etc.]

2.2 Target Group

Libraries inspite of its limited budget have to satisfy the increasing demand for fast, full and furnished information to its target group. Like other business sector, library must clearly defined its target group within the library. The possible categories or target group of any library is:

(i) Student

(a) Resident
(b) Day scholar
(c) Distance learner

(ii) Faculty

(a) Teachers of the institutions/university
(b) Visiting fellow

(iii) Staff

(a) Clerical Staff of institution/university
(b) Administrative staff
(c) Technical Staff

(iv) Other Users

(a) Frequent
(b) Irregular

(v) Non-users

a) Strary users
b) Occasional

2.3 Differentiated Marketing

The concept of differentiated marketing for libraries is to determine and sets out to cater more than one target group. The target groups is highly effective by differentiating its product/service offering and communication towards it clientele.

2.4 Customer Behaviour Analysis

When the business sectors are repidly identifying the needs, wants, requirement, expectations, quality, quantity and behaviour of customers and conducting door-to-door regular surveys and research. Why not the modern libraries duly equiped with latest technology apply this to recognized its targat users and their behaviour and nourished them according to their expectations. The main according to their expectations. The main objective and responsibility of todays library managers is not only to satisfy clientele needs but also of fund raising. Library should clearly understand the needs, behaviour and objectives of their users through various techniques of marketing management including personal contact.

2.5 Differential Advantage

Kotler[4] mentioned "It should consider what elements of its reputation or resources can be exploited to create a special value in the mind of potential customers. Therefore, non-business organization like library must consider different ways and means to reach and aware its target group. Library must think in term of seeking differential advantage.

2.6 Multiple Marketing Tools

Business sectors allow and adapt with multiple marketing tools to

advertised and sell their product. Simiarly, library can make their services/ product advertised through various existing and latest techniques of marketing. Some of the internal and external promotional tools for LIS are as follows:

2.6.1 Internal and External Promotional Tools for LIS

(i) Oral presentations
(ii) Demonstration diskettes
(iii) Promotional film cr video
(iv) Leaflet or brochure
(v) Telephones services
(vi) Promotional mailing
(vii) Computer Network/LAN
(viii) Inter-net
(ix) Local advertising
(x) Bulletin board
(xi) Newsletter
(xii) News release
xii. Printed Book mark label
(xiii) Library Logo
(xiv) Seminars/Workshop
(xvi) Exhibitions
(xvii) CAS
(xviii) SDI
(xix) Acquisition list
(xx) Reprography
(xix) Suggestion box
(xxi) Posters & display
(xxii) Celebration of library week

The above mentioned promotional tools needs further explanations. The widely used method of promoting library services is the oral presentation which can be used both internally and externally supported by other promotional material. Oral presentation requires a strong communication expertise for an effective display which librarian can be successfully learned and get through experiences of marketing management.

2.6.2 Objectives of Promotional Strategy for LIS

In small libraries personal contact is sufficient but in big libraries only personal contact is not enough, therefore other method of promotional strategy should be adopted. To define exact place/location of product/service is compulsory for the maximum use. Library services should be displayed appropriately near the main entrance. The publicity value of selling information is two fold: First, if you give a good service, the word will spread, and your income will increase; second, you will show your collegues that the service you provide is far from a drain on their budgets, but actually

contributing to the overall income.[5] Following are some of the objectives of promotional stragegy for LIS

(i) to create an awareness among target users of the existence and objectives of services.
(ii) to attract more and more users through offering more and more competitive services
(iii) to educating current and potential users
(iv) to changing for LIS
(v) to build a strong and positive image of the library
(vi) to introduce selling ideas

2.7 Integrated Marketing Planning

Integration and co-ordination is first and foremost need of any business or non-business organization to achieve its pre-determined objectives and goals. It is a key concept in library integrated marketing planning too. Nevertheless, library required a well planned coordination, integration with specified objective to get efficiency and cost effectiveness.

2.8 Continue Marketing Feedback

The information requirement of library users are not static as information itself is not static because of its multidimentional growth perticularly after the induction of latest electronic mode. Therefore, to cater the needs and expectations of users community and to get know about their preference/ priorities a continuous feedback system is required. Libraries instead of under-estimating the reality and potentiality of user community's problems and grievances must get in touch with continue process of feedback to have marketing objectives fullfilled. The library feedback system must be open, continue and flexible for everyone and everytime.

2.9 Marketing Audit

If feedback system is flexible and open then changes for new adaption is expected and necessary in view of the entry of new information technology in LIS. Therefore, library must reexamine and rethink its basic services, target group, differential advantages, feedback system, users needs, marketing tools, P. R. program and communication channel to provide a place for marketing of LIS so that a new image of library can be established.

3. MARKETING STRATEGIES

With the advent of electronic information there is a worldwide awakening of information and the library users have had raised hope for appropriate access points to serve their information needs. The essence of marketing strategy for library and information services are to identify its plus and minus through a systematic well defined plan. Libraries can take a good adventage from existing marketing strategies in an increasing competitative marketing situation. The initial market strategy for libraries is to identify if

the current users could be encouraged to avail greater use of available library services. It has been observed many users are unaware of the range of library services offered by library and information centres. Strategic planning is needed because there is quicker change in uncontrollable environment factors (chiefly economic conditions and technological development) than ever before[6]. The objectives of marketing strategies for libraries is to:

(i) to identify the marketing problems and opportunities facing the library
(ii) to identify the major needs and wants of library users
(iii) to organize library staff

4 WHY MARKETING?

Today, marketing is extremely important for any business sector. It has also became central for the libraries to survive and succeed. The concept. techniques and tools of marketing have often been success fully applied by the premier institutions like INSDOC, DESIDOC and IIT's and other special libraries in India. Due to the rapid change in the scenario of constraints resources, cost inflation and competion, marketing has become necessary for libraries too. Increasing competition from commercial information suppliers has compelled librarians to consider implementing marketing techniques in their service. For Librarian marketing process, both users orientation and exchange relationship concepts need to be identified. The best library services will become meaningless untill used by right user at the right time. This marketing precept should be kept in mind while identifying the satisfying exchange relationship. Library marketing consists of users and library is activities and exchange relationship created through the creation, distribution, promotion and pricing, products, services, and ideas.

5 CONCLUSION

Electronic information has create a new challenge and competition for libraries. Economic pressure due to recent resource crunch in all libraries also forced them to throw their product/service to market. Therefore, library managers of coming days have to bear a dual responsibility to fulfill the information need of the users as well as to contribute something to financial backup of the library. If the modern libraries have to show its responsiveness and information alertness whose final objectives is to satisfy the information requirement of its potential users then the library manager will have to take a serious note from the marketing programme. Application of marketing techniques to LIS will be now necessary and welcomed by the libraries to cope up with the situation arises due to technological and economical innovations. The library activities and work have rapidly changed to marketing related since it have been involved in packaging and re-packaging of information. Marketing activities need to be organized implemented and controlled by the librarians. Marketing involves a thorough review of ones

services including and analysis of opportunities. Therefore, well defined PR plan and marketing strategies not only improve the image of library but also endeavour to contribute in fund raising.

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LIBRARIES IN THE CONTEXT OF ELECTRONIC INFORMATION ERA

B. K. Dalai*
D. B. Ramesh**
J. R. Sahu ***

ABSTRACT

Increase in the number of users and varieties of their needs have made the modern libraries to apply new technologies, new modes of access to knowledge, storage, search and retrieval. The emerging trends in computer, communication, and publishing technologies for wide spread of distribution of information is also forcing the libraries to undergo substantive structural modifications. Library and information science (L&IS) personnel may have to face many challenges while transferring to electronic media in their library and information centres. To cater to newer and fast changing needs, L&IS personnel need to enrich their knowledge with updated information and working of different types of library collection and services with the utilisation of modern information technologies.

In this paper, an attempt has been made to identify the role and impact of electronic media in modern libraries and information centres in the context of information age of 21st century. It also identifies the knowledge and skill requirements by the L&IS personnel to interact with the changing environment and suggests some measures for the development of the same to meet the present and future challenges in the context of emerging new technologies in the libraries.

1 DEVELOPMENTS IN INFORMATION TECHNOLOGY

Over the decades, there has been tremendous change in the information world. Every one has to adapt to these changes. Changes in society and demands for information utilisation have forced the information profession to look for more effective and efficient methods for processing, storing and retrieving of information. To cope up with these challenges, librarians and other information professionals have reSorted to the application of modern information technology. It has been estimated that on an average professionals spend only 5 to 15% of their time on reading, but upto 50% of time in looking for information. With the emergence of Information technology, it has been possible to store the information in electronic form. The required information from the electronic databases can be accessed and retrieved quickly through

*Library & Documentation Regional, Research Laboratory (CSIR), Bhubaneswar

networking at local, regional national and international levels like LAN, WAN, and INTERNET, etc.

2 ACCESS TO ELECTRONIC INFORMATION

The storage and maintenance of the huge mass of paper documents year after year have become extremely costly, time consuming and labour intensive. The storage and maintenance cost of paper documents is becoming more than their production cost. Limitation in accessing the information has been one of the major factors costing time, effort and resources. Digital libraries as electronic libraries in which large number of geographically distributed users can access the contents of large and diverse repositories of electronic objects look forward to face the challenges by storing information in digital form, using communication networks to access and obtain information and copying by either downloading or online/offline printing frame master file.

3 COMMUNICATION & NETWORK TECHNOLOGY

Recent developments in the automation of libraries continues creating networks of geographically separate libraries for resource sharing. It is basically a transmission system for linking computers over a restricted geographical area and a combination of cables, computers, processors and interface software which interconnects computers and related devices. Libraries are now busy in finding ways and means of exploiting the communication technology at their disposal to access their own and other library catalogues, CD-ROM databases and other resources. Some important communication and library networks established/under development in India are.e.g SIRNET, ERNET, I-NET, NICNET, INDONET, INFLIBENT, CALIBNET, MALIBNET, DELNET, etc.

Computer networks are expected to play an increasingly important role in the libraries for resource sharing and management. Networks are usually set up in such a way that groups or organisation that share some common goals communicate through computers and make use of each other's computer system and data. Each computer networks has a host computer, also known as server, which is assigned the duty of controlling the complete network. Computer networks have wide area communication facilities with following protocols such as Public Switched Telephone Network (PSTN), Public Data Network (PDN), Satellite Data Networks (SDN), Network of Leased Lines (NLL) and Integrated Service Digital Network (ISDN). Presently many countries have set up dedicated Public Data Networks (PDN) for the data transfer, which work on a packet switched mode, where in a physical line can be used more efficiently by multiplexing message packets from a number of sources. Satellite networks are broadcast networks where a message transmitted by one station and heard by all other stations.

4 EMERGENCE OF INTERNET AND INTRANET

In the context of new electronic environment the role of information professionals is becoming challenging and crucial. During the last decade the INTERNET has grown in to a gigantic computer system allowing millions of computer users across the globe to access thousand of databases to retrieve or exchange latest information on any topic conceivable in the world. Gate Way INTERNET Access (GAIS) enables subscribers to log in to any database, send E-mail, read news, download files remotely run programmes on distant hosts and range of other applications. The global information structure consists of communication lines, communications atellites and linked up computers in the form of INTERNET that has enabled scientists and technologists, world wide, to exchange their ideas and resources and keep themselves abreast with the latest developments in their respective field of activities. In other words, INTERNET is a global collection of people and computers all linked together by many miles of cables and telephone lines all able to communicate because they talk a common language, the Transmission Control Protocol/Internet Protocol (TCP/IP).

INTERNET access by LIS staff will also facilitate them to provide better services by means of referral services, resource sharing, current awareness service, ordering of books, etc. Every library must plan for installing a web server at the library itself so that the right information will be provided to the users at the right time. Library INTERNET Browsing Software (LIBS) is a Telnet-based network access tool that helps users to find a long-on to library catalogue systems. The system also grew in size, connecting to numerous on line library catalogues as well as Campus Wide Information System (CWIS), information services and a variety of databases. The libraries in the INTERNET sites can be searched and browsed by using any popular web browsers such as Netscape, MS INTERNET Explorer, etc.

Intranet is an internal network that uses the INTERNET standards of HTML (Hyper Text Mark-up Language) and HTTP (Hyper Text Transfer Protocol) and the TCP/IP communication protocol along with a graphical web browser to support business application and provide departmental, inter-departmental and organisation wide communication solutions. For example, an Internet can be as simple as an internal web server that allows employees access to an employee handbook and a phone list. The Intranet on the floor below could include sophisticated interactions with a database, video conferencing, private discussion groups, and multimedia.

5 IMPACT OF IT ON L&IS ACTIVITIES

Subscription rate of scientific periodicals and cost of books have been

increased rapidly. A stage may well arrive when the library funds are not at all sufficient to meet these costs. The INTERNET provides access to an enormous number of databases distributed around the world. It collectively offers tremendous potential for collaborating and for sharing resources such as, documents, software, data and network services. With multimedia technology we have image libraries, audio libraries, and even digital video libraries. Traditional libraries budgets devote an ever increasing share of their funds to electronic services, whether in the form of CD-ROM's, on-line public access catalogues, or on-line databases. A digital storage costs go down relative to cost of library shelf space, and as electronic services become more useful, affordable, available and usable, there is a move towards the grand challenge of a world digital library stream. Librarian's are in a position to meet these challenges and provided the information-resources to the users with the help of ITs without any fear, frustration and failure.

The L&IS profession is passing through a nebulous metamorphosis, especially with regard to the technical medium in which libraries are now functioning. In the essence, an overall intensification of specialisation both in the technological aspects of information retrieval work and stronger subject oriented competencies and evaluative abilities are being developed for information professionals. The in-service training and continuing education should be intensified to meet the changing demands at work place. To sustain important services with fewer staff and resources and even developing new services to meet new demands of clientele are more common in the libraries. The increased use of information super highway and its limitations present subject oriented challenges to the practising library professionals. These affect not only the methods and devices used for information accessibility, acquisition and control but also the retrieval precision to provide the targeted information in the correct context. The librarians and information work force should be prepared to receive and keep pace with technological changes and face them boldly. One of the great challenges for an explorer on the INTERNET is to find the information needed from the millions of resources available. Since no person or organisation is in charge of the INTERNET, there is no master list of all its resources. Finding the data you want can be time consuming. Thus, it is not surprising that enterprising adventures on the INTERNET decide to make it easier for themselves by writing software to facilitate the hunt. India's present annual demand for paper is estimated at 35 lakh tons and the figure is expected to touch the 50 lakh tonne mark by the year 2000. The paper mills in the country can produce only 17 lakh tonne. Instead of cutting down wastage of paper, we are now importing waste paper to feed our mills. So computer is not enough. There should also be a computer culture and documents movement in the office should be on the system itself while messages can be sent on E-mail. This impact requires new truncated skills for electronic information handling and organisation and interpretability of network resources.

Development of IT and tele-communication networks, the information scenario are heading for paperless library which may involve:

- active promotion of L&IS for optimising utilisation of resources and services
- designing and developing user-friendly on-line information systems and services to provide easy and multi access to information
- adopting and evaluating the newly emerging information technologies to exploit their potential for effective processing, storage, retrieval and the dissemination of information
- developing a highly motivated, skilled and competent work force to manage and operate effectively
- libraries at local and nation level should form resource sharing groups under LAN and WAN for maximum utilisation of money, men, materials and to avoid unnecessary duplication
- induction of information technology in organised manner to ensure system compatibility, connectivity, monitoring and evaluation of the computerisation and networking programmes
- stimulate and promote an harmonious programme of human resource development to the changing needs of L&IS
- to promote technological installations like networking teletext, telex, fax, videotex, on-line access, CD-ROM, e-mail, and other for free access information

6 CONCLUSION

Mutual exchange of information and resource sharing will be the moto of our professionals ethics and it has to be nourished in future for growth and healthy development of our libraries and information centres. In this age of limiting factors like space, money, manpower, and materials, etc., there is an urgent need for inter library co-operation and resource sharing. All this can only auger well, and give hope of steady progress in the challenge of utilising new communication technologies for better access to knowledge and information in the countries thrust towards academic, economic and social progress. In the times ahead, therefore, library and information centres will have to employ more and more of modern information technology to cope with the rapidly multiplying literature and its demand all over the world. In the information age it is the time for every one to reap the benefit of to great gifts of IT-The INTERNET. LIS personnel should be well conversant with the new technologies and their application in information science.

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23

EMERGING ELECTRONIC INFORMATION ENVIRONMENT AND ITS IMPLICATION ON VARIOUS TYPES OF LIBRARIES

Ms Manesha Saksena*

ABSTRACT

The prevalent information requirement can be fulfilled and satisfied only with the most efficient tools of information storage and retrieval [ISAR]. And in today's concept the most efficient are electronic communication devices which are fast and reliable, that is the valid reason that present is very much identified with the Electronic Information Era [EIE]. Libraries are baptized as Digital and Virtual library. The digital library is a virtual librarY within itself and this notion is discussed in this paper. Digital library maximizes the utility of library resources its electronic tools. In this article all endevors are at work to critically analyse feasibility of electronic and technological resources. Traditional sources of storage are proved slow inefficient in retrieval. Multimedia and CD-ROM are winning the race of ISAR. Electronic Publishing (EP) in information technology (IT) is economical in time and space aspects and is most favoured for the researchers who don't have time to turn over the pages of encyclopaedias. Networking is found implacable solution in this information explosion age and to develop the spirit of resource sharing. In fact it is demand of today's EIE. Though there are constraints with all the electronic devices concerned with technology and human resources it is proved that for effective information catering and cost effective services IT should be adopted in a virtual library.

1 INTRODUCTION

Knowledge is power and that power can be accomplished through point to point and appropriate Information. The guarantee of knowledge can a be evaluated on the basis of information, the sources of information, the media used for the transmission of information. Information. Information should be latest and to the point. Today libraries are flooded with various information sources. Because of information explosion it has become difficult for a single library to preserve each and everything even on a specific subject. In such a situation information technology comes to the rescue of libraries. Thinks to the technology, various media could appear after the invention of printing technology like magnetic tapes, microforms, compact discs etc. All these ISARs media have found their places in LICs and playing vital role in information dissemination.

* Library Officer, Library and Information Centre, Entrepreneurship Development Institute of India, Near Bhat Village, P. O. Bhat 382 428

Developments in IT particularly computer technology and document processing and delivery technologies have been revolutionizing the library and information services. The prime focus of collection development and services to readers and other information users has been continuously moved to proactive stages. The technologies have made the librarianship to be more resilient towards meeting demands of users. The profession has found that any information or its source exists to meet the needs of users. Therefore IT has to built on a flexible frame to provide instant, conductive approaches towards identification, location, access, retrieval, and usage of the information to satisfy the demands. In fact, the entire information access activity is focused to stored information animate and ultimately help the interface between information presented and absorbed by the seeker of the knowledge as humane as possible. This really is the focus information storage, retrieval, dissemination, access, and absorption process.

The drastic changes have come in the sphere of LICs. The convention, ownership to access has revolutionized the concept in EIE. Electronic publishing, various storage media like CD ROM, Multimedia etc. are strong components to picturesque the digital library which would be a virtual library. Networking and resource sharing are catalysts in the developmental activities of a library and various digital libraries. In digital environment only digital information is disseminated; software is produced locally and most of the information is obtained by remote access; much of this information is less permanent in nature. To setback and prove the identity in EIE any LIC should march hand in hand with all the IT implementation. Internet which is called as network of networks is a global concept of resource sharing, it is used world wide for personal and group communication i.e. for file transfer and accessing database on remote computers. Information sources on internet are all stand as computer files of some kind or other. They have allocation on at least one internet website may be duplicated at other site. These files on the internet contain varied materials.

2 DIGITAL LIBRARY/ELECTRONIC INFORMATION CENTER

The end of the century and the millennium coming towards the end the future has been endared with great technological blessings. The microchip computer, the IT being the foundation for a technology that is going to sweep the entire context. A step has already been made and that is Digital Library Electronic Information sources are the asset of today's libraries which gives them an identity as an electronic library. With explosive growth of information it will be a dream to store all published information physically. With their very qualities of compactness and sconcisness it naturally attempts to adopt it. Digital libraries meant for providing digital form of information collection which can be structured unstructured-data scanned images, graphics, audio, video recordings, etc.

Digital library is converting the analogue information which could be in the form of books, films, art or catalogue to digital form to enable faster and have earlier access to them

3 WHY DO WE NEED IT?

Digital libraries will contain both digital and non-digital information material, for example paper based and film based materials co-exist with digital source. In broadening the scope of digital libraries to meet the emerging demands of information use. There needs to be:

- Media integration to handle hybrid documentation
- Versioning to handle fluid and transient materials as well as permanent materials
- Tools for collaboration and communication
- Service practice to develop work practices and procedural to handle cataloguing and maintenance of digital collection.

3.1 Seiler and Supernant opines

"society will totally convert to digital information and with society, so will libraries" many substitute for small and large libraries that are now geographically dispersed. General purpose libraries, each like a Library of Congress but holding more information will be located originally. Such regional libraries might be sold as a turnkey system with a common hardware platform and bundled with identical collection of information and software.

The most vital reason being that documents and other material those are collectively stored start deteriorating after a certain period of time at a rapid rate although it is tried manual level best to preserve them in its natural & original form, digitising this information enables it to be preserve in an additional way.

The second reason being that vast amount of information is being created and to store it in a way that is done physically is time consuming and make it more difficult to find specific information later on. These searches are impractical to be carved out manually in case of physical library. With advent of IT in academic arena the libraries should be exploiting IT to its optimum benefit. and its foundations are laid down.

Digital libraries provide access for the teaching and learning environment to enrich their existing knowledge and emphasis is laid to provide access to it whether it is form local or distant source. The digital library has narrowed down the gap that exists between end user and the library. Any information pertaining to any topic can be had access to without any hassds.

Gary Marchionini and Herman Maurer believes, the role of digital libraries in teaching and learning describe how digital libraries are evolving to meet the needs of teaching and learning libraries facilitate three types of learning.

- formal learning which is systematic and guided by instruction, e.g. courses, offered in schools and colleges training, on the job all of these

being supported by library resources;

- informal learning usually directed by the individual and as and when necessary; resource persons mass media and public libraries supporting such learning environment;
- professional learning which is directed by the individual but more focussed, such as taking up continuing education courses to improve work-related knowledge and skills supported by libraries, personal collections and networking with colleagues.

In such an environment digital libraries will allow teachers students to use information sources and tools that have been in the past physically and conceptually inaccessible.

4 NEED FOR EIE

As the concept of library has changed from ownership to access, librarian is no more a custodian of valuable Manuscripts and costly encyclopaedias. He is an information intermediary or effectively vital channel for information transmission. Due to the jet speed of information emergence everyday librarian has no adequate time to manually scan books and feed the information thrust neither it is practical nor possible. Secondly in electronic tools variety of alternative for information and also information resources are available so if it is not procured by a library then user will feel handicapped and it will delay his work which can be development work or research work. And this is very much possible with the research libraries.

Hence the cost technological tools is very high that single library can not procure all CDs, magnetic tapes or VCDs and its is not possible for a library to possess every thing published in the knowledge world this problem can be solved by networking and resource sharing. On the other hand the benefit of networking is that a researcher can avail the latest information on his subject only by clicking few keys on the keyboard as the network of networks internet is there to serve us all. As it connects more than 140 countries of the world so the labour for referring different maps and gazetteers is reduced. It provides all kinds of information on each and every subject of universe with millions of websites and various sorts of search engines are available to browse it.

To cope up with the time electronic resources are beneficial because every minute comes with a new change. If a book is taken for reference or card catalogue is referred for the location and availability of information source then at a time only single person can avail such opportunity while going through online catalogue more than one user can access it an do some with reading a CD on PC. Simultaneously mutual discussion is possible. For example in the reading the CD BOOK FIND it becomes easier to find the books on a particular author or what books available on a specific subject.

Digital libraries solved the problem of space as online databases for union catalogues is there the location of a information can be traced and

can be available also on online. Earlier it was possible through manual ILL services which consumed lot of time and energy. So now no need to get big catalogue cabinets and preserve catalogue cards.

The CD-ROM has qualities of high storage capacity, easy to use, durability, fixed cost of searching etc. So far the versatility of CD-ROM is concerned with the range of media that can be designed to integrated on a disc as well as capabilities of the search software available. It is designed to fulfill many roles in ISAr education, mapping out, and creative design and numerous other fields. This wide range of data is readily available for reading into memory and subsequent data manipulation. The CD-ROM curse storage constraint and becomes the need for today's EIE.

Multimedia is amalgamation of more than one medium. Earlier also it was there but it has become a no concept because of its integration and interaction with computers. It is a paperless system. The use of MM provides much enhanced interface between user and information. It can better convey the meanings of various information objects than the traditional tools. MM is proved to be a highly effective form documentation for the simple reason that they provide rapid access to information and much more current than the old fashioned manuals. Since information is stored on a server can be updated whenever warranted. A wide range of MM are available for the use. A few examples include; McGraw-Hill Encyclopaedia of Science and Technology, McGrawl-Hill Dictionary of Science and Technological terms. It incorporates Information handling technology as hyperlinking which allows non linear navigation through data and object orientation which simplifies complex operations with point and click utility. As a result MM heralds a new way of learning and communicating. It moves from being a programmer's playground to a technology as familiar as VCR & as necessary fax. In other words if the eighties spawned PCs and networking belonging to nineties then MM will be the technological breakthrough of the millennium.

4 COMPONENTS OF EIE

4.1 Virtual Library

To understand the meaning of virtual library on he has to have clear idea of the word Virtual which means being in fact, in effect. It means that thing which is the fact and is also in effect. As far as library is concerned what is the fact is very in effect in most of the developing countries because today's fact is that readers and information seekers are looking for electronic technology sources of information for storing and accessing but it rare found in effect today while technology advances for the better utility of sources i.e. it should posses electronic devices for storing and accessing information. Time and space are the main criteria of evaluation for virtual library.

To define virtual library is a bit difficult task. One can identify the significance of virtual library from its very features.

- It is not a single entity where everything is stored.
- A range of services and collections linked together or made accessible through electronic networks.
- A system by which a user may connect to a remote sources of information.
- A parallel library which includes a finely balanced mix of print, multimedia and electronic information resources.

In all type of libraries the impact of the word Virtual should be effected remarkably because academic research public or any industrial libraries information need is every where similarly and equally intense and sincere.

4.2 Multimedia

Multimedia is a technology that attempts a harmonious real time integration of different media like images full motion, video, voice, text, graphics, and other graphics data for enhanced man-machine interaction encompassing the audio-visual senses. It promises to radically alter our library by providing an environment friendly systems supporting different media like video, audio, graphics, and text all on the same platform for efficient information handling.

According to Dr. Marshall McLuhan media is the medium which is the message. The medium by which a piece of information or knowledge is communicated to us, has a profound influence on us The medium is of greater importance because the same piece of information when conveyed on a printed page, or over the telephone, by radio, slides or television will appear different effect on us.

Multimedia can be defined as designing, pertaining to a form of artistic, educational or commercial communication in which more than one medium is used.

Information manifestation on a computer with aid of vedio, audio, animation and graphic technology combined in one interactive package in named multimedia.

- Multimedia computer can recreate the sound of musical instrument.
- Play back recorded sound.
- Show picture and movies on the monitor.

Hanry Newton (1991) defined Multimedia is the combination of different types of media in the communication of information between two users and their computers.

As mentioned earlier multimedia is a fine refined amalgamation of various media which are converted from different formats into a uniformal digital media and is delivered by computers. Unlike the analogue media the digital media which allows users to manipulate according to the needs, use at their pace and interact at any point of the programme. When a multimedia program is developed in a hypertext environment the resulting product is

called hypermedia. All hypermedia products are multimedia but not vice versa. The basic difference between hypermedia and multimedia is in the organisation and linkages of the information fragments.

The main elements of multimedia are, text, data, graphic, photographics images, animation, audio, video.

A multimedia system records process, stores and delivers all types of information in binary code the same way the computer does. This quite different from the traditional analogue technology of radio, TV, A-V tapes, gramophone records, or the combination of digital audio and analogue video in interactive video discs.

Hypertext is a tool to optimise the process of writing, storing textual information and accessing that information. Hypertext improves accessibility of stored information of by eliminating the need to follows rigorous set sequences it allows the user to reference mass of related material through the pursuit of adhoc path.

In drafting and arranging information hypertext is very much useful. Hypertext is a system of knowledge representation in which element of knowledge can assembled in deferent ways according to the different perspective of users of the system. Hypertext is very flexible structure in which information is provided both by what is stored in each node and by the way these nodes are linked to each other.

4.3 Electronic Publishing

Technology has changed or precisely say diverted the way of publishing that even though the libraries are flooded with traditional publication, information market are welcoming tempting electronic form of publication. As regular readers of libraries are habituated with the tradition from of publication. It is the duty of library professional staff to take adequate initiative to keep readers abreast of the new mode of information process. This is not enough even they have to make readers convinced with the emerging form more information sources.

Electronic publishing is a process for production of Typeset-quality document containing text, graphics, pictures, tables, equations etc. In general it is used to mean any information source published in electronic form electronic publication includes sources like magnetic tapes, video discs and databases. It can be either flatted or bibliographic or directly or number image, the first electronic book was publishing in 1985 in Germany. Since 1995 there is remarkable increase in the amount of electronic publication but the year 2000, 50% of abstracting sources and 25% of periodicals on all the subjects will be available in electronic form.

The products of electronic publishing are mostly reference materials, secondary sources and the primary periodicals such as full text electronic journals are slowly replacing the print on paper sources Libraries have already started using computers for information activities and acquiring publication

in electronic media.

In electronic era electronic publishing is a crucial components to prove the validity and the validity of technological utility of information sources in the most appropriate and effective manner. Electronic publishing is the only means to be able to access in the technological aged while the traditional means have become the outdated and obsolete.

5 STORAGE MEDIA

Days are gone when information used to be stored in clay tablets, wooden boards, papyrus, parchment etc. After the invention of paper by Cai Lun in China in 105 A. D. The storage facilities have become more convenient. But in today's fast era paper is not a compatible storage media. There are more flexible efficient compatible storage media in scientific era of today. More recently in addition to printing media other media have been employed in recorded knowledge. They include motion picture, films, microforms. Microform is general term identifying visual information, information originally in paper form which has been photographically reduced. Motion picture films and motion picture films on video formats are important physical media information. Films Trips are the earlier forms of non-print physical media to find the way into library collections. Different sorts of audio recordings are also acquired in libraries. They are also in the form of disc recording audio tape media That has been around years. In fact many technologists are of the view that in the near future the television combined with computer will be the ultimate form of physical media of information to users.

In the future a large components of the physical media of information will be an electronic network. This electronic information is stored in computer storage discs.

5.1 CD-ROM

CD-ROM stands for Compact Disk Read Only Memory. It is a cheapest storage medium/device among the optical disc family. Before CD-ROM there was no practical way to store and delivery large volume of data required to create big databases or mixed text, data graphics, audio, video, and software, CD-ROM has enabled application of multimedia in a practical way. As it self defined that 'read only' there is no risk of data manipulation or accidental overwriting.

CD-ROM system comprised of:

Information sources CD-ROM drive computer disc control card software-humanware

Increasingly libraries are obtaining information in the CD-ROMs. Periodicals updated monthly, technical documentation, medical databases, insurance regulations, software games, music, and a host of other useful information both for business and entertainment is available in low cost

compact discs (CDs). Not only are CDs compact durable and easy to use but they also contain 650 MB of information which is equivalent to the total disk capacity of most machines. A single CD contains the information of 1,30,000 pages of text or 450 floppy discs.

CD-ROM is an electronic form for storing print information on a small laser disk. CD-ROM requires the interfacing of a CD-ROM player and micro computer. Various Optical Medical Media are the crucial components in today's's library which play a vital role in electronic information era. In Optical Video Disk System and recorded single is read by a low power laser in the video disk player. Digital Optical Disk hold information and employ laser both in recording and reading. Audio compact disk are system intended as computer storage media. Optical media being one of the forms of non print media is operated through optical video disk system such as Digital Optical Disk CD-ROM etc.

For the wider utility of information various databases are prepared on CD-ROM. To handle large data on computer directly in not feasible and CD-ROM technology takes enough pain to solve this problem. So to have quick access to the latest enough pain to solve this problem. So to have quick access to the latest information CD-ROM databases must be approached.

The most popular CD-ROM databases are:

Bookman's Price Index
Chemical Abstract
Directory of Special Libraries & Information Centres
Encyclopaedia of Associations: International Associations
Inspec
Oxford English Dictionary
Publisher's Directory
Ulrich International Periodical Directory

6 IMPACT

Ours is science age and technological life. The major notion is that science and technology have cropped in all spheres of human life. Machine is everywhere in all its endeavour to overpower Man and it has gained success in its efforts. In the post modern era after industrial revolution human life has witnessed reform in all walks of life. Hence revolution has proved its identity in all fields and all walks of life libraries are not remain exception. With revolution in the concept of information and its access the gradual changes have been brought in the implementation strategies of available sources.

Libraries have become the representatives of information services provider. As said earlier technological sources are adopted in LICs the whole scenario of library is changed. The ordinary library is replaced by

electronic/digital liabrary. The basic classification like public, academic and research library is still there but the common feature among all is digitisation of storage and retrieval.

6.1 Academic Libraries

The choice of school library as the learning centre is based on the idea that this is a backbone of the learning process. The teacher is fast emerging as a supervisor who manages the learning process and educates the student on information and learning reference resourcing. With the advent of CD-ROM the video recorder is replaced by it on the computer. The introduction of super VGA has brought multi-user. LCD (Liquid Crystal Diode) technology has now reshaped the future of the reproduced picture and the pentium has given a tremendous information storage facility. It is the job of librarian to make fellow teacher and students aware of the new technology and also convince them for adopting them. This can be done by arranging seminars, workshops, actual guided hands on training the teachers so that they can formulate their teaching aid material. The library can go for the journals like Audio-Visual Instruction; school Library Journal; and School. These journal can exploit the application of audio-visual aids in classroom teaching and being non-technical can be easily understood by primary school teacher.

Academic libraries of colleges and universities students as well as lecturers and faculty members are always in need of latest and relevant information which can be access through electronic sources only because data in traditional sources will either be very out dated or very time consuming to retrieve it, for such situation online databases and networking are proved best solution.

6.2 Research Library

Research institutes are always in search of latest development of the related subject. A researcher does not have time to wait for journal to come and read about the last experiment made. He not even would go and scan the books and encylopaedias. He will simply like to click on the keyboard and access desired information. Various database on CD-ROM are available on most of the subjects for catalogues, bibliographies, OPAC is one of such database which is the acronym of Online Public Access Catalogue in one of such databases

6.3 Public Library

Public library is place where people of all category and of all sorts of interests come. Main purpose of such library is recreation. In early age novels of renewed authors, valuable encyclopaedias, different dictionaries, number of magazine of general interest were kept for reading and reference as public libraries are gateways to information and culture. Now the media of recreation are replaced by various audio-visual devices like multimedia,

VCDs, LCDs, etc.

Through public libraries even a layman can come across the electronic tools and its importance compare to traditional tools. But it is also a challenge to make all people convince with a new technology because those who are habitual with old way of knowledge gain and recreation may not be ready to accept the neo concept of entertainment and recreation. This can be solved by arranging video show which prove the merits of technologies so that mass can avail the opportunity to learn and know more that too relevant to era.

7 ADVANTAGES

The advantage of EIE are varied and numerous the advantages to be derived in higher by the use of IT would include:

- More efficient and less expensive administrative machinery with consequent changes needed in planning management and policies
- Cost-effectiveness;
- Greater educational impact;
- Better reach;
- Providing customization at the student level;
- Better student exposure; and
- Enhancement of research by providing more linkage to the scholars and better dissemination of their results.

The advantages of EIE are many and varied, various tools have their own advantages according to their compatibility and capacity

CD-ROM is admired because:

- it is spacious for large amount of data
- lightweight and portable
- reliable and portable
- clear cost advantage in comparison to other high capacity storage products
- easily available and transportable

The advantages of multimedia are

- it can help satisfying different information needs such as reference, enrichment, entertainment, leisure, etc.
- it can help meeting various types of information preferences of the users such as scholarly, scientific, vocational, artistic recreational, etc.
- being in digital format information can also be accessed by remote users on a network,
- it overcomes barriers of proximity and physical of library to accommodate users,
- easy to use its interactivity is the best substitute of books and human beings.

8 LIMITATIONS

It is self evident that information technology is far better than the conventional sources of ISAR. It is already at work in most of the developed countries and people have tested the fruits of it. In developing countries still there is few miles to go. Developing countries as they called are also at the stage of developing in sphere of IT. There is no doubt that IT is always for the betterment of information seeker but there are some flaws in it.

8.1 Budget

The budget allocation for LIS are not adequate to fulfill all the requirements because the major proportion of the budget consumes in book purchase and journal subscriptions. Secondly the cost of installation of technological devices is very high that all libraries can not afford. This possible with the research libraries only which can recover the cost. Ordinary public library or academic library can not afford it.

8.2 Infrastructure

The infrastructure of our libraries is not compatible with latest and forthcoming its because the physical environment of building is not suitable IT application e.g. lack of adequate and efficient system configuration. Non AC library building, etc.

8.3 Manpower

Due to faulty Curriculum, all the qualified & I professionals are not familiar with IT and its application and utilities. So library personnel are required to train them because without training them it will be difficult to explain them the importance of IT application.

One major problem the developing countries experience is the cost factor involved in acquisition and access of electronic sources. They tend to be more expensive than their printed counterparts, particularly with regard to the accessory or supporting infrastructure facilities. It is true that electronic resources are economical in space. However space economy cannot compensate for the financial increases elsewhere.

These are the general limitations of IT in its overall implications. There are limitations with EIE which can be elaborated like this:

- Current library practices and search mechanism mainly concentrate conventional documents on paper. Acquisition classification, cataloguing serial subscription and control, document processing, display, dissemination, circulation shelving, maintenance, stock taking, weeding out etc. are specifically related to documents on paper. These can be easily handled through the prevalent practices. An ownership mark, call number or users number etc., can be written on a document. The same is not possible in multimedia environment. No marking can be done or it will spoil the whole data. In an electronic library/Information

environment where a number of electronic gadgets are procured, processed and presented for use problem of recognition creates confusion in tracing out or shelving back in the absence of an identification mark.

- Variety of forms, size, shape, etc., do not allow to maintain all related but on different forms/size documents in a single collection. For example, magnetic tape, CD-ROM discs and a bunch of floppies or a catridge tape can not be kept together for want of symmetry.
- Resource Sharing could only be possible while each participating agency has a networked link and has converted/created a computer readable catalogue of its holdings facilities and services.
- In conventional system, a number of users can directly access to their respective choice documents simultaneously in a reading hall sitting as long as needs be but in electronic environment it is hardly possible. Sequential approach is only possible and the user have to wait identified in a queue for their turn.
- Concept of documentary evidence will no more be valid since data on electronic medium can be modified any time by anybody having access to the system containing the data without referring it to concerned authority. This can lead to mischief, data corruption, loss or piracy. Other factors like virus, power failure, system down, software incompetence or revisions also hamper the information and library services.
- Intellectual property rights copyright, patent, license, agreement, etc. will have hardly any meaning and piracy will lead to non standard, unauthentic versions flooded in the market yielding absurd outcome. This definitely will effect the reliability of the information and the information providing agency. An overall atmosphere of no trust and chaos will prevail in that situation.
- the electronic information sources not having adequate bibliographic control are not easily located and are not well reviewed. Electronic document are so fluid, interactive, and are changed frequently and not owned by any library, that the concept of evaluation has totally changed from that of the print on paper.

There is problem of how to integrate electronic resources with traditional forms. The need for total integration can not be taken for granted as most of the LICs and library professionals have taken up. It has been pointed out that the future of LICs is the combination of actual and virtual materials (the virtual collection is electronically browsable) Another problem is the lack of owner ship of resources to claim funds from the concerned authorities. The funding bodies must realise the electronic information resources are leased rather than owned, and others do not exist in library at all. In the changing context if the LIC's funding is not increased, they tend to become useless

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17

EMERGING ELECTRONIC INFORMATION ENVIRONMENT AND ITS IMPLICATION ON LIBRARY SERVICES IN UNIVERSITY LIBRARIES

Khaisar Muneebulla Khan*
Smitha G. Bekal **

ABSTRACT

This paper defines library, academic libraries and mentions the modern library services that are being provided by a university library. It also discusses new dimensions in library and information services in an electronic information era. A brief account is given about use of information technology in providing library services, concept of digital libraries, virtual libraries, multimedia and hypertext environment, storage media and electronic publishing. The paper concludes with few observations urging for the adoption and use of information technology to provide effective and optimum library service in higher education, university education by university libraries on modern lines.

1 INTRODUCTION

A library consists of the trio—the books, the staff and the users. A library is a social institution, born in civilised literate society, grows and developes in response to social conditions and needs for equipping the people with necessary proportion of accumulated knowledge and preparing them for cooperative social life. According to Ranganathan, 'a library is a public institution or establishment charged with the care of a collection of books, the duty of making them accessible to those who acquire the use of them and the task of converting every person on its neighbourhood in a habitual library goer and reader of book.[1] The library is sometimes called as the memory of human race. Depending upon the nature of clientele and services, the libraries are categorised into public libraries, academic libraries, special libraries, national libraries and contact libraries.

Academic libraries are those which are attached to teaching and learning institutions like schools, colleges, universities and similar academic institutions and cater to the needs of different levels of academic community. It is considered to be an organ around which all academic activities resolve.

* Senior Lecturer, Deptt. of Post-graduate studied and research in library and information science, Mangalore University, Magalagangothri-574 199, Karnataka
** Dept. of Post-graduate studies and research in library and information science, Mangalore University, Mangalagangothri-574 199, Karnataka

According to Prof. Isaac "A Library attached to an academic institution like a school, college or a university is called an academic library. Its role is to help promote the objectives of its parent institutions. A school library is an agency for the realization of the objectives of the school education and college and university libraries seek to promote the objectives of higher education."[2]

The academic libraries supplement academic institution and play an indispensable role in the dissemination of information and knowledge they collect, store and disseminate information and also performs the laboratory function by making its resources to be used by the academic community in the learning process.

2 UNIVERSITY LIBRARIES

According to Deshpande K. S. "University libraries serve as resoruces for teaching, learning, publication and research programmes of institutions of higher education."[3]

University library seeks to promote the obejctives of higher education. A university library is a part of the university system and thereby it aims to fulfill the objectives of its parent organizations. By accumulation and organization of books, manuscripts, journals, and knowledge in different formats, the university library serves for the conservation of the knowledge and ideas, an active force in teaching, learning process, research and extension programmes of the university. The main objective of the university library is to meet the reading and informational requirements concerning teaching, research and other academic programmes of the university. Thus a modern university library aims to function as a dynamic institute of education.

2.1 Objectives and Funcation of University Libraries

The basic objective of the university library is to be as a dynamic instrument for explaining and expanding the horizons of knowledge. The library endeavours to make the legitimate needs and demands of the patrons, from the senior academies engaged in advance research to the fresh entrant, stimulate and encourage students to develop the life long habits of good reading, study and research and to be the centre of university educational and scholarly pursuit.

Objectives of an university library are as follows:

(1) Consevation of knowledge amassed from times immemorial.
(2) Dissemination of this knowledge through teaching, publication and extension programmes.
(3) Extension of the bounds of knowledge through research work by teachers and other research workers.
(4) Helping the teachers and the taught to achieve the highest academic honours and a lifetime of good reading.

A university library is no longer part of an ivory tower world, it is a

practical service oriented institution, accountable for every aspect of its performances. The fundamental role of the library is education. It should be operated as a mere storehouse of books attached to a reading-room, but as a dynamic instrument of education.

In broad terms, the functions of the university library is as follows:

1. To acquire, process, organise and make available varied types of reading materials for meeting the needs of different levels of users.
2. To guide research scholars and provide them the resource useful for enhancement of research projects.
3. To keep the faculty members informed of the lates mount through in their fields of specialisation.
4. To establish a information centre in library and render readers advisory service as to enable them to make use of library resources.
5. To adopt new technology, e.g. computerization in certain areas with a view to provide purposeful services in minimising possible time.
6. To keep to authorities informed of the achievements and literary output of the university, to seek support and financial assistance.

2.2 University Library Services

The popularity and use of any library depends upon bringing of right contact between a right reader and the right book at the right time. In other words popularity depends on the extent to which satisfactory or optimum library services are being provided to the readers or library clientele. Library services are of two types–technical services and readers services.

Technical services are also known as work behind the screen. In other words, technical services are the preparation for providing letter reader services, which include acquisition of materials, classification, cataloguing, binding, weeding out of reading materias, etc. On the other hand readers services include circulation work, reference services, bibliographic service, information services, etc. It is here where the staff is in direct contact with the readers in providing library and information services.

A university library provides the following minimum services, that is lending services, bibliography instruction and library orientation, provision of general and specific information, assistance in the location, searching of documents or readers advisory service, selective dissemination of information, compiling of bibliographies, preparation of abstracting and indexing services, reservation of documents, interlibrary loan, holding of library exhibitions, including display of new additions, current awarness service, reprographic service and translation services.

3 NEW DIMENSION IN LIBRARY AND INFORMATION SERVICES

The unpresidented growth of information and knowledge proliferation and at the same time an ever increasing demands from readers academic

community in the university education asks demand provision of library and information services on modern lines by using information and communication technology. Therefore, there is a need to give a new dimension in collection, management, processing and dissemination of information.

New dimension in library and information services with the drastic growth in the literature output, library operations, it is seen that many library problems cannot be solved by simple manual techniques. University libraries, in particular have to take best advantage from the modern technology, in order to survive and continue to grow. The winds of information technology have been blowing and making some changes in the existing services of libraries. Modern technology and managerial techniques evolved during the last few years in developed countries are not substitute for a capable and efficient administrator who could use these tools to achieve the goals set for libraries. Once the plan and programme are designed and proper guideline are provided trend, it will be possible to establish and manage an effective information network in India. With the growth in information technology new grounds are being set by the libraries, so as to serve the users in a better manner.

In order to visualize the new dimensions of library trends and system, the organisation of information must be a fundamental focus of the profession. There should be a clear cut relation between the organisations of information to the natural processes of information seeking and knowledge utilization. There should be a concern in the field of information environment, the history, context and information process in society.

The study of information media is essential, as there should be an effective combination of people, machines and information for the effective movement and use of messages.

4 ELECTRONIC INFORMATION ERA

This age may be truely called as electronic information era caused by the explosion of electronic methods in every specialised fields. Yet this is only a part of the whole changes taking place for the socio-economic, cultural development which at present has brought a new dimension in the means of human communication. Today we are moving from the print media towards the magnetic tape, thus giving rise to electronic library. This is true even in case of university libraries. In the past information was in the form of handwritten prints, but now it is available on tapes, disc, etc. this of course is a symbol of progress in the very concept of the form in which the information exist.

5 INFORMATION TECHNOLOGY

The present university library is a information based one. Information technology since a decade or so has changed the whole system of information, particularly with the emergence of computers, telecommunication, E-mail, Fax, CD-ROM, Hypertext, multimedia, mobile phone system etc. All have

made the flow of information from the point of origin to the location of its use continuous, easier and more quicker.

The word Information Technology seems to have a wide implication. However in this context it refers to electronic age related technology, particularly associated with the task of information acquiring, processing, preserving and dissemination irrespective of its location, purpose and form. Some hold that the information technology is a part of information management, others say that, information management is only a facet of information technology. However, Rowley has taken a narrower view in describing information technology as a mere tool for information managers as well as a servent to information management. This could be considered as more logical and hence acceptable to a librarian, particularly in Indian context.

6 INFORMATION COMMUNICATION TECHNOLOGY

In recent times information technology has taken a new form to make human life not only informative but also comfortable. Owing to the restless efforts put in by the scientists and technologists, several new technologies have been brought up, one such being the information communication technology. These have no end points in view of its operation and use including the services offered by libraries.

This consists of voice-mail technology, which is a sophisticated telecom service. Entry of hybrid mail technology-is a gift of the postal services which entered a new phase of modernisation with the introduction of 'Hybrid-mail' technology. It consists of involving electronic transmission of written material in english using computer terminals connected through satellite. Then comes the multimedia telephone technology, cellular mobile telephone technology. This is basically a radio telephone system and from the user angle it is just like a cordless telephone instrument.

In this way information now is not only available in recorded (written) version but can also be in communicational form.

7 USE INFORMATION TECHNOLOGY IN MODERN LIBRARIES

The implication of information technology in modern libraries does not limit only to the to the equipment used for the automation of the library. Prof. Baverly P. Lynch observed that a number of authors writing before world war-II were carrying a question in their mind as to what technology would be to the world of information?

In 1934, Otlet discussed remote reading via telecommunication and urged the need for improvement of its technical standard as such system grew. In 1936, Schucmeyer described the use of telephone to request a display of books to the home via television equipment.

Vannevar Bush, through his writtings in 1944, gave the library world the

'Memex', a device that combined photographic and electro/mechanical technology.[4]

Thus, the entry of information technology into various library application is being recognised. In the near future not many libraries can survive without the use of information technology. Libraries are now making use of audio and video technology, through which visual information can be got Libraries have begun using microforms as an effective mode of recording information. Use of CD-ROM, of optical technologies and are also common.

8 DIGITAL LIBRARIES

Digital libraries are libraries which have a number of machine readable facilities for remote access to many digital databases. There are many projects being undertaken in different parts of the world. Yet there are many problems being faced in developing digital library. Challenges of digital libraries on the library profession as well as users are many. Digital libraries have evolved through a period of fast technological development so as to meet the needs of individuals with varying interests in various fields. In the recent past some other terms like 'Virtual library' or Electronic library has also got good attention. The change of the term 'Electronic library' to Digital library' is mostly due to the growing interest in digital network, digital audio and digital video relative to electronic publishing. The preservation, search and access, content creation, storage and retrieval are essential functional attributes of digital libraries.

Digital libraries are defined as "the new way of carrying out the function of libraries encompassing the following:

- new types of information resources
- new approaches to acquisition
- new approaches to classification and catalogueing
- intensive use of electronic systems and network and
- dramatic shifts in intellectual, organizational and electronic practices."[5]

It is clear that the emergence of digital libraries will effect the traditional function of libraries, library staff, authors, etc. The existence of the libraries of the future depends largely on the decisions of the present generation.

9 MULTIMEDIA AND HYPERTEXT ENVIRONMENT

Information can be said to be human mind in action. When man starts thinking, a number of thought pass through his mind in some sequential order, with some relationship between the topics and subecjts, the thought and action. This may be because of the relation that exist between every little thing in the universe. Hypertext, is nonsequential way of arrangement so, as to represent things in a more natural way. On the other hand multimedia is the information acompanied with graphics, sound, video, etc. put togather to have a understanding and meaningful approach towards the required

information.

The term Hyper means over, text refers to the contents of a book and a media is the medium through which the test and the subject are interlinked. Hypertext is a text in natural language which allows computer to display non-sequential information (text). It allows the reader to link the various blocks of the text. Thus it is a higher form of text. Multimedia is a further extension of hypertext, with the author creating link between the information and the graphic, sound, music, video, etc. thus leading to the information of a combination of a text, sound and visual images.

Multimedia can be rightly understood on the synthesis of interactive computing with full motion video and high quality sound as stated by many authorities in simple terms.

10 ELECTRONIC PUBLISHING

Publishing has undergone momentuous change. With the increase in the generation of information, millions of articles are being published every year. Thousands of books, magazines and pamphlets will now be available electronically. When purchased as data transmissions from the publishers will now be available electronically. When purchased as data transmissions from the publishers as magnetic or optical media, the available materials will loose their discrete identity that the tangible form would give them. When published materials were available in tangible form, publishers had a great control on their use. Copy right gave them the authority to enforce their rights on the material, because the sources were identifiable. Today, where information can be converted into transmittable data, sources are available anywhere and everywhere and the control exerted by the publisher over dissemination is being challenged.

Materials can be stored in the library electronically. Publishers can sell directly to users by data transfer. In other words, the technologies widen the horizon to expand the scope and quality of information based products. Any person with an access to internet, has a potential of being a basement publisher. He can display the work, go through, read and republish in his way.

11 CONCLUSION

Library is a service oriented institution and librarianship is a service oriented profession. The success of any library depends upon the extent to which the library provides satisfactory or optimum service to its clientele. The needs of readers in academic libraries, university libraries, have become similar to that of special library clientele due to inter-disciplinary and multi-disciplinary nature of research, emergence of newer disciplines, microsearch and specialisation. The technological changes, social changes and the change in environment needs to be accepted by libraries to provide library service to the university library clientele. Libraries in the present days have to adopt

and create electronic information environment by making them multimedia libraries, electronic libraries, both print and electronic media libraries, linear text and hypertext, direct access online, computerised, CD-ROM, digital libraries, etc.

We are also witnessing a revolution in information technology which is transferring day-by-day. The way knowledge is stored, exchanged, transfered is also undergoing tremendous change. In this era of information explosion in which large amount of information needs application and use of new technology that is information and communication technology are to be adopted by libraries.

In addition to the above, the electronic information and its use has an advantage to accomodate inecrease work load, achieving greater efficiency generation of new services and helps in cooperative activities. The application and use of information technology in the emerging electronic information environment in university libraries definitely helps in improving the quality and productivity of library and information service.

Introduction of new technology and its use for providing optimum library service requires staff learning new skills through training, as also a change in the attitude of library personnel to the electronic information environment. In India most of the university libraries are on a transition period and with the help of ambitious INFLIBNET program and to meet the specialised needs and demands of academic libraries clientele they are slowly and steadily marching towards the application and use of information technology and adopting to the emerging electronic information environment, to provide pinpointed, expedicious and exhaustive library service on modern lines.

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13

FINANCIAL RESOURCE GENERATION AND SHIFT TO ELECTRONIC INFORMATION ERA AT THE CENTRAL LIBRARY OF IIT MADRAS

Harish Chandra*

ABSTRACT

The present paper discusses the need and importance of financial resource generation in libraries information centres within respective institutional framework. It further highlights the created electronic information infrastructure, various value added services available to end users, methods adopted for financial resource generation with specific reference to the Central Library of IIT, Madras.

1 INTRODUCTION

Finance is the key to all activities which enables an individual and institution to set the priorities and achieve the goal accordingly. The libraries and information centres are not an exceptions to this fact. It is further observed that the present electronic era is largely influencing the corporate culture and the methods of working of the personnel including the librarians and the managers of information centers in India and abroad. Interestingly, the librarians and the managers of information centers are also actively engaged to re-orient their efforts and implement information technology in their respective institutions depending upon the availability of resources at their disposal. It is an universally known fact that under electronic information era, the modernisation process requires a considerable amount of the investment of financial resource which is undoubtedly not within easy reach of an organisation. It is further experienced that after the implementation of modernisation in a library or a information centre, the financial resources are still required for the procurement of books, journals, equipment, stationary items, furniture, computers, maintenance of systems and services and also meeting the other recurring and non-recurring essential expenditure.

2 NEED FOR FINANCIAL RESOURCES

The factors as discussed above motivate the librarians and the managers of information centers to chalk out a workable strategy and a suitable work plan within respective institutional framework with the support of concerned

Librarian, IIT, Madras

institutional authorities at least to initiate the process of financial generation. It is also known that with the advent of electronic information era, the old concept of a library being only a store house of books has now changed. Consequently, in an academic organisation, a library is not only considered as a centre for the creation and recreation of information product and services, but also a dynamic catalyst of R&D activities having a strong role to contribute significantly for achieving academic excellence in an organisation. This fact has brought a major shift to the responsibilities of the libraries not only to engage to house the collection, provide routine services to the end users but also to generate financial resources for their respective institutions. This change has made a library as one of the important dynamic institutional organs like other department or centre with the capacity to generate financial resources. As a result, the image of librarians and the managers of information centers has automatically upgraded giving an opportunity to contribute financially to their respective institutions through using available electronic information infrastructural resources and services. This has become more easy under electronic information era as information is treated as the resource of resources, having multiplier effect on all developmental activities.

3 ELECTRONIC INFORMATION INFRASTRUCTURE AVAILABLE AT THE CENTRAL LIBRARY OF IIT MADRAS

As we know infrastructure plays an important role in the development and expansion of the facilities and services in an industrial society to a large extent. For this reason, government and corporate world always give priority to promote the projects and initiatives for infrastructural development in all sectors. These days due to increased importance of information in the society, the present central government is also giving priority to finance infrastructural projects including for IT sector in the country. In this regard, various international tieups and collaborations are also being explored to seek adequate resources for IT sector. This new arrangement will ensure to facilitate the speedy acceleration of interrelated industrial development of the country, ensuring the welfare of the common people in all walks of life. It is a real fact that IT has an added advantage to contribute substantially to other activities in a society. Pursuant to this fact, IIT Madras also gives importance to develop all infrastructural facilities of the institute including the Central Library. With this objective, our Director has constituted the following tasks forces:

1. Task Force on Improving Interaction with the Outside Environment
2. Task Force on Information Technology
3. Task Force on Performance Appraisal and Professional Development Faculty
4. Task Force on Professional & Career Development for Staff

5. Task Force on Teaching-Learning Processes
6. Task Force on Technology Upgraduation of Institute Infrastructure
7. Task Force on Total Quality Management

These Task Forces provide us an opportunity not only to study the existing institutional infrastructure but also to explore the possibilities for raising resources for various infrastructural development including IT for IIT, Madras. The information technology has been identified as the key sector. In view of this, our institute has provided us the resources to develop the following electronic information infrastructure at the Central Library, which are given below

3.1 CD-ROM Networking System

Considering the advantages of CD-ROM products over printed media and on-line search, the Central Library has installed an integrated 56 drive Meridian-956 CD-ROM network system with six user terminals with 300 MHz Pentium processor, 6.1 GB HDD, 64 MB RAM, 32X high speed CD-ROM drives 14" VGA monitor and keyboard. The server is pre-loaded with Novel's intranetware (Ver. 4.11) to provide access on a Local Area Network (LAN) as well as remote access under the Wide Areas Network (WAN). The existing CD-ROM server with 8 Drives is also integrated with the new server to provide access to a total of 64 drives. The advantage of the present system is that it allows multiple users to access all the CD-ROM disks simultaneously from any workstation.

3.2 Server

The Central Library has a DEC Alpha server of 1032 series on digital UNIX platform. It caters to the needs of the Central Library databases and also providing various services to the users.

3.3 Internet Access

The Central Library has also INTERNET access through Computer Centre with 164 kbps which is under expansion very soon. Initially two terminals are available for the users to access internet. Users are provided proper orientation for effective use and also adequate needed instructions have been provided for the users.

3.4 Scanners

Hewlett Packard Scanjet 4C flatbed single-pass colour scanner is used to create professional documents with 600 dpi superior results. Scans are automatically optimised for printing, display, or electronic filling. It has text conversion facility with OCR software, technology. It has added advantage of scanning pictures directly into applications using TWIN or OLE. In addition

to this, recently we have also received two flatbed Symbol LS 5800 horizontal scanner with keyboard wedge connector and RS 232 interface, three handheld laser scanner symbol LS-4004 with keyboard wedge connector and intellistand have also been procured for bar-code application.

3.5 Portable Data Capture Unit

Symbol PDT 3100 integrated scanner with RS 232 keyword wedge connector, NICD battery & charging cradle has been procured for the use of conducting physical verification in the library.

3.6 Bar-Code Label Printer

Datamax PRODIGY PLUS with serial/parallel interface & software has been procured for the implementation of bar-coding in the Central Library. Currently it is being used to generate bar-code labels for the installation on the books.

3.7 OPAC Systems

The Central Library also has OPAC systems for accessing the books catalogue of the library. Currently, four user terminals are available for the users installed in the main lobby. These user terminals are extensively used for conducting catalogue searches by the users. The DEC pentium systems are used for this purpose.

3.8 Laser Printers

The Central Library also has four HP Laserjet 5M printer with new features like true 600 x 600 dpi laser printing, improved HP resolution enhancement technology and 120 levels of gray and enhanced grayscale for smooth photo like images giving excellent output. These are used for DTP work, generating membership records, attached with internet terminals and other in-house activities.

3.9 Inkjet Colour Printing

HP Laser 690 c is the new application that gives true colour tone and pictures to add beauty to the documents. This facility is also extensively utilised by our users.

3.10 CD-ROM Databases

CD-ROM technology has drastically changed the entire process of the collection processing, storage and dissemination of information to the users in the area of science and technology. With this objective, we have procured various CD-ROM databases to meet the information needs of our faculty,

students and industrial associates. These databases are available for users which can be accessed under LAN and WAN environment through our 56 CD-NET system. Presently, the Central Library has the following CD-ROM databases:

1. INSPEC 1989+
2. Ei : COMPENDEX PLUS 1993+
3. GRANTS DATABASE 1997+
4. CURRENT RESEARCH WORLD WIDE 1997+
5. FINDEX 1984+
6. ESPACE WORLD 1997+
7. INPAT

3.11 Ethernet Bridge

Remote ethernet bridges are used as communication interface between the Central Library and the Computer Centre of the institute for providing fast and uninterrupted communication access to the networking resources to the users. Currently, we have two ethernet bridges which are used to have direct access to the campus LAN and internet at high speed.

3.12 Microfiche/Microfilm Reading and Printing

Microfiche reading and printing facilities are available in the Central Library. The copies can be had on plain paper by dry process. It is a universal printer which can take copies from microfiche, jackets, 10 mm roll films. It has magnifying lenses for 17x, 20x, 25x, 38x, 42x with dual lens with the capacity for manual selection. It has screen size of 12" x 12" for viewing. The image can be rotated 360 degrees and print on to A4 size paper.

3.13 Media Resources

The Central Library also has strong media resources with the objective to provide audio video viewing facility to the users on various subjects related to the area of science and technology through over 200 audio video cassettes available with the media resource centre of the Central Lbrary.

3.14 Multimedia Workstation

The Central Library also has a multimedia workstation for multimedia access facility to the users pertaining to the various multimedia databases. The system is pentium processor based of 17" SVGA colour monitor with 32 bit sound blaster card (creative) and two stereo speakers.

3.15 Software

We are using the software developed by the faculty of the Department of Computer Science and Engineering of our institute for effective information

handling and providing services to the users. The software has been designed in SQL supported with UNIX platform.

4 VALUE ADDED SERVICES

The services are the main backbone of a library which enhance the image of the library and the library staff. The Central Library is actively engaged to play a dynamic role not only to provide the routine services but also to interact academically for achieving acceleration of academic excellence at IIT Madras through various ways. Recently, we have also participated in the ISO-9001 exercise along with the five units (Computer Centre, IC & SR, Academic Section, Central Workshop, Civil Engineering Department–User Education Programmes) of the institute. Due to these value added services and proper systems and procedures adopted at the Central Library, the ISO final certification team rated the Central Library as the best and first among all units of the institute. The Central Library provides the following value added services to the users:

1. Internet access
2. On-line access
3. Document scanning
4. SDI
5. OPAC access
6. Document delivery
7. CD-ROM literature search
8. Multimedia access
9. Journals content page
10. Patents information
11. Standards information
12. Consultation card
13. DTP and Offset printing
14. Audio video viewing
15. Conference alert service
16. Faculty publications

5 SPONSORED PROJECTS

The Central Library has submitted various projects to the funding agencies in India for generating the resources as well as to augment various facilities and services. The major projects sanctioned are given in table 1.

Table 1 Project Sanctioned

Capacity	Project Title	Sponsoring Agency	Value In Lakhs	Duration	Status
Chief Coordinator	Central library Computer-based Information. Support System/Networking	AICTE	Rs. 8	2 Years	Completed
Chief Coordinator	Creation of Patents Information. Support service for R & D Activities	AICTE	Rs. 5	2 Years	On going
Principal Investigator	Creation of Full Text CD-ROM Database of Ph. D. Theses of IIT M	AR & DB	Rs. 5.37 (AIP)	2 years	On going

6 FINANCIAL GENERATION METHODS

Realising the importance of resource generation and the problem of financial resource crunch, the Central Library is actively engaged to play a dynamic role in the academic development of the institute activities through various ways. In addition to this, the Central Library is also generating the resources to the best of its capabilities with the help of various value added information services and available electronic information infrastructural facilities. Table 2 indicates the resources generated during 1998 through the following methods and services.

1. Over due collection
2. Photocopying
3. Document delivery service
4. Desk Top Publishing
5. Offset printing
6. CD-ROM literature search
7. Document scanning
8. Sponsored projects
9. Technical consultancy
10. Membership to alumni, retired faculty, corporate, selffinancing and private colleges and industries under industrial associateship scheme of the institute

7 CHARGES FOR VARIOUS SERVICES

The Central Library provides various services to the end users with the help of specialised printed and electronic resources and services on science, technology, engineering, management, etc. The services like internet access document scanning, DTP, offset printing, CD-ROM literature search, and multimedia based services are very popular among the users. The various charges for the services available to the users are given as per Table 3.

TABLE: 3 SERVICE CHARGES

Sl. No.	Library & Information Services	Charges in Rs. Paise
1.	Photocopying (internal)	0.60
	(external)	1.50
2.	Transparency preparing	1.00
3.	Microfilm/Microfiche Printer copies	2.00
4.	Laser Printing directly from the floppy	3.00
5.	Post Script output	.6.00
6.	DTP composing using scanner	10.00
7.	Offset printing first 100 copies	35.00
	Additional 100 copies	10.00
8.	Document scanning	20.00
9.	Soft binding	20.00
10.	CD-ROM literature search (per record)	5.00
11.	Document delivery (per page)	5.00
12.	Photocopy of Ph. D. thesis (per page) for Indian user	5.00
	for foreign user	US$300
13.	Membership	
	(a) Self-finance and private college (Refundable deposit)	10,000. 00
	(Service charges)	3,000.00
	(b) Alumni. of IITs : (Refundable deposit)	2,000.00
	(Service charges)	750.00
	(c) Retired Faculty of IIT Madras (Refundable deposit)	250.00
	(d) Industries under IAS scheme of Institute	
	Small scale (per calendar year)	3,000.00
	medium scale (per calendar year)	5,000.00
	(large scale) (per calendar year)	10,000.00
14.	Overdue charges General Books (first 7 days	0.25
	After one week (per day)	1.00
	Text Books (per day)	5.00
	Journals (per day)	2.00

8 PUBLICATION OF BROCHURES

The Central Library has brought out various brochures highlighting the facilities, services, organisation of collection, rules and regulations, eligibility for membership, membership privileges, contact person and points, charges for various services, concise statistical profile of the Central Library. These brochures are also sent to the potential users of our services with the objective to strengthen the membership of the Central Library. In addition to these, NAL Bulletin is also sent every month to the users. The important brochures of the Central Library are given as below:

1. Information Brochure on Lirbary Rules and Regulations
2. Information Brochure on Library and Information Services
3. Information Brochure on CD-ROM Information Services
4. Information Brochure on Book Bank Facilities
5. Information Brochures on Printing, Reproghaphy and Publication Service

9 FUTURE PLAN

1. To strengthen more membership of the library
2. To organise user oriented programmes
3. To create specialised databases
4. To publish the holdings of the Central Library
5. To give more presentations to different organisations about the facilities and services available to the user.

10 CONCLUSION

It is very much clear that electronic information infrastructure is the key to all sectors including library and information science. It has great potential to affect the entire corporate world directly or indirectly. The librarians and the managers of information centres can utilise the existing electronic information resources and services to generate financial resources for the potential development, expansion and maintenance of the infrastructural facilities for information technology, which has direct and immediate bearing on the growth and high image of libraries and library professionals in India under electronic information era.

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TELECOMMUNICATION AND INFORMATION TECHNOLOGY: A PERSPECTIVE

H.Kalilur Rahman*

ABSTRACT

The innovations in telecommunication bring a better solution in transmitting information. The emergence of computer technology and the advancement of telecommunication create the Information Technology era. The evolution of Information Technology simplifies and speeds up the information retrieval process. This paper discusses the role of telecommunication in the present and future development of Information Technology.

1 INTRODUCTION

The retrieval of exact information has become a difficult task due to the exponential growth of the information in all fields of human knowledge. Information generation, collection, retrieval and dissemination through creation of databases and systematic information services are becoming essential to meet the increasing demand. This must be done more rapidly and accurately. The technological advances in computer and telecommunication simplify this job in a more sophisticated way. It has changed the way we perceive and disseminate information and help to access any remote information.

2 INNOVATIONS IN TELECOMMUNICATIONS

Telecommunication is the term used to mean the technology of communication - at a- distance. It includes several ways of communication such as letters, telegraph, telephone, and the recent one being computer communication.

The rate of change in the technology of telecommunications is explosive. There are three major factors, which involve in the technological changes of telecommunication.

(a) Speed of Transmission
(b) Access Tool and
(c) Integration.

*Librarian, Crescent Engineering College, Vandana, Chennai-600048

3 SPEED OF TRANSMISSION

The most required one in telecommunication is speed of transmission. The high speed of transmission is achieved by the new telecommunication transmission media. There are various types of transmission media such as copper cables, fibre optics, radio and light waves. The fibre optic cables occupy the same space of copper cables but carry information up to 100,000 times faster. This permits high communication transmission rates and the corresponding ability to move volume of information cheaply and rapidly.

Satellite communication, a very great achievement in the field of communication, creates a new era. Even remotest areas can be connected to the world of networking by using the satellite links. There are about 100 communication satellites in the sky at present and by the year 2000 there would be about 500 of them. The aggregate bandwidth of all these satellites would be about one-hundredth of the bandwidth that can be offered by a single fibre. The satellite communication can provide quick connections to all areas of the world. Very Small Aperture Terminal (VSAT) based networks using communication satellites are becoming popular for the data communication. It is also easy to install and is also cost - effective.

These innovations improve the quality of information transfer process. The transmission of the huge volume of information, a high resolution colour photograph and a three dimensional X- ray can be achieved within a second. Today, transfer of a database of a thousand figure takes a very few seconds over a leased data communication link and around ten seconds on a standard "dial-up" phone line, at a very reasonable cost.

4 ACCESS TOOLS

Information Technology field has made unbelievable progress in its reach, variety, utility and penetration because of combination of communication satellites and new access tools. The high speed and versatile computers and newer computer softwares, compact disks have changed the concept of the information technology. The enter has brought about of personal computers in the telecommunication field brings a great revolution that is "Communication Network". It removes geographical barriers and makes the reality of cocept of "Global Village".

5 INTEGRATION

Historically, the field of Information Technology which comprises access tools, computers, telecommunications and information stores of was dominated exactly by that level of incompatibility. Incompatibility means that this device can not directly link to that device, that is the personal computer can not use the telecommunication facility. It requires modem and software. Ending of incompatibility is a major achievement in the field of telecommunication and computers. It is one of the main reasons for the birth of Information Technology. The information technology reaches a new

landmark by the integration of computer and telecommunications. Information Technology and is making inroads in almost all the fields. The fate of all fields such as business, industry, education and banks is regulated by information echnology.

6 TELECOMMUNICATION IN INFORMATION TRANSFER

The library is a principal source of information in any institution. In addition to its traditional roles of acquiring, housing, organising the information, libraries are now compelled to identify external resources of information to fulfill the growing demand of its users. The influence of electronic networks on the delivery of information is the biggest technological advantage to the libraries. Networks and telecommunication technology have the potential to produce 'Virtual Library' or 'Library Without Walls'.As information technology allows greater access to the library's resources, it is increasingly apparent that access may be achieved without visiting the building that houses the materials. One can access any information in any part of the world in an easy and transparent manner.

The telecommunication network change the whole concept of information transfer. Now millions of documents are digitalised and are available online. Online access becomes inevitable one. The searching of information can be made through an on-line terminal connected, via the telecommunication networks. There are many online system networks for access to many databases over the telecommunication network both for current information and retrospective databases. The commercial telecommunications links, such as Tymnet, Telenet and Compuserve are saving countless hours of user time and have streamlined the information search. The earliest attempt to the access to the computerised database was made in the mid-sixties by the US National Library of Medicine with the introduction of the MEDLARS (Medical Literature Analysis and Retrieval System). Access to MEDLARS on-line is known as MEDLINE. The founding of OCLC as the Ohio College Library Center in 1967 initiated a new era in the field of library. In 1978, the Research Libraries Group selected Stanford University's BALLOTS system as the basis for its Research Library Information (RLIN). The provision for access to online databases on a commercial basis was came such as DIALOG, ORBIT etc.

JANET (Joint Academic Network) in UK was instituted to provide telecommunications links among British universities and research institutions as well as with networks outside the UK. At present JANET connects over 150 sites including all British Universities and Polytechnics, British National Library and the National Library Scotland and Wales and research councils.

7 INDIAN SCENARIO

In India, the growth rate of Information Technology is very high with the strong support of the government. The Government of India and many

State governments are focusing their very attention keenly on information technology. A new telecom policy is expected to be announced soon by the Government of India for faster development and better use of information technology. India is very much concerned about the potentiality of information technology for education and development. Prime Minister Atal Behari Vajpayee mooted the idea of setting up the Vidya Vahini Network to synergize all planned intranets of various agencies in the country. This will also have the powerful link up with the Inter University Network IUNET designed to provide a 2.5 gigabit band-width backbone linking all IITs and Indian Institute of Science, Bangalore. For this purpose, the government of India has recently signed a MoU with US based IUNET with its central hub at the Carnegie Mellon University with which leading IT professionals and University professors are associated.

Now a large number of library resources sharing networks like Metropolitan Area Network such as CALIBNET, DELNET, MALIBNET, BONET, PUNET and ADNET, and countrywide ones like ERNET (DoE network), SIRNET (CSIR- INSDOC), NICNET (NIC), INDONET (CMC), INFLIBNET (UGC) and RENNIC (NIC) are all playing a catalytic role in ushering the growth of online information and dissemination of information with the help of telecommunication technology within India.

8 INTERNET AND INDIA

The best innovation of this century is Internet. Internet is a amazing phenomenon. It has attained very high popularity within a very short span of time. Today, the world of information technology relies on Internet. World Wide Web (WWW) the powerful weapon of Internet, has accelerated the growth of Internet by giving it an easy to use, point and click graphical interface. Users are attracted to the WWW, because it is interactive, user friendly and combines graphical text, sound and animation making it a rich communication medium. Many search engines like Infoseek, Altavista, Lycos are facilitating the information searching process in Internet.

Accessing the Internet through a normal telephone line is slow. But this can be rectified by accessing through a 64 Kbps ISDN. Internet access at data rates of 2 Gbps to each subscriber line will soon be possible through constellations of Kaband satellites in the sky.

India's presence on the Internet is fast growing. VSNL is the authourised Internet Service Provider. Government relaxed its policy and also permitted the private sector in this field. As part of global information revolution, VSNL has put India on the information superhighway in the world. But in India Internet is used by small group of academic and business firms. ERNET (Education and Research Network) in India is connected to Internet via National Centre for Software Technology (NCST), Bombay. This network is providing all features available on the Internet. Internet to all Indian libraries are very much essential because of delay in printed source of information

; lack of funds in the library ,availability of information in Internet is incomparable with any other sources ; access remote libraries and databases.

9 FUTURE OF INFORMATION TECHNOLOGY

Technology is changing rapidly. No one can control the rapid change of technology and predict what will happen next. The astonishing growth of information technology is perfect illustration. As the world is moving towards the next millennium, Information Technology has become the buzz word. The future of information technology is very promising. Developments in telecommunication increases the type of information that can be transmitted. A few years ago, multimedia communication was impractical . The computer and telecommunications changes the status quo of information technology. The next innovation of wireless communication will play a dominant role in the information technology in the twenty first century. Besides voice, a new range of services such as multimedia, high-speed data etc. are being offered for delivery over wireless networks. Mobility will be seamless realizing the concept of persons' being in contact anywhere, at any time. It is clear, however, that in the twenty first century, people will communicate simultaneously using speech, viewing and data. The speed of communication will also be important. Moreover, people will wish to access the Internet while travelling by using their personal digital assistants and communicate wherever they may be without worrying about the geographical location. Wireless technologies have the ability to enable communication anywhere, any time. The twenty first century might, therefore, witness the convergence of telecommunications, information technology and wireless communication.

10 CONCLUSION

In future, no one can claim any rights on information technology. Because, all fields are associated with it and using information technology for their regular job. Information is not only required for education and research but also for business, industry, bank and also for a common man. The integration of computers and telecommunications has done this wonder. These innovations also revolutionised the way of functioning in library by information handling methods. Library networks, online information, virtual library and multimedia information are witnessing the progress of library field. These technological advancements move the libraries from the isolated libraries to connected libraries.

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IMPACT OF INFORMATION TECHNOLOGY ON PHYSICAL EDUCATION AND SPORTS

L. Usha Devi*

ABSTRACT

The need and importance of information for physical education and sports has been emphasised. The importance of information technology such as Word Processing, Data Base, Spread Sheet, Smart Cards, Sport Discuss, Electronic mail and view data systems, Internet with few examples, their uses at various levels for various purposes, wherein some are useful for teaching and training and some for ministerial work and some for the promotion of sports activities, which are very essential for the better use of the leisure time, and some of the future trends has been highlighted.

1 INTRODUCTION

The advancement in science and technology has reduced manual effort enormously and has created the biggest problem that is the worthy use of leisure in the rapidly changing world. The aspirations for the participation in physical education and sports,the present system of life have great influence on human beings, and India is no exception.

The poor performance of Indian athletes and sportsmen at the International competitions has been of great concerns,especially to the coaches, physical educationists and sports scientists. Efforts have been made to improve the standards of our sportsmen since long, however little success has so far been achieved in this respect.

Normally a person starts taking part in a game or event without proper guidence. It is thus a sheer chance that his choice of the sports may be suitable to his inherent capabilities. Therefore, the failure to become champion in most of the cases is inevitable. Thus there is an urgent need to provide counselling to those endowed with such suitable characteristics that form the basis of performance in a game or event. This may be one of the most important factors that can help in raising the standard of sports in most of the countries.

In our country especially, initiation of individual towards sports and

*Assistant Librarian, Bangalore University, Bangalore-570056.

sporting activities is lacking because of poor economic conditions, lack of encouragement, lack of opportunities, a faculty educational system, a vast difference among various categories of people and so on. More than anything else lack of proper supply of information regarding sports and games through various media has been responsible for not influencing favourable attitudes and interests among the people towards sports and games.

Lack of information regarding sports among most of the people is a serious handicap in creating awareness and interest among people in sports activities. Correct information presented in a simple and easily accessible manner helps in developing a proper understanding of such activities. Talents, attitudes and interests, ones make up, values and aspirations are bound to be influenced and effected by the news or information presented. At this crucial juncture the flow of sports news and the instructional procedures and teaching methods etc., certainly helps the interested people to take a definite and appropriate direction.

2 INFORMATION TECHNOLOGY

Information technology is the broad term used to describe the many ways in which modern technology, usually in the form of computers, may be used today in schools, colleges, universities, libraries, business establishments and elsewhere. It relates to a wide variety of possible operations and tasks these machines perform, such as receiving, manipulating, reproducing information and data, with a speed and accuracy only dreamed about a few years ago.

The National curriculum has recognized the value and importance of information technological development within education. Information technology has been included as part of the wider curricular area of technology in the National plan. Whilst information technology undoubtly falls within that category, there can be many links with other curriculum areas and physical education is no exception.

3 EMERGENCE OF INFORMATION TECHNOLOGY

Not long ago there was no technology or computer studies as part of the school curriculum. This relatively new initiative in education has come about with the rapid development of computers which earlier were expensive and large, had small memories, were slow to process data and therefore were inappropriate for wide spread school use with the introduction of the microcomputers, their true value and potential in education was explored and exploited more fully.

Computers are now compact and very powerful. They are versatile, flexible and reliable, yet portable and robut enough to be used just as effectively in the gymnasium as in the class room or the physical education office, using a computer successfully and regularly no longer requires a degree in

computing, knowledge of the inner workings of the computer, or the ability to write software. Any individual should now be able to load and run any good software program quickly and easily.

Using a computer has been made much easier by a myraid of recent innovations including the mouse, touch sensitive boards (e.g. the concept of key boards), optical scanners that read text and pictures directly into the computers, floppy discs, large memory hard drives, a variety of highly versatile printers, extremely sophisticated yet user friendly (easy-to-touch) software programs and so on. But what brought computer technology within the reach of most people for the first time was the micro computers small size with and relatively low price. These two factors brought computers within the reach of education. A deliberate promotion by the government to provide every school with a computer in the early 1990's started the more towards today's information technology.

4 APPLICATION OF INFORMATION TECHNOLOGY IN PHYSICAL EDUCATION AND SPORTS

4.1 Word processings

A physical education department generates a great deal of printed work throughout the school year. This could range from an information sheet for a specific activity, such as swimming gala, to a hand book containing he principles and practices of running the physical education department, Letters to parents, minutes of meeting, work sheets, team sheets, recording sheets, programmes and so on, can all be easily produced and stored on a disc. The formate of the annual swimming gala may not change from year to year, and so the information sheet will remain the same the next time if it is needed. When this work is stored on a disc, it takes only minutes to retrieve it, change to date, print it out and photocopy it, without having to type it out once again.

4.2 Database

In physical education we can become overwhelmed by vast quantities of data that are recorded but seldom analysed fully. A computer data base offers the potential to manipulate and study these data more effectively. A general data base will be available for all makes of computers and although there will be slight differences in the way they operate, the principles will be the same. The user initially has to set up the program according to his or her needs.

4.3 Spread sheet

With the introduction of Local Management of schools, all teachers have to be more financially accountable for their spending and maintenance

of their department stocks. A Spread sheet can assist considerably with this administrative task. The Spread sheet can be set up like a database, according to the needs of the user. Items of equipment can be recorded along with the quantity held new items purshased and the cost of each item. A series of mathematical formulae can be inserted to multiply the number of items with their cost and insert that figure into a new column, Similarly, calculations can be made down columns or along rows so that overall totals can be automatically processed by the computer.

4.4 Sport Discuss

In many levels of education, the ability to search for information rapidly and with authority is a boon. This can be achieved most succinctly by reviewing the literature using a CD-ROM data base. Silver Platter is one of the companies manufacturing these and as the name suggests, the data with many thousands of references per disc, are accessed by using key words recognized by the system thesaurus. For medical information, the MEDLINE, Silver Platter uses the Index Medicus thesaurus, but for sporting applications the Sports Discuss data base is the most useful. This is based on the coaching Association of Canada's holding of journals.

4.5 Electronic Mail and View Data Systems

A computer can be connected to a modem, which is an electronic device that enables communication between computers through the telephone lines. This capabilities enables an individual to exchange information, around the world if necessary, more quickly than by traditional communication methods. The system can be used effectively as either an electronic mailing facility or a resource base.

A message may be sent by electronic mail from one school to another. A printed copy of that message can be produced, and an immediate reply can be returned. Through the same system access can be made into various resource data bases. For instance the Campus 2000 system has a sport data called SPORTNET, that holds details about various organizations, including the physical education Association. Access can be gained into other even larger data base to obtain information on teaching, coaching, facilities, equipment and so on.

4.6 Database System

Efficient Management of ticketing and booking through the use of information technology is now widely used by sports stadia to manage and promote ticket sales, and to promote themselves to their target audiences.

A good example of this is Leedi United who collect data from their fans, process the information and, when a less popular event is coming up, will attempt to increase ticket sales by promoting it heavily through direct

mail.

Fans no longer would be able to buy tickets for any area of the ground they wanted, but would have to be allocated a specific seat.

In the recent survey of the UK theatre market carried out by synchro system it is found that information is the key to success for theatres. Most theatres are supported by regular theatre goers, but they must be kept informed of forth coming events. As with sports clubs, poor attendance is usually due to bad promotion rather than lack of interest. As a ticket sale is made the theatre must store that information, and use it within their traditional marketing campaigns.

Stadia had not realised the importance of information that as been presented to them on a regular basis every time. As the task of promoting arts and cultural events becomes more difficult theatres must find ways of sharing information or resources. This is already happening in some venues such as the whittey Bay Play house which has recently installed a new system from synchro. In addition to selling their own tickets, the play house also acts as the box office for numerous amateur dramatic companies in the North-east. An efficient data base system can convert information into a valuable marketing tool which the stadium can use to promote events and the sale of tickets.

5 FUTURE APPLICATION

5.1 Smart card

Cards of credit-card size on which information can be stored will become increasingly used in future.

Information about sport club membership can be stored electronically and read at points of entry or sales. Charges or fees can be deducated from a bank balance following the current Swtich card principle, thus reducing the need to carry as much money and reducing the prospect of theft.

5.2 Internet

The Texas A & M University is beginning to take advantage of this technology. The Texas A & M student teacher web site created for student teachers in health and physical education has been successful

6 COMPONENT OF A WEB SITE

A web site consists of two parts: Homepage and Hyper links

When the address is typed into the browser (e.g. Internet explores or Netscape), the home page is the first image the viewer sees. Home pages generally have one topic of interest. Think of the web site as a book. Normally

the home page provides a brief explanation or overview about the reason for the site's construction. The home page is usually a table of contents that categorize and lists related topics or tiems. These items are called direct hyper links.

The hyper links can be considered chapters of a book. These hyper links contains chunks of related information based on the topic of the home page. Direct hyper links can either be closed, meaning that there are no other links embedded within that page, or they can be open. An open direct hyper link contains links to peripheral pages of similar related topics. Those links may be connected back to the home page or they may be linked to another web site.

The use of the Internet for the supervision of student-teachers holds many fascinating and exiting possibilities. The full potential for the use of the Internet as a formative supervisory tool has yet to be realized in the area of teacher development, what bagan as an idea for using E-mail as a way to communication with student-teachers, has blossomed into a richer format by including the dynamic platform of the Internet.

However, nearly all the major software manufacturers have developed user friendly program that require little or no knowledge of HTML (hypertext make-up language) coding, current versions of Adobe's page Mill and Microsoft's front page'98 make the process of developing dynamic web sites as simple as pointing and clicking the mouse.

7 CONCLUSION

There are many examples of both minor and radical developments in information technology systems having a impact on the leisure industry. Acceptance of technology is associated with reduction in the cost of that technology or an increase in capabilities. Almost every day new application of information technology is seen. Computers are now part of our cultures, their potential use in many spheres of physical activity presents an existing challenge for future directions in physical education.

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EMERGING PARADIGMS OF SCHOLARLY COMMUNICATIONS: THE IMPACT ELECTRONIC TECHNOLOGIES

Tariq Ashraf*
Satendra Singh Dhaka**
V. K. Mittal***

ABSTRACT

Scholarly activity ordinarily culminates in publication, the communication to colleagues and students of results, observations, and interpretations emerging from one's research. It is at this point that libraries have traditionally entered the process; they have collected and classified printed products published by academic and commercial publishers that serve as vehicles of scholarly communication. But libraries are, of course, indispensable to scholarship from its very inception. They give scholars access to past work and thus make future contributions possible. Those contributions represent not only a culmination, in that they communicate results of work brought to the point where publication is deemed warranted, but also a beginning, in that they furnish material that supports new scholarly ventures and stimulates new analyses. The information technologies of the late 20th century compel us to rethink about the most basic assumptions underlying the processes of research and scholarly communication. They affect not only the nature of scholarly activity in the first instance but also the nature of the contributions of other agents—publishers of scholarly materials, academic booksellers, research libraries—participating in the process of scholarly communication. Some of these technologies have already been effectively employed to streamline and improve various library functions, especially acquisitions, cataloguing, and circulation. The cataloguing function in particular has been transformed as a result of the new technologies.This paper is an attempt to assess the impact of new publishing technologies on the scholarly communications, its various nuances and apparent advanytages over the traditional medium.

1 FROM PRINT TO ELECTRONIC TECHNOLOGY

The medium of print in which text-based information has traditionally been disseminated has shaped one's most fundamental understanding of the nature of text-based discourse and communication. To some extent, that is, terms rooted in the nature of the medium—print products—rather than in the nature of the resource—the intellectual content—shape the discourse. The non-materiality of text-based information as exemplified by the technologies of the late 20th century, in contrast, entails different terms.

*Librarian, Institute for Integrated Learning in Management (IILM), New Delhi
**.Librarian, Rajdhani College, Delhi University.
*** Librarian, Satish Public College for Education, Rewari (Haryana)

Texts are no longer necessarily immutable; rather, they are dynamic. Given that characteristic, interactivity is eminently possible; readers can alter the received texts and reformat the information they contain to suit individual information needs by means of various scanning and sorting mechanisms. Late 20th century technologies, in short, uncouple the material object—the book, the journal, the newspaper—from the intellectual content—the information the material objects contain.

The characteristics of print, therefore, have had profoundly important implications for the storage and dissemination of information, including scholarly information, and thus for the most fundamental aspects of the processes of scholarly activity and communication. The essential distinguishing characteristics of research libraries are themselves expressions of the technology of print, as are those of the various publishing industries that have grown up over the past half millennium. Because printing produces physical objects, libraries, in fulfilling their role as participants in the process of scholarly communication, have accordingly acquired certain fundamental characteristics determined by the nature of the technology and appropriate to the nature of their role in the process of scholarly communication, as currently defined. Libraries have been and continue to be physical spaces where printed materials are collected, classified, and stored in a way that facilitates access to them. They contain spaces where readers can consult materials in the collection rather than take them elsewhere and the proximity of members of the library staff—specialists in information management—similarly facilitates access

2 PRIMARY AND SECONDARY TEXTS

One characteristic of electronic information technologies is that they establish a different relationship between interpretive works and the underlying data or primary texts on which they are based. Consider the difference between the more traditional approach to assembling and publishing data and the electronic procedures of for example, Gen Bank, the US national repository for nucleic acid sequence data.[1] In the past scholars and scientists gathered data in an attempt to test a particular hypothesis. When sufficiently important results were obtained, a paper describing them would be published and the authors would typically include some of the data substantiating their conclusions. After electronic databases such as Gen Bank were established, the data contained in such articles would then be extracted and stored electronically. There are limitations inherent in such a model. However, the period between the submission of the manuscript of an article and its publication was inordinately long, and, as the volume of data increased, publishers were understandably reluctant to include anything more than excerpts, especially given that sequence data in printed form was of limited usefulness.

Such a model might apply to humanistic scholarship and scholarly communication as well. Many humanists would be as interested as scientists in having ready access to the full range of primary material underlying scholarly arguments (in this instance, of course, the material is ordinarily different in kind, usually text rather than data). In historical disciplines, for example, one can distinguish between the sources—contemporary chronicles and narrative accounts, letters, diaries, works of art, literature, and music, debit-credit registers, data on demographic trends, government statutes, and so on—and analyses that make use of such material and attempt to package and interpret it in particular ways. It is in the comprehensive assembling of the primary material that electronic information technologies are especially flexible and powerful tools, in part because "the facts are never all in," as Harlan Cleveland has said, and one ,therefore, wants to be able to assemble material in a way that is appropriate to the dynamic quality of scholarship, and in part because the new technologies permit one to search the assembled primary material with ease and reorder and reassemble it in ways appropriate to one's purposes.

In the humanities, as in the sciences, many publishers are increasingly unwilling to print lengthy original source material because it is so costly to do so. "[P]rinting costs," wrote the late Eric Cochrane of the University of Chicago, "have all but extinguished the four-century-old tradition of European text editing."[2]

These developments highlight the virtues and limitations of each medium and the appropriateness of particular media to particular material. Electronic media are better suited to storing underlying raw material, whether data or texts. Print, in contrast, is better suited to presenting works of synthesis and interpretation that make use of the raw material. As Henry Riecken has suggested, "It may be no more sensible to publish a commentary on the Miller's Tale in electronic format than to embalm in a printed work the data from the Current Population Survey...."

The example of Gen Bank suggests that, at least in some scientific disciplines, printed journal articles need not contain the documentation for the argument they advance. A more appropriate means to handle documentation might be through reference to the contents of the dynamic electronic database, thus consigning the type of material to the medium that handles it best. One advantage of this approach is that it may lead to shorter, less expensive print products that contain little or no documentation.

Storing the raw material in electronic form, conversely, would in principle permit individual readers to manipulate it in ways that print clearly does not. It also avoids what might be characterised as the compromises and half measures typical of the traditional vehicles of scholarly communication—printed articles that contain the scholarly argument in the main text with brief excerpts from the underlying documentation in footnotes, tables, and appendixces.

The new technologies will also permit a fully integrated process in which works of synthesis and interpretation are also published electronically and linked to underlying base data or texts through flexible, sophisticated hypertext and windowing functions, which offer considerable advantages over print in their ability to connect primary and secondary material.

To be sure, various kinds of intellectual material have distinctive characteristics and purposes. But that need not imply that literary or philosophical writing or scholarly works of analysis and interpretation should be exempt from electronic publication in the first instance. It is rather that the arguments for electronic publication of such works are not the same as for substantiating data or documentation. Print continues to be the preferred medium for certain purposes: the printed page is still more readable than a computer screen; a book is more transportable than a portable computer; a subtle argument that unfolds over many "pages" is often more accessible in print than on a computer screen.

3 COST/ EFFECTIVENESS

There are arguments for a print option at some point in the process of scholarly communication because of the advantages that print affords; they are not necessarily arguments for the production of texts, whatever the genre or intellectual purpose, in printed form in the first instance. Even in the case of a commentary on the Miller's Tale, there are advantages to having the text stored electronically, in that a reader can instantly locate a passage in the commentary of particular interest using a search-engine. Electronic media may also be more appropriate media of distribution, with respect to economic cost-effectiveness, in very specialised fields where monographs can, at best, be expected to sell just a few hundred copies.

4 RESOURCE SHARING

The availability of text in electronic form has important potential advantages, moreover, for purposes of resource sharing among institutions, in that texts stored electronically are almost instantaneously transmittable. One of the main impediments to resource sharing—the cost and perceived inefficiency of traditional interlibrary loan services—is, therefore, resolvable, at least in principle. Current interlibrary services, which have been described as a bulky process in which a dozen people labour to bring forth a mouse, could be completely transformed. A reader at a university library in California might be able to review, on a read-only basis, the first few panels of a text maintained electronically at a library in Massachusetts and decide whether to request that the text be downloaded and printed. A transaction that may take weeks under present circumstances could take seconds, and the reader could choose not to request the text at all after having reviewed a small portion of it.

5 CUSTOMISATION OF INFORMATION

Electronic storage of text also permits the reader or end-user to tailor universal information to individual needs. McGraw-Hill, has developed a program that permits faculty members at the University of California at San Diego to design their own textbooks[3]: they can search an online catalogue from a computer in the university's bookstore for materials in McGraw-Hill's Primis database which contains the full texts of books, journal articles, and so on. The on-site publishing center compiles the materials, creates a title page, and adds an index, table of contents, and page numbers; the entire process can be completed in 48 hours. McGraw-Hill has been granted permission from copyright holders to reprint all materials in the database. Because the texts are created and "published" on demand, faculty members need not anticipate class enrolments weeks or months in advance to order books. More important, faculty members can design texts more precisely suited to their pedagogical purposes. The economic implication of such a capability, as one economist observed, is that largely because of the changes in costs due to electronics, the size of the minimum press run for a title has become smaller. Indeed, McGraw-Hill publishes textbooks on demand from a database of articles or chapters.... The minimum press run is approaching one. The number of titles produced grows in part as titles for narrower audiences become economic.

6 UNPUBLISHED RESEARCH

Electronic publication, finally, has the virtue that it is the only existing medium appropriate for publishing material of certain types, as Jerome Yavarkovsky, Director of the New York State Library, has observed:

> In some instances, research results are not published by conventional, printed means because the results can't be printed and still be meaningful. This is true, for example, when the results are three dimensional, graphic, moving simulations, or animations, or when the outputs are dynamic visual representations of variable processes or theoretical constructs. Traditional, printed publication is completely inadequate for disseminating research of this kind. Yet, this research should be included in what we refer to as "the literature."[4]

7 NEW PARADIGMS

Because few electronic journals presently exist, no one can confidently predict what new paradigms of scholarly communication in the electronic age will eventually emerge. Our objective in this section is simply to offer a few suggestions as to how scholarly publication might work.

It is critical that in starting virtually "from scratch" with a brand new "making public" vehicle, we are unfettered by old modes of viewing and

doing publishing: by existing notions of publishing offices; marginal cost structure of publishing; the idea of "circulation;" indexing and abstracting; "monographs" and "serials;" advertising; ownership; possibly even profits. We have the opportunity to begin with a blank page—even that notion needs a new metaphor.[5]

8 ELECTRONIC PRODUCTION AND DISTRIBUTION

Assuming that the principal current document formats—monographs and periodicals—will continue to exist in an electronic environment, at least for a time, the new technologies will no doubt first be applied to the tasks of producing and distributing traditional kinds of documents.[6] Let us begin with production.

When a scholar finishes the manuscript of a journal article and sends it to a publisher, it is ordinarily subjected to editorial and peer review. Some observers have suggested that the traditional editorial and peer review processes might be circumvented altogether because electronic information technologies so facilitate communication among scholars. In Henry Riecken's words, a jaundiced view might hold that desktop publishing suffers from the same blight as computer network 'bulletin boards'—anyone with the equipment can 'publish' whatever he wants, of whatever merit or interest, and the potential audience is left with the task of sifting through the midden.

However, the new technologies may well expand the review process and change its character, with preliminary versions of manuscripts being made available on a network for comment by interested readers. The author would then prepare a final version, incorporating any suggestions that seem to have particular merit.[7] Even if this expanded process does not develop, the traditional one is greatly expedited in an electronic environment. Editors can send manuscripts to reviewers and receive responses much more quickly, thus reducing the period between the time of the manuscript's submission and editorial decisions.[8]

The manuscript then goes into production, and here electronic technologies have already been effectively employed. If the author has submitted his or her text in electronic form, the cost of original typesetting is considerably lower, since the compositor's task is simply to edit the electronic version of the text, and original keying of characters is kept to a minimum. Both author and editor can have changes made readily, using global search and change functions.

Whether the new technologies will result in other significant production cost savings is difficult to determine at this point. Many of the principal costs have less to do with the medium than with the nature of the activity. For example, many of the costs associated with the highly labor-intensive editorial and peer review processes will remain, while some costs associated with the actual production of the text—typesetting, in particular—can almost certainly be reduced.

Once author and editor have settled upon a final version of the text, it is distributed. Traditionally, distribution has consisted of shipping or mailing printed and bound copies of the first copy to individuals, vendors, and libraries. In an electronic environment there might be a variety of distribution media. Publishers might continue to make hard copy available on demand from their own printers to clients who do not yet have the means to make use of electronic versions of texts (or prefer paper). Alternatively, they might issue titles on CD-ROM or floppy disc; these have an advantage over printed volumes in that they miniaturise the text, so that the considerable space problems libraries face might be addressed by this kind of distribution.[9] Such products might either be sold to the user, whether individual or institutional, or leased. In either case, the option to download and print the text or any portion thereof might be controlled by the sales or rental agreement. If the CD-ROM or floppy disc is sold or leased to an institution, the publisher might also specify in the agreement that the text is not to be mounted on a local-area network, so that more than one reader can have access to it simultaneously.[10] In any of these cases, the cost of printing, if it is permitted, could be the responsibility of the individual user, just as now the individual ordinarily incurs the cost of photocopying printed material in a library's collection.

The option that appears to be of unusual interest is that texts will be mounted on a local-area or wide-area network and clients provided with direct access to them online. Under such circumstances one can envision a variety of retrieval architectures. Individual institutions—colleges and universities—might choose to maintain local electronic repositories of frequently used titles they had purchased outright from the publishers; in that case the cost of the telecommunications connection with the publishers would be eliminated. Alternatively, some publishers might choose not to sell titles but rather maintain them at central sites themselves and charge users on a fee-per-use basis. Yet a third kind of architecture may eventually evolve in which libraries at different institutions collaborate in collecting electronic materials; under those circumstances the consortium will own a full complement of resources but will distribute them among the different members of the consortium.

9 PUBLICATION COSTS

To what extent any of these methods of distribution will result in cost savings is difficult to determine now with any precision. Any of them could have significant positive implications for libraries' space problems, as we have suggested, although there will continue to be substantial costs associated with storage, especially if texts are maintained in online databases. William Y. Arms suggests that "[t]oday, storing a document on a computer is more expensive than on paper, but prices are falling rapidly. By the end of the decade, online computing will be much cheaper than storing books

on library shelves."[11]

10 DISTRIBUTION COSTS

There are other costs entailed in distribution. Let us consider, for example, a journal published by a university press that is currently mailed to subscribers; if the texts of the articles are instead mounted at the university's BITNET node and subscribers elsewhere retrieve them from the network, the cost of mailing, currently recovered in the subscription price, is eliminated, as are the costs of printing and binding on the publisher's part. On the other hand, both the university where the journal is produced and the university where it is received incur costs associated with the operation of the computing and telecommunications facilities supporting the electronic distribution; such costs are ordinarily hidden, at least from the individual subscriber, yet they ,nonetheless, exist. How the costs for various phases of the process of scholarly communication in a fully electronic environment will compare to those incurred now is clearly a subject for considerable further investigation, as is the associated question of who will absorb which costs.

Now let us consider some of the possibilities inherent in these various options. First, individual readers could tailor the information to particular needs. The reader might be able to excerpt and print a single chapter (or page) of a monograph or a single article of a journal issue. Indeed, as several observers have suggested, the very concept of an issue of a journal is challenged by electronic information technologies.[12] Articles are currently collected together and an issue published when there is a sufficient number of articles available to make up an issue. In an electronic environment, one can envision a situation where a single article will be mounted on a network as soon as it clears editorial review; there will be no need to wait for other articles to reach the same point in the process. It is in this sense that some of the distinctions entailed by the technology of print invite reconsideration.

11SUBSCRIPTION AND PRICING PATTERNS

Precisely because electronic technologies permit individual information needs to be met, different subscription and pricing schemes and practices will almost surely develop, whether for individuals or institutions. For example, publishers or vendors would presumably be able to charge on the basis of the amount of material retrieved: the entire text of a monograph or any part thereof, an individual journal article, a page or even a few paragraphs of material downloaded selectively. Case Western Reserve University and IBM are attempting to monitor this process within the university through a software that functions as a kind of royalties manager. On a larger scale CitaDel, the new citation and document-delivery service of the Research Libraries Group, allows for online ordering, delivering, and billing.

Publishers, moreover, may choose to offer various services of other kinds. Although many subscribers will wish to continue to receive routinely all the articles published in a particular journal, it will be possible for publishers to facilitate selective acquisition as well. A comprehensive, fully integrated service could provide tables of contents, lists of article titles, or abstracts of periodical articles or monographs, as INFO-SOUTH now begins to do for Latin American studies. Prospective buyers could skim portions of a full text on a read-only, not-keep basis. Readers could order individual items of interest by means of a simple command; the document could then be delivered by any number of methods.

12 PUBLISHERS AND LIBRARIANS: REDEFINING THE ROLES

Some redefinition of the traditional roles of publisher, vendor, and library and of the relationships among them is almost inevitable. Because individual end-users will be able to purchase information tailored specifically to their needs, they will perhaps be more inclined to interact directly with publishers or vendors—that is, readers may not need to rely as much on the library. Libraries, for their part, may develop a different approach to acquiring materials, more appropriate to the characteristics of electronic technologies. Such an approach has been termed the "just-in-time" model, as contrasted with the "just-in-case" model currently governing libraries' acquisition practices. Because libraries will ultimately have ready access to electronic versions of texts stored elsewhere, they will be able to base acquisition practices on immediate reader needs rather than on a priori assumptions about what those needs might be. Instead of subscribing to a certain number of journals, for example, libraries may instead negotiate contracts for a certain number of discrete articles from a national database of articles, acquired in response to readers' requests.

It also seems clear that there may be some blurring in the distinctions among the historical roles of publishers as producers, vendors as intermediaries, and librarians as archivists. Scholarly publishers have traditionally allowed titles to go out of print because of libraries' willingness to serve as a sort of secondary distribution system and warehouse,. The costs associated with archiving materials have been the responsibility of the library. In an electronic environment, where texts can be miniaturized and storage costs greatly reduced, publishers and vendors may be more inclined to maintain archives of texts for many years.

It may also be that traditional models of resource sharing among libraries will be affected. Libraries have historically turned to other libraries for materials not owned locally; if such materials continue to be available from publishers or vendors, libraries might be inclined to acquire them directly, if resources permit and the demand justifies acquisition. Under any of these circumstances, the rapidly changing state of the technology is likely to be

an important dynamic. As Jerome Yavarkovsky suggested, "A necessary feature of online accessibility and network publishing is a commitment to archival storage. Once an article is accepted and published online, the publisher, or some other agency, must keep that publication available in perpetuity, in the same way that traditional publications are held permanently by research libraries. This archival responsibility might even be one of the roles possible for research libraries in the future."

13 CHANGES IN SCHOLARLY ETHOS AND COMMUNICATION

Electronic information technologies may, some observers think, bring about far more significant changes. Indeed, some envision fundamental changes in scholarly ethos and practices of scholarly communication as a result of their introduction. Apart from the expanded processes of peer review described earlier, the new technologies could permit immediate and public response from readers to electronic publications and allow them access to the reactions of prior readers. Further, since their invention centuries ago, footnotes and bibliographic references have connected texts to prior pertinent writings and documented the arguments authors wish to advance. As such, they serve as print equivalents of hypertext. But the analogy is far from perfect. Footnotes and bibliographic references are always selected samples of the full range of material that might be related to the text at issue. Electronic technologies such as hypertext permit access to a much wider range of relevant materials—both primary and secondary, substantiating and contradictory—than those authors have elected to call to readers' attention. In this new environment, readers need not rely on authors' selective presentations of related materials and can, if they choose, seek additional references for themselves using electronic media.

These new technologies may also permit the emergence of new institutions or infrastructures supporting scholarly communication. The advent of electronic capabilities provides the university with the potential for becoming the primary publisher in the scholarly communication process. At the present , we are in the untenable position of generating knowledge, giving it away to the commercial publisher, and then buying it back for our scholars at increasingly prohibitive prices. The electronic revolution provides the potential for developing university controlled publishing enterprises through scholarly networks supported either by individual institutions or consortia.

How might such a system function? One proponent envisions two broad types of campus network nodes, editorial and distributing. The first of these would offer editorial software for creating and reviewing papers. As demand dictated, it might also store publications held by an editorial node at another campus, a redundancy that would reduce telecommunications costs and network traffic. The second type of node would exist solely to distribute

publications by making them accessible online and would resemble traditional libraries by serving as repositories of publications created and issued elsewhere. The distinction expressed in this scenario is familiar and approximates the distinction between the collecting or archiving function currently performed by libraries and the production function performed by university presses. In the new environment, librarians might continue to be responsible for decisions about which materials are made directly available to local readers. Access to materials stored elsewhere, however, might well be more directly controlled by the ndividual reader than is the case under the terms of current interlibrary loan services.

A variety of pricing and compensation schemes, similar to those anticipated earlier, might emerge: a licensing fee paid to a particular publisher might permit a local node to provide access to all the publisher's works; subscription fees might be based on anticipated use of subsets of a node's publications, with users—institutions or individuals—paying for access to parts of the node's holdings; alternatively, access might be on a fee-per-use basis. For individual institutions, there will continue to be important and difficult questions to resolve concerning the extent to which the costs of these services are assumed by the institution or passed off to the individual user.

One can envision how the system might operate. Individual scholars interested in accessing particular titles at their own workstations might first determine whether the titles were among those purchased by their institutions and loaded at the local campus network node. If the texts were available locally, the individual readers might be able to access them on a read-only basis, just as now they access printed materials in the university library on a read-only basis. If they chose to download and print portions of the text retrieved, they might be expected to assume some of the cost of doing so, just as now they assume the cost of photocopying printed material. If the text were not available locally, they might be able to scan the first few panels of text on a read-only, not-keep basis by means of a telecommunications connection, either with the publisher's (editorial) node or with the distributing node at another campus within the consortium (in this instance, the local library or its descendant institution might continue to act as mediator in the process). If they decided, once again, to retrieve and print all or part of the text, they might be charged according to whether the title was acquired directly from the publisher or from a fellow member of the consortium.

What any of these scenarios might permit is an assertion (or reassertion) of the university's direct role in scholarly communication. The commercial publishers entered the market because they offered economies of scale and technical expertise to professional societies interested in publishing conference proceedings and professional papers. To a considerable extent these new technologies may eventually obviate the need to rely so much on

the commercial publishers for their expertise, especially since many of those involved in editorial work for learned journals, even those published by commercial publishers, are academics with university appointments; copyright, if it remains in force in anything like its present form, can be held either by the author or the sponsoring university.

14 ISSUES TO BE RESOLVED: ADULTERATION OF TEXT, FUNCTIONING OF THE NETWORK

Clearly, a number of issues must be successfully addressed and resolved by all the relevant parties before electronic technologies, whatever their virtues, will be seen as preferable to print as a medium of distribution. There is, first, the question of ensuring the authenticity and integrity of the text. "Electronic text," Riecken notes, is far more susceptible to distortion, adulteration, and mischievous or criminal alteration than printed pages. Text on CD-ROMs (read-only memory discs) cannot be changed and thereby prevent alterations of the sort that concern Riecken.

The very characteristic of electronic text that permits easy adulteration is in another way a source of concern to publishers, and in what follows here we are anticipating some of the substance of the later discussion on copyright. A technology (photocopying) already exists that provides prospective buyers of a printed media product with an alternative to buying it (although a less satisfactory one). Anyone who would otherwise subscribe to a journal who instead photocopies selected articles of interest takes advantage of an existing technology to avoid subscribing, and the publisher is denied revenue.

Publishers are understandably concerned that making texts of scholarly material available electronically will greatly facilitate this kind of circumvention. Publishers of computer software programs, for example, are aware that there are a great many pirate copies of their products. Their response is to charge substantially for every copy legitimately sold to offset the economic effects of illegal copying just as University Microfilms does for photocopies of journal articles.

It will be important, moreover, to refine and extend electronic access functions approximating the kind of intellectual activity occurring when a scholar browses in a library or skims the pages of a learned journal. When the latest issue of a core journal in a particular discipline is published, many scholars at least skim the opening pages of articles outside their own subspecialty to have some sense of what colleagues are writing about generally in the discipline. If one had to retrieve the text of the latest issue from a network, would one be more inclined to retrieve and print only the articles in one's own subspecialty? Would one's own interests become ever narrower as a result? As suggested, a related issue concerns the ability to browse in a library.

Some interesting discoveries are made serendipitously; will scholars be

able to make such discoveries as easily in an electronic environment?

Illustrative material—black-and-white or colour reproductions of works of art or other images, graphs, and charts—presents particular problems, which may explain why, until very recently, there was not a single peer-reviewed electronic journal in the sciences, where scholars make extensive use of such material. It is certainly technologically possible to offer such material and with fully satisfactory results; the issue is rather that to do so assumes the availability of specific equipment and software.There are not yet universally accepted conventions for representing images digitally, and the inconsistent methods of representing and resolving such information are an added complexity.

Finally, there are many questions to be resolved concerning the functioning of the network and the principles governing scholarly publication therein,. Among them are issues of availability, affordability, and friendly access; the consequences of a shift from the current subsidisation of the network to its eventual commercialisation; intellectual standards (the integrity of texts and privacy); underlying cost structure (cost recovery, methods of collecting and distributing revenues, and so on); ownership and copyright practices; and academic culture (incentives or disincentives associated with publishing one's work on the network instead of by traditional means). In the culture of print, the fundamental issues of this type were addressed and resolved many years ago, and paradigms governing scholarly practices and the functioning of the entire system, with all its complexities, have been widely accepted. The new technologies provoke fundamental reconsideration.

The various scenarios sketched here suggest both the potential and flexibility of electronic technologies and also some of their current limitations. It is likely that the electronic information technologies of the late 21st century will be utilised in this way for some time; eventually, their distinctive characteristics will almost certainly produce fundamentally different kinds of genres.

Perhaps the most important characteristic of electronic information technologies that will serve to produce a new kind of writing is precisely that the technologies permit almost instantaneous communication. The fact that the technology of print often entails an extended process from the time a manuscript is submitted to its publication may perhaps be related, though not in an uncomplicated way, to the deep meanings, ambiguities, and complex structures characteristic of print genres; electronic technologies, conversely, encourage the communication of fresh, immediate observations.

These initiatives present challenges to library staff members and others involved in providing information services to the members of an academic community. Among them are issues of selection (including the matter of simply being aware of the existence of particular electronic journals), acquisition (knowing the correct subscription information and successfully

placing orders and retrieving and downloading the texts), cataloging (providing readers with adequate access information, including information about the medium, how one subscribes, how one specifies the "location" of electronic materials within the "collection"), access and retrieval (including "adding value," such as the possibility of doing keyword or simple string searches of the ASCII text), indexing of contents, archiving, and so on.

Various initiatives at a number of institutions are likely to yield lessons of value to many others. At Carnegie Mellon University, the Mercury Electronic Library now stores information resources of various types, including the page images of the journals included in Elsevier's TULIP program. These can be read online over the campus network. The key feature of CMU's practical success is the early adoption of a distributed approach to computing—that is, acceptance of diverse types of workstations and formats for the storage of information, as well as of the concept of dispersed storage of information.

More important than the differences among these projects is their common assumption that the roles of the component institutions in the process of scholarly communication are changing and in ways that can be understood only by practical attempts to discover what is effective.

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18
REENGINEERING LIBRARY AND INFORMATION MANAGEMENT IN THE DIGITAL ERA

Ms Chitra P Rao*

ABSTRACT

Reengineering means starting over or starting from scratch. Old job titles, old organisational arrangements departments, groups etc. cease to matter, Reengineering means how do we want to work today, given today's market and technologies. The core thought is the nature of discontinuous thinking or in simple terms thinking anew. Reengineering the library and information management process is outlined in this paper taking into account the impact of information technology on our professions . An effort to redesign the processes of Library and Information Management in the digital area is underway to align ourselves for the coming millennium. The paper examines the method of a radical change over incremental changes which have occurred over the last few decades in our library profession. Have our services improved, have we reduced costs, inventory, processing time etc.? These are some of the issues that are addressed in this paper.

Keywords : Reengineering library; Digitization, Information management.

1 INTRODUCTION

Reengineering can be formally defined as the fundamental rethinking and redical redesign of business processes to achieve dramatic improvements in critical contemporary measures of performance such as cost, quality, service and speed. Today's changing scenario in the publishing and information technology fields have forced library & information professionals to accept the changing demands placed on the profession today. There is a marked shift from the need of information in academics quality to industry & business houses today. Information is fast being treated a commodity and is treated as an intellectual service today. The constant changes in the technology have direct impact on the method library & information service is developing today. There is clear and marked difference that information service has crossed national boundaries and with the rapid progress in telecommunication technology the demand for information and its method of supply has undergone a sea change with the advent of E Mail services and the INTERNET. With these factors how can the Library & Information professional gear up to face the demand and change. This can be done only

Sr Librarian & Head Department of Library National Institute of Industrial Engineering Mumbai 400 087

through fundamental rethinking and radical redesign of library processes to achieve dramatic improvements in critical contemporary measures of performance such as cost, qualify, service and speed which is basically what reengineering means.

Nature of writing has shifted from single discipline to multideciplinary subjects, the value of using management techniques for continuous improvement in quality and reliability has forced us to take a serious view on how libraries & information centers the world over have to reorganize to meet the new challenges of the information technology, publication industry as well as the user demands (our customers). The only method is to completely rethink and reorganize library and information centers to gear up to the new challenges for the 21st century. The paper applies the methods of reengineering to our profession systematically and arrives at the logical conclusion of how well such an application will work for the LIC today.

Basically reengineering means 'starting over'. In today's context we have attempted use of computers effectively in LIC's but one cannot anyway claim that their methods have resulted in remarkable success namely, reduction in cost, improvement in quality, service and speed in totality. Reengineering methods when applied to the processes (activities of the LIC will enable us to study the whole process with a view to change without thinking of what is currently existing) that basically means today change, in keeping with today's available resources and needs. We as professionals also have to evolve side by side those processes which have made tremendous impact on the LIC, that is the publishing & information technology fields for example . take the case of the news papers today. The world over, few read them in the print form, mostly they hear the news on television or they read the newspaper in the Digital form. Here again if you have access to the net you can read all the newspapers published in the world, read only the headlines or read only the business section etc. There is a complete revamping of the newspaper publishing world today due to digitization. Added to that we have numerous computer specialists who would package the information in any way you want that the user can have a very select, and a very customized version of the newspaper. Similarly in the publishing world numerous databases of technical journals are available with full text facility and the facility to download the information as desired, the user here again receives total satisfaction.

The need of the hour today is not only in depth collection in the library but the fact that it promptly that is available for use to the user. The study of the process of reengineering has opened up new vistas of application for the library & information professionals. Their demand is opening up from a person within the four walls of the library to an information analyst in any publishing industry, also in the packaged information business as well as traditional jobs in the academic, industrial or special libraries. Once the barriers of the profession have been removed we can view our- selves in

the new millennium as information providers through different packages rather than limiting ourselves within the traditional walls of the library used as our boundary for development. Once the process of reengineering is applied to the library & information service activity, there will be far reaching effects on the publishing industry as well as the utility of librarians in other professions also. There will be a very clear shift from librarians to information analysts or Documentation experts with a very high degree of subject expertise.

The key areas that will be studied in this paper will be as follows

* Globalisation of information service
* Developments in information technology
* Rapid increase in publishing activity
* Information proliferation due to less restrictive writing atmosphere
* Increase in the publishers and their focus to provide books on current subject

The key feature of the paper is to define the information service in the modern context which helps to distinguish a service from a product

1.2 We have outlined above the existing scenario of the library & Information profession today, who have introduced computerization in parts or in increments at their service centers. Let us now understand the radical changes which can be introduced through the process of reengineering the activities of Information management. It has been identified that there are 5 stages for radical change for a process or activity. They are

* Recognizing the need for change - what's wrong?
* Developing a strategy for change - How to correct?
* Implementing change - Correction
* Consolidating change - Check
* Sustaining change - Maintain

1.3 Reengineering hence means a new beginning , its meaning is further clarified thus "Making a dramatic performance breakthrough by making radical change to the process as a whole bringing above improvements in performance such as cost, quality, service and speed". Information technology is an essential enabler to the process of reengineering.

2 INFORMATION TECHNOLOGY PROCESS

The Information Management Process today involves the following 4 activities or processes.

1. Author - creator of information
2. Publisher - Designer or packer of information
3. Library - Storage and dissemination of information
4. User(customer) - Assimilator of information and creator.

2.1 The library traditionally has dealt only with stage 3 of the information management process. Hence we can clearly identify that whatever be our improvements added to this field it is only going to be a small part only. Traditionally library and information professionals have managed the end product i.e. books - journals etc. and have never involved in the preparation of the product. But in view of the changing patterns of technology and the significant role played by telecommunications in shrinking the globe to communicate within minutes with one another across it, we have to rethink our options as professional handling information.

2.2 Reengineering means changing roles of people and tasks, a shift from activities to results. The four steps to reengineering are activate, analyse, annihilate and assimilate processes not tasks. Activate the process of reengineering by forming a methodology to change, formation of teams, identify core processes, select the mission.

Analyse : select the process and nail down the scope, set goals for new design.

Annihilate : This is the brain storming or the most creative exercise in the process of reengineering. One forgets about the existing process but thinks 'anew' about the processes as a whole in its entirity from start to finish. Building a prototype for change. Testing and retesting the same.

Assimilate : Assimilation of the existing prototype in the existing organisation, its impact and new processing.

Our profession due to various developments in technology has undergone continuous incremental change. As we are discussing the need to meet the challenges of the next millennium we have to now think of radical or discontinues change. A change which thinks inside out without building on existing system but something radical which can be called a revolutionary change. The thought is if today we want to think about our profession then how would we do so, on its own as existing today or a barrier free - library without walls.

We today deal only with the product of publishers i.e. books, journals etc. but not about the information industry as a whole; if we think about the genesis of information through the process and reaching the end user we have to analyse changes in all the 5 stages of the "product" called information in the context of modern technology and telecommunication.

Library and information professionals today are only looking at the finished book or journal but we now perceive that we should be involved in the creator and designer stages also. Books may soon be replaced by booklets due to the nature of repetitive information. Elaborate styles of writing currently existing need to be redirected to writing in a focused manner. Text books would be few and rich in content but issues would be discussed by way of case studies or individual experiences and comments which would be available as papers or booklets. With the advent of technology to

information management a radical change in writing techniques is forecast. As time is a critical element authors would like to publish at the earliest so as to ensure their creative rights.

3.1 The advent of technology is every aspect of human life has proved that one should rethink the options available today. When one thinks of applying the technological options to business problems it has been proved time and again that it just does not provide the full picture or a total solution. Reengineering processes or activities help in identifying numerous process which are streamlined, integrated and transform a process or activity and thence a profession also. The key areas of importance to be noted while reengineering are as follows : (see Fig 1... Levels of reengineering)

* Organize work around results not tasks
* Capture data only one time when its created
* Allow decision points here work is performed
* Incorporate controls into information processing
* Make people who use the process do the work
* Work in parallel instead of sequentially then integrate results.
* Treat geographically dispersed resources as one.

3.2 Process Life Cycle of Information Management : The creator of information is an author, who writes the paper, or book, which is then handed over for publishing, the publisher edits, typesets, packages and sells the information as a book, journal, monograph, conference proceedings etc. Once published the book or journal is available for purchase. Individuals, corporate offices and libraries procure them. The individual reads and preserves in a private collection, corporate offices purchase when the subject content is topical and later on it is on some unwanted heap. The libraries take care of the book journal etc. preserve them and library users (customers) read the books and make use of them.

3.3 The library today has used various methods and technologies to help it preserve and use the book, namely acquisition, classification, cataloguing, accessioning etc. These are treated as library technical activities and once the book is processed through library it is then ready for circulation to users. Let us now examine the task of acquiring the book in the library. Various methods are in vogue , 1. selection through recommendations, 2. through catalogues, 3. through vendors . Once the books are selected it goes through the acquisition process which is highly manual in its orientation , the library committee examines the selected books and finally makes the recommendations for purchase. The next procedure is of taking the sanctions for purchase, ordering, bill processing etc. Then the book is finally acquired after it is accessioned. Then it undergoes the period of technical processing that is the classification, indexing, cataloguing etc. Then it is physically prepared for circulation & then released. Many libraries have automated

the process of circulation with bar coding etc. but few or any have made any significant contribution in reducing the acquisition process time. Nearly in all libraries the books are always piled up in the technical processing rooms.

3.4 The book if published in a foreign country is available to our users nearly after 6-8 months at the earliest. At any given time the same book would be purchased by different libraries who individually would acquire & process it. In effect there is a tremendous amount of duplication or waste of professional man-hours. Also given current budget constraints no library can provide every book requested by the user. We next depend on the goodwill of other libraries and use the inter library loan method to fulfill user needs, which is limited geographically. The problem faced by highly specialized libraries hence becomes even more acute.

3.5 Computerization though has eased our operation considerably one cannot say that it has achieved any marked transformation in handling the information , as users continue to search their library , & those in the vicinity with outdated tools. As information or bibliographic data is not fully computerised the problems have not been resolved.

3.6 Figure 2 depicts the current process life cycle of information generation to assimilation. Since there is no interactive activity flow it is obvious that there is a lot of process repetition in Libraries all over the country & the world. Today in the context of internet , digitization of informationi s the key to reengineer the Information Management process.

3.7 What does digitization mean : Digitization means the availability of information in the machine readable or software form. Can tables charts maps drawings etc. be digitized? The answer is YES. With such advances in the information technology areas we have now been forced to think again in the new technology phase. Can information transcend national boundaries then again the answer is yes. The Internet is the proof of it.

3.8 When such rapid and immense changes have been going on around us with direct impact on our profession we are honor bound to rethink. Today we have three distinct technologies at our disposal & they are

1: Networking
2. Databases.

3. Desktop Tools. We are all already using these technologies in some way or other , but our objective is are we making the most of it? Sadly the answer is no! Because we have not changed our roles in the Information Management process. The time has now come to rengineer our activities to face the new challenges.

3.9 Fig 3 Reengineering Information Management sees library as an apex point who interact with authors , publishers, and users in turn and reengineer the Information Management life cycle. We will now break apart from the traditional molds set about our role in Information Management and think of radical changes . We will first examine the case of the author

An author writes and participates in information generation, the publisher publishes the same after the editorial board have agreed. Today all submissions are in the digitized form & the publishing world too has digitized & automated to a very large extent. In the new process the librarian involves herself in interfacing with the author & publisher, by reading the book , preparing an abstract, preparing subject key words etc., all with the consultation of the author. This would be done once and then once and for all the book is indexed. Compare it to today where every library acquires the book and each one of them indexes abstracts etc. Which is a duplication of efforts all over the world. Here there is one problem , though the Library & Information centers follow standardized procedures & norms all over the world , there are still certain major differences. What are they? Firstly there are 4-5 major classification schemes which are followed all over the world. In the modern reengineered context it hence becomes imperative to resolve this issue. We have to develop a tool for classification .

Tools to help the process of reengineering the Library & Information Centers

4.1 Developing a classification tool : the basic premise of classification is the breaking down of knowledge into similar meaning group called subjects. These subjects are linked with a specific classification number which are then used for retrieval of the book, and also to systematically replace it. Now how can one develop this tool ? We accept that the subject is the base unit of any classification scheme. So we first identify the subjects in the knowledge base & then assign the class numbers to it from all the major known classification schemes . This will give rise to a classification matrix which can be incorporated with the input software at the book publishing stage itself . Revisions etc. also would be treated in the same way. Thus this Classification Matrix along with the Subject Thesaurus will reside on the Database of the publisher. Whenever the key term is keyed in the data field, the screen will show the various classification numbers from different schemes. The Librarian of any Library will just have to click the scheme he or she uses.

Thus saving valuable time & energy of Librarians & also help in avoiding repetitive work. This is useful as an automatic classification tool.

The next tool to reengineer the Library & information Management centers is the preparation of a standard input database which can also be used by the Publishing Industry. In many existing library Software there is a

method to key in bibliographic information alongwith key words & abstract in a standard input file. In the reengineered environment we have to utilize this standard input format at the publishing stage itself instead of in Libraries. This would ensure that any published information is available in standard formats which have been perfected by the Library professionals , over & over again. By extending input format to the publishing input stage we are again saving valuable time by ensuring compatibility with Libraries the world over and information is input at one time only. This standard data input software format if used in the publishing stage would derive valuable use when we download information , based on key words or subject searches very easily. Also as it is in standard format our hits would be very accurate & search results excellent.

The next tool is the step of developing standard output formats for report generation & printing of catalog cards. Today all Library software packages have standardized data output format either on screen , or on catalogue cards, or as bibliographic lists. The same should be incorporated at the publishing stage itself, so that Libraries can down load catalogue data in the standard formats directly. Thus saving valuable working time of Librarians in each & every Library . As today every large library has a cataloguer whose sole responsibility is to get the output in standard catalog formats, on catalogues cards. With the above tool the only work that needs to be done is down loading & printing which can be handled by the clerks/ typists. Thus saving the professional's valuable time and freeing the Librarian to do more value added service to the users.

The development & management of the above tools will bring about radical change in Information Management . The changes will reduce duplication of work, stop repetitive tasks , release professional time , and have a very highly standardized & generic method of library operations. This in the long run will give rise to a total quality output.

4.2 With reference to the acquisition process described earlier, reengineering the whole process, will enable one to browse through the internet, for e;g; at site amazon.com. Here one can browse through the latest books available, one can read its abstract & scan the contents pages , see the cover page etc. and then make a decision to purchase. In Libraries the acquisition process is very long drawn out as there are too many intermediary interfaces, e.g. user, vendor, publisher etc. All these can be eliminated when authorized persons give their recommendations to Library to purchase the book after browsing them on the internet. That alone is not enough, lets imagine that the book is available in its entirety on the net , then purchasing becomes that much simpler. One has to ask for immediate billing & pay through a Credit Card Account which would enable the Librarian to download the book on the Local Library server. Thus cutting down the Purchase time to a maximum of 1 hour and also simultaneously overcoming delays caused by geographical

boundaries. Libraries may also order the hard copy of the book alternately which too could be sent in 1-2 weeks time. Apart from saving in time the above gives us information access which is current & available on the NET instantly. Check the next scene where the Library server is networked within a campus locally through a LAN, and geographically within the country through satellite networks . This would further reduce the research time of looking of books from other libraries. Inter library loan of books could be handled electronically, where the whole book can be electronically sent to the requester. The issue of Copywrite may come up with the publisher which too could be handled by numerous methods. Pay when you use or pay when you transmit etc. Thus reengineering library and information management if handled successfully would open up new avenues to the user , be it a single user or those affiliated to libraries, or corporates. The era of networking and digitisation is here to stay , the Library professionals should gear up to the challenges of Reengineering Information Management.

In conclusion there will be immense restructuring of the Library & information Professional as a whole. They would not only be considered the custodian of information as is done today but also as custodian of Quality & Timely information managers , who will have complete, standardized , cost effective, services to offer.

Though the discussions are futuristic and theorotical at this stage careful planning & implementing this process would involve saving in many tangible & intangible ways. Be it time, paper, transportation costs, Professional time, etc.

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HYPERTEXT: A TOOL FOR KNOWLEDGE ORGANIZATION IN DIGITAL LIBRARY

Manorama Srinath*

ABSTRAST

Provides an history of the origin of the concept of hypertext. Illustrates the steps involved in the creation of hypertext document and describes different types of authoring tools.

1 INTRODUCTION

Information managers describe libraries as being in transition. A few years back, with the advent of information technology, the library is defined as electronic library. Subsequently this concept was replaced by virtual library. Now the term digital library is used to depict the sophisticated modern library.

The fundamental functions of digital library are to create an integrated network of digital knowledge, that facilitates universal access of compound electronic documents which includes text, video, audio, images, graphics and animations.

Menu-driven commands or Boolean operators have become incapable of effective retrieval of information from the compound document. The complexity of the electronic format of the document changed the characteristics of the retrieval tools. The invention of hypertext technology has brought a revolutionary change in the organization of knowledge in the digital format. It's non-sequential reading and writing capabilities, facilitates retrieval of related and relevant information from a large database, on the basis of associated indexing.

The advantages and use of hypertext documents are numerous. The links or cross-reference facilitate the user to select any desired fragment of information in the database without bothering about searching the page or the index. The information can be organized in a logical manner by the use of appropriate links, which also prevents the user from being lost in the hyper space.

The effective search engine created in the hypertext document makes

* Professor, Department of Library & Information Science, University of Madras.

it suitable for various purpose such as teaching aid, self-learning material, touring guide, to link reference sources, to construct thesaurus, an evaluation tool, a planning device, decision aid, to analyze a system, to browse library, classify documents, medical reference document and manual of procedures. Thus the use of hypertext can be endless. The effectiveness of this retrieval engine has become more popular due to its usage as on-line and CD-ROM browser.

This article provides a brief history of the origin of the concept of hypertext. Then it illustrates the steps involved in the creation of hypertext document and explains the different types of authoring tools. This explanation is supported by various practical (projects) works carried out by the author of this article using these authoring tools. The works are created to serve as teaching aid and self-learning electronic documents.

A list of works is given below:

- Animal encyclopedia for children (in English)
- Animal encyclopedia for children (in Tamil)
- A teaching aid for colon classification and AACR II
- A manual for book and periodical acquisition
- A manual for anti-rabies vaccine
- A help manual for CDS/ISIS
- A website for the University of Madras
- A medical reference document for Siddha medicine using Microsoft Word.

All the above works have been explained in a brief manner in this article.

2 A BRIEF HISTORY OF THE ORIGIN OF THE CONCEPT

Vennevar Bush, the scientific advisor to the US president Roosevelt, had introduced the concept of Hypertext in 1945. He developed a system, which would provide access to a large collection of microfilm, with a in-built mechanism of linking two associated pieces of information. The invention was known as MEMEX, which was based on associative indexing and it would enable an user to retrieve information in a non-linear manner. Though Bush was regarded as the Founding Father of hypertext, Theodor Nelson, who developed a more advanced system than Memex in 1960 in USA, coined the word hypertext. That system was called as XANADU and it not only facilitated non-sequential reading and writing but it was a Hypermedia which linked texts along with graphics, video, audio and animations etc., Another landmark in this field was AUGUMENT, originated by Douglas Engelbert, which was developed in 1968 for a multiuser, network environment.

Since these inventions, a number of organizations started venturing in this field and developed hypertext systems for various purposes.

3 STRUCTURE OF HYPERTEXT

The major components of hypertext are 'Nodes' or fragments of

Information and links or cross-references, which links the information associatively. For creating this an user-friendly software which facilitates to browse the whole document in a non-linear manner is necessary. In other words, the software should enable an user to jump from a fragment of document to any desired part or page of the document by activating the links.

5 STAGES IN CREATING HYPERTEXT DOCUMENT

- Determining the purpose of creating a hypertext document
- Deciding the topic
- Collecting information
- Collecting the necessary pictures or illustrations
- Choosing the authoring tool
- Creating the document
- Identifying the links
- Highlighting the links
- Connecting the various nodes or information
- Creating more links which guide the user to browse the document without getting lost in the hyper-space
- Hypertext systems created by the author of this article and the students of the department of library & information science, under the guidance of the author.

5.1 A Guide to CDS/ISIS

A self-learning tool for CDS/ISIS was created by using a software called 'Hyperword'. This software is a word processor and works in DOS platform. The information can be typed by using this software like any other word processor and both linking and browsing facility is in-built in this software.

All the menus of CDS/ISIS were typed and the functions of each menu were explained. The user can choose the highlighted terms or links from the menus and if these links are activated the explanation for the menu will appear in the monitor. It is a user-friendly software and just by using the + and – keys, the user can nvigate through this electronic document. The limitation of this document is that it cannot be used for creating a database and it is only a self-learning tool for CDS/ISIS. Since it works in dos environment, pictures cannot be included in this.

5.2 A Teaching-Aid for Colon Classification

Hypertext Document can be created by writing programs in an application software such as FoxPro. A teaching aid for Colon Classification was designed by using FoxPro in Dos environment. The system was intended to explain the rules of CC (6th edn) for certificate students. The rules were explained with worked out examples.

5.3 A Self-Learning Tool for Animal Encyclopedia for Children

An animal encyclopedia for children was designed by writing programs in FoxPro, which works in Windows environment. Entire text was created by using appropriate commands.

This system consists of descriptions about each animal, which are supported by the pictures of animals. Number of links were provided in the text as well as at the bottom of each node, to facilitate the children to navigate through the system easily. It also includes test-yourself package, which facilitate to test the knowledge of the users after going through the system.

5.4 Website for the University of Madras

A system as designed to serve as a web site to the University of Madras. In INTERNET hypertext environment is usually created by using HTML (Hypertext Mark Up Language) which requires an authoring tool and a browsing or navigating software. The text is created by using Webpen and it is browsed with Nestscape Navigator. Since it works in Windows environment, pictures of the University and the photo of the vice-chancellor was included in the system. It was designed only on experimental basis and it has not been incorporated in INTERNET.

5.5 Animal Encyclopedia in Tamil

This system has been undertaken as a UGC major research project by the author of this article. First this system was designed by using Webpen as an experimental basis. The text was typed in a Tamil software and it was copied in Webpen and the pictures were incorporated. It proved to be successful.

But later an easy way of creating the document was found. A Tamil Script Bamini was copied in Microsoft Word and the hypertex document was created. Since the 'Word' facilitates to create hyperlink, designing the system was found very easy. The software enables to incorporate pictures also.

5.6 Hypertext System for Siddha Medicine

The above experiment facilitated creation of a hypertext system for Siddha medicine, which includes the symptoms of diseases and the Siddha treatment. Though the system was mainly created in English, the basic source for Siddha treatment is found in Tamil, hence it needs to include Tamil quotations whenever necessary. For this the Microsoft Word was founded very useful.

5.7 Expert Systems with Hypertext Facility

Expert systems and hypertext are complementary methodologies. Hypertext system can be extended by including expert system techniques, which enhances the retrieval of information.

5.8 Procedures of Acquisition Section

An expert system was developed which explains the procedures adopted in the acquisition section of university library. This package was developed by using VP expert system shell. The inference engine of the package combines hypertext and expert system facilities.

5.9 Preparation of Antirabies Vaccine

An expert system was designed, which was intended to be used as a self-learning tool for the choice of access point using AACR II rules. VP expert system shell was used to create this system.

This VP Expert system shell works in DOS platform and pictures cannot be included in this.

5.10 Other Authoring Tools

Apart from the above mentioned authoring tools, Power Point has a facility to create hypertext.

The most common language used to create hypertext document to be incorporated in INTERNET is JAVA program, which enables to create animations also.

6 CONCLUSIONS

The systems which have been explained above proves that hypertext is an effective tool for knowledge organization for various purposes. The success of the system depends on the links created. An user might get lost in the hyper-space while navigating in a huge data base. And it can be prevented by creating a number of appropriate links which guides an user to jump to the desired node from any point of the database. This requires a systematic mapping of the links before creating them.

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ROLE OF DIGITAL LIBRARIES IN THE ELECTRONIC INFORMATION ERA

P.Venkatramana*

ABSTRACT

Rapid advances in information processing, storage and communication technologies have revolutionized the role of worldwide libraries in disseminating information services to their users. Libraries are reconsolidating their positions, building digital collections, redesigning their services and information products to add value to their services in order to satisfy changing information needs of users. This paper gives brief description of digital library. It deals with the methods of building digital collections, use of digital libraries and the problems of digital libraries. It concludes with a brief description of the digital library projects initiated in different parts of the world.

1 INTRODUCTION

We are amidst an information explosion and information technology (IT) revolution leading to the emergence of electronic information era. Rapid advances in information processing, storage and communication technologies have revolutionized the role of worldwide libraries in disseminating information services to their users. As a result, libraries are facing new challenges, new competitors, new demands, new expectations and variety of information services from users tailored to their wants and needs. Libraries are reconsolidating their positions, redesigning their services, and information products, incorporating new technologies, upgrading information resources, training people, changing information objects, modes of communication and information delivery in order to add value to their services and to satisfy the changing information needs of user community.

Libraries provide information services that must fulfill the information needs of present and future library users. Traditional libraries are still handling largely printed materials that are expensive and bulky. Information seekers are no longer satisfied with only printed materials. They wanted to supplement the printed information with more dynamic electronic multimedia documents. The users' demands for information delivery in digital form at their desktop are increasing in recent times. In the present environment, where there is a

* Asstt. Librarian, School of Planning and Architecture, Hyderabad 500 028

wealth of information resources being published and transmitted through electronic media, libraries must take proactive measures to develop digital collections to cater for digital information needs of their users.

Recent developments in technological capabilities such as high resolution capture devices, dramatic increase of digital storage media, explosive growth of Internet and WWW, sophisticated search engines, fast processing power and reducing cost of computers, high bandwidth networks and increasing number of electronic publications make it possible for the establishment of digital libraries.

2 DEFINITION OF DIGITAL LIBRARY

The concept 'Digital Library' is a recent phenomenon. Different phrases such as electronic library, virtual library, library without walls and digital library have been used interchangeably to describe this broad concept. Digital library is the most current and widely accepted term, which is now used almost exclusively at conferences, online and in the literature. Cleveland has given the following working definition of digital library.

" Digital libraries are libraries with same purposes, functions, and goals as traditional libraries - collection development and management, subject analysis, index creation, provision of access, reference work, and preservation, A narrow focus on digital formats alone hides the extensive behind the scenes work that libraries do to develop and organize collections and to help users find information"

The institutions involved in the American Digital library federation came up with a similar notion of digital library [2].

"Digital libraries are organizations that provide the resources, including the specialized staff, to select, structure, offer intellectual access to, interpret, distribute, preserve the integrity of, and ensure the persistence over time of collections of digital works so that they are readily and economically available for use by a defined community or set of communities."

3 BUILDING DIGITAL COLLECTIONS

The success of a digital library depends largely on the nature, content and quality of its digital collections. The basic requirement in creating digital library will be the building of digital collections. The digital collections of information include various resources such as electronic journals, books, full text, CDROM databases etc. The benefits of information collections in digital form for preservation, access and managing large quantities of information have been recognized by both library professionals as well as users. There are essentially three methods of building digital collection.[2]

3.1 Digitization

The primary method of building digital collections is digitization.

Digitization means conversion of any fixed or analogue media - such as books, journal articles, photos, paintings, microforms - into electronic form through scanning, sampling or infact even rekeying [3]. It is the creation of digital collection of information with multimedia features and thus offering faster and easy access to large number of users. Promoting access to information resources is a major driving force for digitization of documents. Digitization provides solutions to traditional library problems such as conservation, preservation, storage space, multimedia documents and remote access to information collections.

3.2 Acquisition of original digital works created by publishers, agencies and scholars.

3.3 Access to external materials not held in-house by providing pointers to websites, other library collections and publishers' servers.

4 USE OF DIGITAL LIBRARIES

Digital libraries can store large volume of information in digital form for archival management. It provides users with immediate access to the rapidly growing information stored in digital form. It provides users fast access to multimedia information quickly and interactively through the integration of technologies. It offers remote access to expensive and special collections of information from many locations by many simultaneous users. Protection of old, rare and unique documents for posterity is an important function of any library. Paper deterioration and its consequences are a major threat to documents held in libraries. The damage caused by this is on a global scale. Surveys of European, North American archives and libraries suggest that at least 60% of the items stored in public archives be potentially subjected to endogenous damages. In the case of 20%, the damage is already evident or so imminent that the items can no longer be used and conservation measures will be needed to save them from their final destruction. This has been supported by reports from libraries and archives all over the world [4].

Many of the books published in the 19th century and in the first decade of the 20th century are exposed to destruction through acid components of paper. The digitization of those collections is the saving solution to fight against the acid paper decay [5].

According to Bunzel the goal of distributed digital library's (started in 1997) retrospective digitization is "to make research materials available in digital form, which on the one hand is urgently needed by researches and on the other hand is very rare, valuable or not easy to obtain in their traditional paper based form" [6].

Digital libraries offer new dimensions of easy access to their resources.

When information materials are in digital form and stored electronically on digital media, they can be used and re-used for any suitable purpose. They can be retrieved easily to answer an information enquiry used to create multimedia applications, or used for resource sharing in either a network environment or for electronic publishing on the Internet, or the World Wide Web. As long as the resources are in digital form regardless of weather they are still images, video or sound - and are on a web server, one can obtain this information almost instantly from any where in the world. The use of multimedia and the knowledge of the navigator permit the delivery of national and international information to users at their desktop. In this kind of environment, printed information sources such as books, journals, archival materials cannot meet a highly competitive technology. The digital information sources become essential [4]

According to Hulser [7] the key functions of digital library are

- To manage large amounts of digital contents of information
- To preserve unique collections through digitization
- To perform searches that are impractical manually
- To protect content owners' information
- To improve access to information
- To deal with data from multiple locations
- To enhance the distributed learning environment

5 PROBLEMS

Although digital libraries offer many advantages they are not free from certain problems. Digital libraries contain information collections predominantly in digital or electronic form. Electronic publications have some special problems of management as compared to printed documents. They include infrastructure, acceptability, access restrictions, readability, standardization, authentication, preservation, copyright, user interface etc. Important among these are:

5.1 Expensive

The major obstacle to digitization is that it is very expensive, especially to undertake alone in-house digitization. One estimate from the University of Michigan at Ann Arbor, the organization for JSTOR project puts the cost of digitization a single page at $ 2 to 6 U.S Dollars [3]. Price, based on his experience, says that certainly the provision of electronic publications to our users may have improved accessibility to information, but not saved money. Indeed, to provide them at all, we had to invest heavily in it, often stealing from our acquisition budgets.[8]

5.2 Copyright

Copyright has been called the single most vexing barrier to digital library development [3]. Copyright is the right that protects the owners creative work or ideas. Content owner's information whether in analogue or digital form has to be protected and financially compensated for use of their work and ideas. The ease with which digital objects can be copied, transmitted and used simultaneously poses a major problem to enforce copyright laws in digital libraries. Copyright law has been violated in digital environment due to lack of control over content access and reproduction of multiple copies of digital media.

5.3 Preservation

Another issue is preservation - keeping digital information in perpetuity. The digital storage media such as hard disks, tapes and floppy disks have a very short life span due to rapid technological obsolescence. The media used to store digital information become obsolete in anywhere from two to five years before they are replaced by better technologies[1].

6 DIGITAL LIBRARIES PROJECTS

The importance of digital libraries has been recognized by all nations of the world. Libraries in the advanced countries have already undertaken many digitization projects to establish national and local digital libraries. A few of the important digital library projects are discussed below:

6.1 Global Digital Library - Bibiliotheca Universalis

Bibiliotheca Universalis, A G-7 countries Global Information Society pilot project was launched in February 1995 in Brussels. The 7 funding partners mostly national libraries involved in the projects are :

Bibiliotheca National de France and Ministere et de la Communication (France, pilot), The National Diet Library (Japan, pilot),The Library of Congress (United States), The National Library of Canada (Canada), Discoteca de Stato (Italy), Die Deutche Bibliothek (German), The British Library (U.K.)

The main objective of Bibiliotheca Universalis is to provide access to the major works of the worlds scientific and cultural heritage digitized by libraries, to a vast public via multimedia technologies, hence fostering the exchange of knowledge and dialogue over national and international borders. Bibilotheca Universalis should strengthen the function of libraries and improve international availability of digitized resources. It will promote large digitization techniques, encourage the definition and adoption of global standards, and provide a practical framework for international co-operation. The aim is to exploit existing digitization programs in order to develop a large distributed virtual collection of knowledge and make it available via the global communication networks, enhancing the services to the end users. In this

way it is hoped to advance international cooperation towards the advancement of a global electronic library system [9]

6.2 The Netherlands Digital Library Projects

Koninklijke Bibliotheek (KB), the National Library of Netherlands and the University of Amsterdam setup a committee for Innovation in Scientific Information provision (IWI) to stimulate innovative developments in the information field. The first IWI study in 1995 explored the future (till the year 2000) for joint national efforts to develop a virtual Dutch Scientific library, and locally to develop digital libraries. IWI's strategic plan for 1996-1998, titled 'Action with Policy' was an important impetus to promote the innovation of scientific information supply and has led to many national and local digital library projects. In addition to projects supported by IWI, some Dutch academic libraries also participate in digital libraries funded by the European Union and European Commission's Telematics for Libraries [10]. In addition to the above, several other digital libraries projects were taken up in different nations of the world. Notable among them are given here:

- In Malaysia, plans for developing nation - wide digital library are being undertaken by special committee at the National Library of Malaysia. The committee comprises of representatives of librarians from different library sectors [11].
- In U.K., Follet report recommendations resulted in funding about 60 electronic library projects covering seven program areas of document delivery, access to networked resources, digitization, electronic journals, on -demand publishing, training and awareness and supporting studies [12].
- In U.S.A., National Science Foundation, Advanced Research projects and National Aeronautics and Space Administration sponsored the joint Digital Libraries Initiative in 1994 to explore the technical requirements for the future digital libraries. It funded digital library proposals from six universities [13].

  The digital library projects such as IBM Digital Library, The New Zealand Digital Library, The Networked Library of Thesis and Dissertations, The TULIP Study, Core Project, Library of Congress and many other projects were initiated towards establishment of digital libraries around the world.

7 CONCLUSION

In future, libraries, if they are to survive and succeed, have to change their role from store house of fixed printed materials to the digital libraries of dynamic electronic multimedia documents in order to satisfy the changing information needs of the users. The establishment of digital library is a complex task and does not happen easily and cheaply. It depends upon several factors such as organizations goal, value of timely information,

availability of necessary infrastructure and resources for conversion, economics of information conversion, demand from users, government policies, etc. Most of the digital library projects initiated in advanced countries were made possible through joint efforts and external funds. it clearly indicates that increased national and international support, collaboration and cooperation is essential for the development of digital libraries.

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DIGITAL LIBRARIES IN THE THIRD WORLD COUNTRIES: SOME OBSERVATIONS WITH SPECIAL REFERENCE TO INDIA

G. Devarajan*

ABSTRACT

Discusses the role of digital libraries in the present day information environment and new challenges and promises for library services expecially in the Third world countries like India. Also the study points out a number of problems as hurdles for the development of digitals, libraries in developing countries.

1 INTRODUCTION

The advent of information technology has paved the way for digital libraries. There are a number of terms used by authors to represent the concept of digital library as polyglot library, electronic library, desktop library,on-line library, library without walls, virtual library etc. of these, digital library is the commonly used terminology by majority of authors. Digital libraries are heterogeneous in nature. these include work related to information and how to digitise, store, find, link, visualise, use, public, manage and share information. Digital libraries provide instant access to digitised information by utilising the avenues of information technology. Today's electronic library based on digitised data is gradually replacing paper-based records and by means of networking one can have access to resources 24 hours a day. A major advance had been the document delivery service, which transmits by fax the full text of documents unavailable on-line. Unlike printed books, digital libraries are multimedial and data retreveble, can be brought under net-surfing in the sea of information and are aided by hypermedia and hypertext programmes and experimental experts systems.

The use of digital libraries was recognised quite early by the develop countries. But in India it is still at the conceptual level. The aim of this study is to bring out the role of digital libraries in the present day information environment and their new challenges and promises for librarians and library services especially in the Third world countries like India in the 21st century.

2 GENESIS AND DEVELOPMENT OF DIGITAL LIBRARIES

The origin and development of digital libraries are only three decades of

*Head, Department Library and Information Science, University of Kerala, Trivandrum 695034

age at the global scenario. Digital libraries are based on minicomputers and they provide basic services for remote access and online search and retrieval. In fact, they make use of techniques to share bibliographic records and link difference remote system. During 1990s there has been a revolution in digital library system. The technology available today made it possible to mix up media objects such a text, image, audio and video. Becauce the visual information systems are getting more popular libraries are becoming more and more graphical in nature. Hypertext technology helps linking references and also helps the information seeker to navigate in the sea of information.

Digital library is the outcome of information explosion. In 1970s libraries in the developed countries began to connect remote hosts to conduct on-line searches for commercial digital bibliographic databases. The invention of CD-ROM in 1980s was a turinig point in the digitisation of information. 1990s maked a prograssive move towards digitisation due to networking, electronic document delivery service, on-line services, electronics journals etc.

3 SEMINAR, CONFRERENCES AND PROJECTS

Relatively a less number of studies and conferences have been conducted in the various facets of digital libraries. "Library networks and electronic media: challenges for publishers and librarian". Bielfeld University, Germany 8-9 February , 94 was a remarkable conference conducted in the area of digital libraries. In this conference a paper presented by Heinisch brings out the virtual library functions, objects and services are offered in an artificially created, virtual environment. He has also emphasised the overall economics of such a system and way in which cyberlib could charge users for thus entering upon an open and measurable competition with other cyberlibs in order to create a calculable and transparent information market.[1] Another is the international seminar on "Information technologies and information services" organised at Shanghai, Chinese People's Republic, October, 20-24,1994. In this seminar a paper presented by Lee on Networked, Electronic and virtual library discusses the emergence of the networked electronic and virtual library in the USA with particular reference to OCLC[2]

A recent conference is the Libraries without walls" organised by the Centre for Research in Library and Information Management, Manchester Metropolitan university from 17-20 September 1997 at Lesvos.[3] A number of projects were launched abroad in the area of digital libraries. The MAGIC (Map and Geographic Information Centre of the Home Babbidge library) attached to the university of Connecticut is a major step in the development of virtual library.[4] A project entitled "Creating a virtual electronic library" by the University of Illinois Committee on Institutional Cooperation, USA is another project is to create a virtual electronic, develop the technological infrastructure required to provide seamless interconnections among arrange

of on-line systems and demonstrate its applications through users initiated interlibrary loans by the committee on institutional cooperation (CIC).[5] The virtual library project launched by the Emory University, Altanta with financial assistance to Luce Foundation for three years explored the ways and means of organisational, economic and educational as well as technological issues to be faced in developing and implementing the prototype of the virtual library.[6]

A notable one - "American memory" project of the Library of Congress aims to make a significant part of its American collections available on on-line by the end of the century, at an estimated cost of some $60,000,000.[7]

4 ATTEMPTS IN INDIA

Only in the second half of 1990s was the field of study recognised in India. In is worth mentioning here that the 15 the Annual convention and conference on Digital libraries was organised by the society for Information Science (New Delhi) at Bangalore form 18-20 Janurary 96. 31papers on various aspects of digital libraries such as

(i) Collecting, capturing, filtering digitised information
(iii) Cataloguing, indexing, processing
(iv) Networking systems and Electronic access
(v) Information professionals for digital informations system
(vi) Critical views on effects and achievements
(vii) Social, economical and psychological implications
(viii) Indian scenario, problem and prospects etc. were presented at the conference.[8]

The Indian Institute of Science, Bangalore which is considered a pioneer institute in India has established a Digital library. The digital library used the IBM's digital library software running on fast computers. The IISc producers about 1000 papers and around 200 doctoral theses every year. These documents are being made available through digital library. Journals are available in the digitised version. Information sources in CD-ROMs are also available in this digital library.

The efforts of digitisation of India petroleum industry and use of electronic communication for geoscientific data and information sources dates back to nineteen seventies.[9] Library and information units of Indian petroleum industry, especially the Oil and Natural Gas Commision have evoloed various specialised bibliographic database, on-line public access cataloues of holding and retrieval services. The efforts are in progress to cover full text of articles and other inhouse publications, imges, maps, graphics animation etc.

Other institutions which have taken initiative steps for the establishment of digital library are National Informatics Centre, All India Institute of Medical Sciences in New Delhi, National Institute of Mental Health and Neurosciences in Bangalore and NGR University.[10]

5 CHALLENGES AND PROMISES

The above observations points out that books and libraries are in transition and the library profession in India should undergo for inevitable changes in the 21st century. It is beyond doubt that the digital library concept offers almost unlimited opportunities to devise new and innovative services and the profession stands to gain immensely form the development of the virtual library.

Librarians should visualise their future and that of their libraries and information services in terms of merging of libraries with computer technology and telecommunications into a virtual library. In this respect the future librarians should have to become more active, harnessing the resources of the electronics world rather than simply learning about them. Also librarians must ask themselves how the routine ways to doing things might be done differently in the new context of work and in the present information environment. The arrival of INTERNET would compel librarians to learn a new range of skills in navigating in the sea of information.

6 PROBLEMS

The digitisation of information sources and ultimate result of developing digital library have strong arguments in favour of change from conventional documents to digital forms. Despite all the aforesaid advanteds of digitistion, whether the libraries in the Third world countries like India are maature enough for such an immediate transition?. In respect of modernisation of libraries the developing countries are years back when compared with libraries in the developed countries. Developing countries like India face a number of problems in materialising the concept of digital libraries. They are the following:

(i) The developed countries are the major producers of digitised information sources which lack coverage of literature produced from Third world countries
(ii) Fiscal allocation in libraries is not always in tune with the inflations
(iii) Imbalance between the manpower produced in library science schools and the manpower requirements in libraries
(iv) Lack of indegenous, efficient and effective library software packages
(v) Lack of information policy and information culture
(vi) Lack of information audit in libraries and information centres
(vii) Problems relating to the conversion of the existing manual data bases into computer-readable databases

The digitisation of information is inevitable and a "necessary evil" in the present day information world. The avenues of information technology help libraries in reducing the size of the library from big to small. The smallness of the library due to the digitisation of information will overcome a number of problems faced by the traditional libraries. But a total transformation of

libraries into digital libraries all of a sudden is not possible, feasible and not a wise decision in the case of libraries in third interrelated socio-economic and political factors. But we should not shut out eyes towards the fast developing technological changes in the information arena. Of course, the digital libraries revolutionised the traditional libraries by digitising and displaying into the computer monitor in the houses of users the information sources of the libraries. As a result of this in future it may not be necessary for a user to visit the library for information!

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DIGITAL LIBRARIES

N Ganga Dhara Reddy*

ABSTRACT

Definition of digital library and its aim to provide access to information 'on demand' regardless of the location of the computer where it is stored, is presented in this paper We also examine the differences between digital, electronic and virtual libraries, technologies for digital libraries, digital library projects and advantages of digital libraries

1 INTRODUCTION

At one time, a library was regarded as a store house and books were meant for preservation. Libraries tended to be passive and archival institutions. According to the Oxford English Dictionary, as early as 1374, the term library was employed in English to refer to a place where books kept for "reading, study or reference".

But now, with few exceptions libraries are regarded as service institutions. According to Ranganathan, a library is "a public institution or establishment charged with the care of a collection of books, the duty of making them accessible to those who require the use of them and the task of converting every person in its neighbourhood into a habitual library goer and reader of books. This is the concept a modern library.. In this definition, the term books refers to documents of different types such a printed, hand written and engraved materials, including books, periodical publications etc. and newer, medial such as films, film strips, video and audio cassettes. Most of us view the library as a place where such information 'containers' are required, organised, shelved and retrieved. More recently, many libraries (and information centres) have begun to use on-line database search systems like DIALOG and connections to the On-line Public Access Catalogues (OPACs) of other libraries, over telecommunication networks. Many libraries have also taken advantage of CD-ROM technology to provide users network access to large information bases. With such remote information access, the walls of the library began to be less solid.

The way we view information sources is changing due to the emergence

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of global computer networks. Personal computers are now usually part of a network of computers and often part of a network of networks, spanning the globe. Until recently, computers and computer scientists, researchers and hobbyists. For most of the others they were out of reach, both economically and practically. Now, computers are less expensive and inter-connectivity is much more widespread. People are becoming more computer literate, and systems are becoming simpler and more accessible. This is happening in India also and is changing the way we communicate and think about information and libraries.

The Internet and the world wide web (WWW) technologies are providing the technological environment and intellectual impetus for the development of 'digital libraries' - libraries without walls, with contains less data and ideas. The Internet has enabled global connectivity of computers and the development of various tools and techniques for networked information provision and access. Starting with basic tools like e-mail (massaging), ftp (file transfer) and telnet (remote login), the internet has progressed to provide user friendly tools like Gopher, WAIS and the WWW for information publishing and access. The WWW, which is integrating all other access tools, also provides a very convenient means for publishing and accessing multi media, hypertext linked documents stored in computers spread across the world, using text coding standards such as HTML and SGML. These tools have been used for providing access to a variety of information sources and services, including electronic journals and news letters, tables of contents, pre-prints, technical reports, software and data archives, library catalogue, discussion forums, reference sources, course ware, directories etc., Given the situation where most of the researchers have desk top computers that are connected to the Internet (via institutional LANs), they can very quickly start accessing and publishing information on the Internet.

2 WHAT ARE DIGITAL LIBRARIES

Digital libraries is an evolving area of research, development and application and multiple definitions have been offered by workers in this area. Based on common aspects among these definitions, digital libraries may be defined as electronic information collections containing large and diverse repositories of digital objects, which can be accessed by a large number of geographically distributed users. Such repositories would exist in locations physically near or remote from the users. Digital objects include text, images, maps, sounds, videos, catalogues and indices, and scientific, business and government data sets as well as hypertextual multimedia compositions of such elements.

Operationally therefore, digital libraries will be network based distributed systems with individual servers responsible for maintaining local collections of digital documents ranging from sets of electronics text to video-on-demand services. From the user's point of view, however, there should appear to be

single digital library system, integrating personal information, work group and organisational information collections and public digital libraries. Any given digital library system should therefore provide a coherent, consistent view of as many of these repositories as possible and allow users to seamlessly connect and interact with information with no geographic location or time.

There is also general acceptance of the fact that digital libraries would need to span both print and digital materials. For the foreseeable future print on paper publications are expected to be around and thus digital libraries are expected to provide integrated coherent access to both types of materials. Key components of digitals libraries, are therefore:

* Geographically distributed digital information collections
* Geographically distributed users
* Information represented by a variety of digital objects
* Large and diverse collections
*' Seamless access'

3 DIFFERENCES BETWEEN DIGITAL, ELECTRONICS AND VIRTUAL LIBRARIES

A source of confusion in this has been the use of terminologies like 'virtual' digital' and 'electronic' libraries. One person's digital library is often another's 'virtual library'. some useful distinctions have recently been made:

Electronics library : A library that provides collections and/or services in electronic form, for example, optical video disk (which is not digital), CD-ROM, on-line, etc.

Digital library : A library that provides collections and/or services in digital form.

Virtual library : A library that does not physically exist, most often used to denote a library with distributed collections or services that appear and act as one. Typical example is a Web Site with pointers and like to other sites.

From the above it may be seen that an electronic library is more inclusive than a digital library. However, digital library has come to be the preferred term, perhaps keeping in line with terms like digital audio and digital video. The current usage of the term 'digital library' appears to encompass both electronic and virtual libraries.

4 DIGITAL LIBRARY PROJECTS

Since the past couple of years the idea of 'digital library' has moved to the refront of discussions and research. Several digital library projects are currently nderway in USA, Europe, Australia, New Zealand and Singapore.

Impetus for digital libraries development has come from two major initiatives taken in the USA. first was the joint initiative of the National

Science Foundation (N S F), Department of Defence Advanced Research Projects Agency (ARPA), and the National Aeronautics and Space Administration (N A S A) in 1994, to found several digital library development project for a period of four years, mostly among academic institutions. The second was the signing of the National Digital Library Federation Agreement in May, 1995, led by the Library of Congress and 14 other research libraries. the purpose was to bring together from across the national and beyond—digitized materials that will be made available to students, scholars and citizens everywhere". the focus of the NSF/ARPA/NASA initiative was a dramatically advanced the means to collect, store, and organise information in digital forms, and make if available for searching, retrieval, and processing via communication networks. Some of the projects funded under this initiative include the following:

*Illinois DL Project (Univ. of Illinois, Urbana Champaign): Goal is to provide comprehensive search and display of complete contents of articles from science and engineering journals.

*Alexandria DL projects (Univ. of California, Santa Barbara) : Goal is to provide access to variety of spatial information (digitised maps, images, air photos, and other graphical information relating to the countries of Santa Barbara, Venture and Los Angeles).

*Standard DL project: Goal is to develop technologies for a single, integrated and 'universal' library, composed from a large number of heterogeneous repositories.

Since then several similar projects have been launched in Europe and other countries.

4.1 NCSTRL-An Example Digital Library:

Let us take a look at one of the operational digital libraries. This is the Networked Computer Science Technical Report Library (NCSTRL), NCSTRL provides unidied access to catalogue records and complete documents to computer science technical reports stored in distributed servers around the world, through the WWW. It is a direct descendent of two earlier systems, WATERS, (Wide Area Technical Report Service), sponsored by the National Science Foundation (NSF) and Dienst CSTR (Computer Science Technical Reports) Projects sponsored by the Department of Defences' ARPA. WATERS and Dienst have been operations since the middle of 1993. NCSTRL, put into operation in November, 1995, combines the best of both the projects. Participation in NCSTRL is open to all academic department awarding Ph.Ds in computer Science/ engineering and to research facilities of industry and government. Currently over 200 department around the world are participating. NCSTRL can be accessed free of cost on the Internet using any www browser (http://www.ncstrl.org).

4.2 Technologies for digital libraries :

Digital libraries are considered by many to be a very challenging research area, as it requires development and integration of several highly sophisticated hardware and software technologies, and polling together of multi-disciplinary expertise. While many of the technologies required for the development and deployment of digital libraries and their access are available today, their performance needs to be sealed up upto handle very large digital collections in networked environment. It is expected that several digital library projects currently underway will result in technologies that may be used readily to develop new digital libraries.

Some of the major areas of focus are:

* Multimedia object storage, retrieval and transmission.
* Data Compression
* Digitisation (multimedia data capturing and conversion)
* Hypermedia navigation
* Authoring tools for creating electronic documents
* Multimedia object representation (e.g. HTML, SGML)
* Meta databases
* Display technologies
* User interfaces
* Search, retrieval and routing software

4.3 Issues in Digital Libraries :

Work in the area of digital libraries has thrown up several issues and challenges. Key issues include the following:

*Copyright:: It is very easy to copy, replicate, massage and distribute digital information. Enforcing copyright in digital environment is a major issue.

*Technological obsolescence: Hardware: The major risk to digital object is not physical deterioration, but technological obsolescence of the devices to read them. (Solutions Reasonable refreshing schedule and use of widely marketed devices rather then special purpose devices.)

Software: A more serious problem is software obsolescence. (Solution— Libraries should rely on standards like MACR and SGML, which are expected to exist in the forceable future.)

*Imagev/s ASCII: Some materials in digital libraries are available as images, and others as ASCII. In some cases these distinctions are inherent eg. a photograph collection is always going to be images and an OPAC is nearly always ASCII. In other cases, e.g. printed books and journals, both formats are possible.

*Interworking : Another key issue is that of interworking of different digital libraries. Given the distribution of library resources around the world, no one expects that there would be a single digital resource. This means that we need methods for finding either individual items or collections in different

places, and assembling virtual collections that users can search or browse.
*Pricing in the digital environment: Pricing of information in the digital world is going to be very complex. Ownership is expected to give way to licensing, pay per use, etc.
*Preservation of electronic information:: Archiving and preservation of electronic information may be one of the most challenging of all tasks we have to solve over the coming two decades. Instead of having shops that sell rare books, we may have shops that sell rare Post Script interpreters. Libraries may have a role to play here considering their traditional responsibility to keep things for a long tome and to be able to make them available for use.

4.4 Advantages of digital libraries

Some of the key advantages digital libraries provide are as follows-
*Ability to search: The ability to search provides an enormous advantage to electronic materials when an ASCII version is available. On- line searching has for some years been replacing printed abstract journals. Since most current material is now produced via computers, it can generally be provided in ASCII from and be searched.
*Ubiquity: Another key advantage is ubiquity—a single electronic copy can be accessed from a great many locations, by many simultaneous users.
*Support wider range of material : Digital storage also permits libraries to expand the range of material they can provide to their users. Digital material can also permit access to video tapes and new kinds of multi-media materials that are created only on computers and have no equivalent in any traditional format.
*Preservation: Another major advantage is preservation. Digital information can be copied without error. As a result, preservation in a digital world does not depend on having a permanent object and keeping it under guard, but on the ability to make multiple copies, assuming that at least one will survive.
*Access current information:: For researchers, digital libraries provide access to up to date current literature and thereby help them to be aware of current trends.

5 CONCLUSION

Digital libraries are expected to bring about significant improvements over current modes of information publishing and access methods. Educators, researchers and students across the world will be among the first to benefit from digital libraries, particularly those in developing countries.

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33
KNOWLEDGE NEEDS TO SURVIVE : DIGITIZATION OF RARE COLLECTIONS IN ACADEMIC LIBRARIES

Chandrakant Pharande*

ABSTRACT

Concept of libraries has changed altogether due to advent of technology. As per Lancaster's prediction "concept of paperless libraries" is coming into reality. Information explosion taken place due to massive production of literature, leaves no substitute but to use computers. Information technology has acquired tremendous value.

In the light of this change, how the concept of libraries has changed altogather, has been shown in this paper. The paper tries to throw light on the need of converting knowledge in rare collections into machine readable form. Which naturally happens to be a suitable solution for preservation of such knowledge for the posterity.

The present paper, to some extent, happens to be a case study of rare collection of the Jayakar Library. This library has acquired a name in the field of academics as well as in research field, due to its potential. And rare collection happens to be a vital part of this potential besides current literature.

1 PROLOGUE

Academic libraries in India, now, are on the threshold of change. Union government has come out with policies and programmes, due to which it is possible that tomorrows libraries have altogether different shape and set up.

But new shape and set up of libraries, probably would not like to loose traditional knowledge with them, which is embedded in rare collections. Number of problems are cropping up in the way of their survival. Highly technical and sophisticated treatments have been invented by the conservators of these collections. They may help to strengthen them and try to elongate their life to some extent. But with all that there is no possibility of permanent survival. Equially nature, laws also does not permit it.

Despite all the care bestowed on these manuscripts the documents are going to perish. But are we in a position to lose the knowledge that is contained in it? Certainly not! The means of preserving them is digitization and scanning. In U. S. and Europe, some libraries have overcome this embarrassing

* Asstt. Librarian (Section Grade), Jayakar Library, University of Pune, Pune-411007

situation. Practical guides and manuals like "Practical Digitial Libraries: Books, Bytes and Bucks", by Michael Lesk (1997), gives step by step tips to undertake the job of coverion so such rare manuscripts into digitization.

The present paper initially tries to visualise, what is there with Jayakar Library that is worthy of being converted into digital and scanned form. Their value, importance and commercial viability etc. are taken into account, while selecting the rare collection for the Project.

2 MANUSCRIPTS

Jayakar Library possess more than 4500 manuscripts in Sanskrit, Hindi and Marathi. Five respresentative examples have been given below to show the nature of these manuscripts and their content.

2.1 Pandavpratap

By Sridhara, carries Acc. No. 266 in the accession register. There are 48 to 55 Adhyaya available in this manuscripts . The manuscripts is incomplete but good in a condition. There are 73 folio's. The year of writing or compilation is not given. The special feature of it is that, it has marvelous colour pictures denoting the episodes in Mahabharata.

Scanning of the text instead of digitization has been proposed, with which colour pictures can be reproduced.

2.2 Samajyoti

It's author is unknown and it carries Acc. No. 2162. The speciality of the text is that it has Mantranukramanika, i.e. every verse begins with mantra. Written on Paper in devrnagari script, spread over in 8 folios. Complete and dated as samvat 1650 (1593 A. D.). This happens to be the oldest manuscripts in the collection of Jayakar Library.

This can be transformed in digital form. It is proposed to put it on multimedia, with which echo of Mantrochara will add to the glory of the digitised text.

2.3 Bhagavadgita: Gita Kasmiri

Its Acc. No. is 3, complete in nature, written on paper in devnagari script, good in condition, spread over in 179 pages. Colour pictures are there to denote the various episodes in Bhagavat.

Scanning of the text is proposed in order to catch the beautiful pictures of Krishnalila, alongwith the text.

2.4 Saptasati Devimahatmaya

This is accessioned under 696 number and equally known as Markandeyapurana. Written on paper in devanagari, spread over in 136 pages but incomplete and poor in condition. Attractive paintings can be said to be its special feature. Scanning of the manuscript is proposed, as well as search for the missing pages also is in consideration.

2.5 Panchikarana and others

This carries Acc. No. 71 in collection, written on paper in modi script. The text of the manuscript is in 18 pages, complete in nature and dated as Sake 1813 (1891 A. D.)

Earlier modi was prevalent as writing script, which can be said as cult of devanagari. Now the script is not in use and hence it is necessary to preserve it by way of digitization.

These are the five examples cited here to give the idea of the types of manuscript holdings. There are hundreds of such types, which are needed to be preserved, otherwise the knowledge embedded in them, will perish in course of time.

Digitization simply may not satisfy the purpose of preservation fully. As indicated in above cited examples, numbers, pictures, colourplates, decorative borders, etc. are there. Naturally in order to reproduced them, scanning of the images of the text and pictures, could be a viable solution.

Manuscripts are the graphic expressions of the talented people of the past. They are the treasure of knowledge. Eminent scientists of present time have understood the importance of them. Dr. Raghunath Mashelkar, Director General of CSIR, quotes in his presidential address at Hyderabad, on occassion of fifth international Marathi conference. "Our old literature in a form manuscript , has tremendons treasure of knowledge. We are proud in saying that we possess it, but what we are having is not indexed properly by us. Neither we have organised it properly nor we are preserving it properly. Today, like Information Technology revoliutionised in the concept of knowledge storage and dissemination. We have to seek help of it and see that our ancient glorious past, available in the form of manuscript, sustain and survive.

In tune with the thoughts of Dr. Mashelkar and in order to fulfil the mandatory duty of a librarian, project of digitaition and scanning of manuscripts literature is under consideration.

3 ATLAS

This is another significant collection, which needs to be preserved. Jayakar library has more than 500 geological and geographical maps. These have been drawn by Survey of India, Dehradun, during British Times (1930 and earlier).

Most of them are paper maps mounted on thin cloth and wound around wooden rod. Some are simple paper maps and folded for the sake of convencence. Due to folding, they have become weak at the folds. Temporarily paper strips have been pasted at the fold to strengthen them.

Maps always carriy lines, countours, etc. In order to cover and depict wider area of country or nation, it is always odd in size. Some have elevations to show heights and ditches to show depths. Those are fixed on a wooden

frame and fixed on a wall.

Since digitaiztion is not advisible in case of maps, scanning is proposed. How to scan the entire map and store it in computer and how to retrieve it meaningfully for the purpose of consultation, will be decided by seeking help of the computer experts.

While visualising the map on the monitor of the computer, entire image of the map may not appear at a time for want of size of map and that of monitor. Perhaps piecemeal approach is needed to be taken for the viewing purpose.

4 BACK VOLOUMES OF PERIODICALS

Most of recent knowledge appears in the periodicals. It may be due to its periodicity and dedication of publisher to a particular discipline of knowledge. Naturally all the scholars and learned people try to put and publish their views through periodicals. This quality of carrying new emerged knowledge through periodicals, gives them the status of important document. So far as the libraries are concerned, periodicals are the major budget consuming head, for a library.

Now the trend has changed. The periodicals are produced on machine-readable form. This has enhancethe speed with which tthey can be transmitted to distant places through networks.

Some publishers have taken care to go retrospectively bring out CD-ROMS of the back volumes. Some have started straight way subscription through CD's and exchanges the latest with the earlier. This is regular feature, so far as science and foreign periodicals are concerned.

There are some manuscripts which are not published any more. These manuscripts however are still in demand in the academic community. Following list of the old periodicals can be a testimony of their popularity, during their times. Information content in them still holds its importance and that's why, they need to survive in order to impart knowledge in them to the postarity. These are published prior to year 1900 and established their reputation in the concerned area. They have been transformed into microform. Now it is necessary to decide whether to trasform them in the machine readable form.

(i) Aitihasik lekhsangrah-1897-1900
(ii) Pandit-1866-84
(iii) Parshu-1857
(iv) Rajhans-1882
(v) Prabhakar-1849
(vi) Balbodh-1881-1916
(vii) Balsumitra-1884
(viii) Manoranjan-1897-98
(ix) Maharashtra kavi-1825-29

(x) Vivid-dyanvistar-1870-1900
(xi) Shilpakala sangrah-1877
(xii) Sadharmadeep-1879-80
(xiii) Sanskrit chandrika-1899-1902
(xiv) Suvichar sangam-1898
(xv) Dyan prakash-1855-60 (xvi) Dyan prasarak-1851-56
(xvii) Dyan sangrah-1872-73

The original back volumes have become brittle due to ageing. Secondly they turned into yellow due acid content in the paper. At the stage of the microfilming the binding of the back issues has been removed. Now they are not in a position to to be rebound.

Micoform media has lost its importance on large scale, due to inception of machine-readable technology. Now the time has come to decide whether to convert this microform digital one, and if so, what will be the "Modus Operandi". This of course will be decided by consultation with experts in the both fields.

5 RARE BOOKS AND MARATHI INCUNABULA

There are noteworthy rare books in the Jayakar Libarary, specially those in Marathi, numbering around 125 have been separately catalogued in a booklet form in 1989. This catalogue has been compiled by Dr. S. G. Mahajan, former librarian of the Jayakar Libarary. Present author helped him in preparing press copy.

Press and Registration act was not in practice until 1867 in British India. Prior to that due to generous attitude of British Government towards education, native social reformist and thinkers along with some noble English men, produced books in Marathi language.

These books are mostly related to religious poetry, social reformation, grammer, Algebra, Geometry, Chemistry and dictionaries, etc. The entries are annotated and most of the books printed in lithography. Books written by Marathi authors mostly carries year of publication either in Sake or Vikram Samvat. Copies of the book produced limited in number and naturally available with very few libraries and individuals. The contents are useful for comparative study and to the scholars studying historical development of the society.

Paper has equally become brittle and yellowish due to ageing. Catalogue of Marathi incunabula proved to indispensible to the scholars. The only hindrance in a way is that brittleness does not allow scholars to handle the books freely. Naturally, dititization of this collection would prove to be a boon to the scholars of old literature. Simultaneously there is no possiblity of reprinting these books, due to limited number of users. Commercially also, it is not advisible to go for reprints. Digitization would be a perfect cost effective solution in their reproduction.

The above cited four types of collections, could be a common phenomenon with most of the academic libraries, specially those having standing of more than 50 years in the field. Those having generous donation collection, necessarily must be having these types of collections with them. They may be facing same problem of preservation, conservation, unlike Jayakar library.

Based on the experience of Jayakar library, such academic libraries may prepare a plan to digitise and scan the literature, which is likely to decay with time, for want of reproduction.

Knowledge embeded in the form of manuscripts, atlas, back volumes of periodicals and in rare books, needs to see the light of tomorrow. In their present form they may not remain worthy of use. Since the knowledge needs to survive, digitization and scanning of literature is the only remedy to it and equally need of the time also.

6 EPILOGUE

The literature embedded in all these forms, is really worth to preserving. It is cultural heritage of mankind. If the timely attention is not paid to them, it is going to perish. Fortunately the new medium like computers has come to help. The problem of survival of such noteworthy collections can be very well be sorted out by transforming the text into digital form.

The present author is preparing a proposal for the "Major Research Project" to submit to UGC. Under this project identification of such collection and a job of transforming such collection into digital form has been envisaged.

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DIGITAL LIBRARIES: A NEW PROFESSIONAL ROLE OF LIBRARIANS

P. Kamaiah*
P. Rajarathnam Chetty**

1 INTRODUCTION

History has repeatedly shown that a new technology or medium completely displaces another. Instead, new balances are achieved in which the strengths of competing technologies are employed to their best advantage. The same will happen with print and electronc sources. The computer technology and especially networking systems has had an impact on every aspect of the traditional organisation. At present information is not only recorded items of knowledge, it is also the digitized bits of information that could be moved through computers and telephone lines to wherever it is needed.

The evaluation of digital libraries posses new challenges to the librarians and information scientists. They have to concentrate on the client expectations, electronic and print information, new skill development and standard hardware. Moreover they should be more conscious about paradigm shifts from paper to electronic, national to global monopolistic to more competitive.

2 CONCEPT AND DEFINITION OF DIGITAL LIBRARIES

There are almost has many definitions of digital library as there are projects using the term. The Association of Research Libraries (ARL) in *Definitions and Purposes of a Digital Library* has defined a digital library as having these qualities:

1. The digital library is not a single entity.
2. The digital library requires technology to link the resources of many.
3. The linkages between the many digital libraries and information services are transparent to the enduser.

* Professor, Dept. of Library and Information Science, S. K. University, Anantapur-515003
** Asst. Professor, Dept. of Library and Information Science, S. K. University, Anantapur-515003

4. Universal access to digital libraries and information services is a goal.
5. Digital library collections are not limited to document surrogates: they extend to digital artifacts that cannot be represented or distributed in printed formats.

3 FROM TRADITIONAL TO DIGITL LIBRARIES

There are phenomenal changes that the information technology has brought in the process of collection, storage and distribution of information, particularly with the rise of digital libraries. Since it is not possible to deal with the impact of digital libraries on the role of librarians relating to various types, the present article seeks to limit itself to university libraries only. As part of the information systems the university libraries have to cater to the needs of students, research scholars, faculty members and other members of the management. The information explosion, computer technology and the development of telecommunications had a great impact on the acquisition, organization and dissemination of information. No longer the library is a central place where the users come and utilize the information. The university libraries, however, big, cannot meet the new challenges unless the university librarians understand and assimilate the new techniques of information technology.

In the past, the system for information transfer had these components in the university libraries. The library has been a place for centrally stored information. Scholars coming to information on a wide range of information subject were housed under one institutional roof. The production of information was not so heavy as to apply the new technologies for exhaustive, expeditious and pin pointed provision of information. Now due to prodigious growth in the production of documents, ever growing specialization in the various fields of universe of knowledge, made the traditional libraries break slowly their grip over the users.

4 FACTORS THAT NECESSITATE THE DIGITAL LIBRARIES

Digital Libraries in the developed world proved to be a panacea for the ills in the information transfer. There are various factors that cogently explain the need for digital Librries.

4.1 Exponential Growth of Scientific Information

Most branches of science show an exponential growth of about 4-8% annually, with a doubling period of 10 to 15 years. As an illustration of this trend, Chemical Abstracts took 31 years (1907 to 1937) to publish its first one million abstracts; the second million took 18 years; the most recent million took only 1.75 years. Thus, more articles on Chemistry have been published in the past 2 years than throughout history before 1900. This high output of information calls for improved techniques in processing and distribution of information. Further, as the body of knowledge grows, fields

of expertise evolve into ever narrower slices. The inexorable specialization of scholars means that even established universities cannot maintain coverage of all subject areas.

4.2 Specialization in Various Factors of Knowledge

The specialization of knowledge results in growth of research scholars. This creates certain economic and organization problems. Economically we cannot offer such a large number of scholars a large number of documents. Many specialized scholars find fewer colleagues on their own campus for purposes of complementary work. Scholarly interaction in this situation takes place among geographically distributed scholars with similar interest. Electronic communications create new electronic scholarly communities. Due to the specialization in various facets of knowledge, the advantage of physical proximity of scholars in universities declines.

4.3 Storage of Infomation

As comprehensive library collections become unaffordable, electronic alternatives have become powerful in their storage capacity. Universities are gradually shifting from investment in the physical presence of information to the creation of electronic access, for example, E-Mail and Internet. Thus, the role of university libraries as the repository of specialized information will loose its currency in due course of time.

4.4 Transmission of Information

It is hard to imagine that the present low-tech lecturer system will survive. Student teacher interaction is already under crisis as a result of the gap between basic teaching and specialized research. The tools for alternatives could be video servers with stored lectures by outstanding scholars. Electronic access to interactive reading materials. Hypertext books, computer conferencing. Electronic distance education will become available for wide range of educational instruction through broadcast, cable online and satellite technologies. Such forms of instruction satisfy the needs of motivated students with full time jobs, family obligations, limited mobility, isolated locations and needs for specialized courses. Such efforts at cost reducation are not likely to be welcomed by the beneficiaries of low-tech teaching, the university faculty which resist effective and even updated knowledge in the form of magnetic and optical sources of information.

All the aforesaid factors will reinforce the importance of Digital Libriries.

5. THE DIGITAL REVOLUTION AND THE NEW PROFESSIONAL ROLE OF LIBRARIANS

These critical issues call for an enhanced use of digital libraries in the service of information transfer. The digital world demands multiple literacies. The challenge is more than computer litercy. It is information literacy. There is growing demand for employees with computer technology skills. But these

are not necessarily information technology skills. Now the situation calls for new professional role of librarians to develop computer programming abilities to learn software package skills that help in information storage and retrieval in libraries, especially in digital libraries that are going to play a predominant role in information storage and retrieval of information. It is necessary that they should have knowledge of application programmes like CDS/ISIS, LIBSYS etc. Also they should have awarness about the operation of Internet and offering of E-Mail facilities to the new generation of information seekers who need immediate feedback for their information requirements.

5.1 Alternatives to Hierarchy

Information technology has begun to revolutionize the organizational design by providing alternatives to hierarchy. Electronic Mail, Electronic Bulletin Boards, Shared Files and other similar systems which allow information transfer without the typical channels of hierarchy break down rigid organizational structures. This calls for a new orientation in the management philosophy of library managers which involves more participative, democratized style of management and decentralization of tasks in the library, based on the skills an individual possess rather than on the merits of their status in the hierarchy.

5.2 Quick Feedback to Users of the Library

In todays environment clientele are responsive and insistent expecting feedback as quickly as they can. Significant growth in the use of the Internet to share and gather information has occurred. Recently, expert systems and artificial intelligence are fast encroaching upon the information retrieval systems. The networks are gaining importance for global exchange of information. Unless the librarians play an effective and efficient role in understanding and assimilating the ever fluctuating technological changing in the information transfer, it is not possible for them to be responsible professionals.

5.3 Impact of Technology

The present situation underlines the need to improve technical skills or else suffer professional progress. Workers without technology are relegated to the traditional hierarchy whereas those with technology will have an access to the changing style of decision making.

5.4 Impact on Recruitment, Career Planning and Growth

Establishment of digital libraries and their related technology will have an impact on recruitment, career planning and growth, social status and quality of work life. The key role of librarians in this context is to be convergent with the present techniques of information processing and retrieval and to be diligent to acquire the required skills as and when called for by the

profession in order not to become out dated entities in the profession.

5.5 Impact of Training Facilities

In order to create job satisfaction, improve motivation and inculcate high morale, it is necessary that the professionals should be liberally provided necessary training to exploit the new technology. For this the library managers should prevail upon the authorities impress upon them the need for trained personnel and encourage the professionals to update their abilities through the training facilities offered by University Grants Commission and other library associations and also agencies like NISSAT.

6 CONCLUSION

Unless the professionals develop keen awareness to changing environment and improve their skills and adapt themselves to the new trend, it may not be possible for them to be effective and efficient professionals of the future. Let us conclude with the literary quote of William Shakespeare which is literally true in the present context:

There is tide in the affairs of men,
which taken at the flood, leads to fortune:
On such full sea we are now afloat,
And we must take the current when it serves,
Or lose our ventures.

Shakespeare: Julius Caesar, IV, iii

Finally we are in such information crisis and it is with us either we move with the current or lose our ventures which depend on the key role that we play.

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IMPACT OF DIGITAL LIBRARIES ON INFORMATION TRANSFER

P. Anuradha*

ABSTRACT

This paper presents the growing user needs and the change of user character for access to information. It explains the concept of digital libraries and their nature, functions and environment. It highlights the digital library products and systems with an illustration of "New branches of the Information Technology Tree". It also overviews the electronic information sources. It explains the importance of CD-ROM's in digital libraries. It highlights, the impact of digital libraries on information transfer and also identifies its limitations.

1 INTRODUCTION

It is an observed fact that when the collection grows beyond a certain size, or the users increase in number and range of interest beyond a certain degree, there seems to be a sudden change in the character of the library and of its service. The larger mass of material makes it hard for the user to find what he wants and hard for the librarian to keep track of the material and the larger number of users and their wider variety of interests decrease the personal contact between librarian and the user. Digital libraries emerged in order to overcome these problems. These libraries have significantly changed the way in which a library stores the information or library users access information. The convenience, ease of use and greater degree of control these libraries offer made them conspicuous in the process of information storage and retrieval. They also offered librarians and users search flexibility.

2 WHAT ARE DIGITAL LIBRARIES?

A popular vision of the digital library is that a library user at one location using one interface could seamlessly search the digital collections of hundreds of libraries[1]. A. N. Yerkey defined digital libraries as "electronic libraries in which large number of geographically distributed users can access the contents of large and diverse repositories of electronic objects"[2].

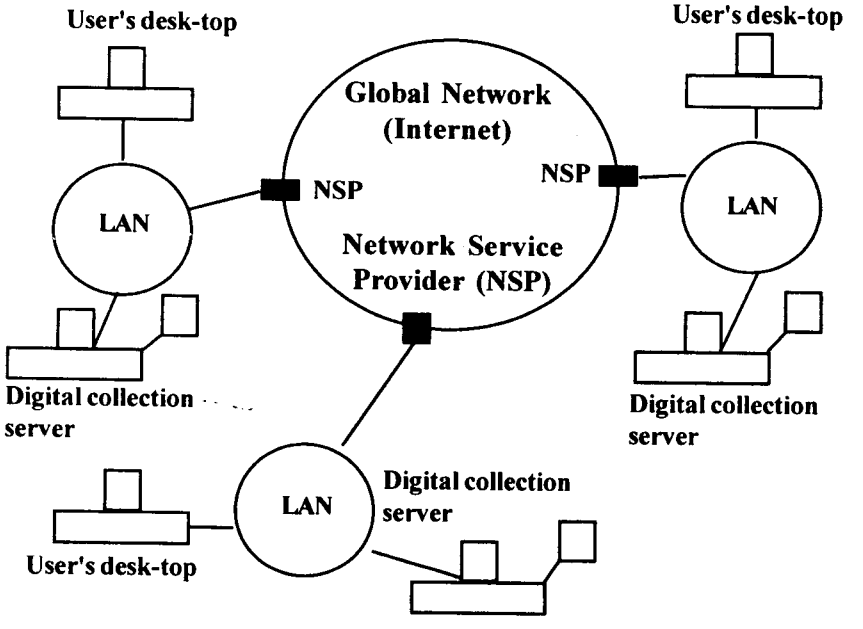
We do not create digital libraries to save money. We create them to

* Senior Research Fellow, Dept. of LIS, S. V. University, Tirupati (A. P.)

grately expand access, increase usability and effectiveness, and establish entirely new ways for individuals to interact with information. The digital library is not a single entity. It requires technology to link the resources of many. The linkages between the many digital libraries and information services are transparent to the end user. Universal access to digital libraries and information services is a goal. These libraries are not limited to document surrogates: they extend to digital artifiacts that can not be represented or distributed in printed formats. The definitions on digital library leaves a great deal of room for diversity. Based on common aspects among these definitions, digital libraries may be defined as electronic information collections containing large and diverse repositories of digital objects, which can be accessed by a large number of geographically distributed users (3).

Digital objects include text, images, maps, sounds, videos, catalogues and indices, and scientific, business, and government datasets as well as hypertext, hypermedia, multimedia compositions.

Any digital library system should therefore provide a coherent, consistent view of as many repositories as possible and allow users to seamlessly connect and interact with information with regard to geographical location or time. There is general acceptance of the fact that digital libraries would need to span both print and digital materials. Key components of digital libraries are geographically distributed digital informtion collections, geographically distributed users, information represented by a variety of digital objects, large and diverse collections and seamless access. The schematic representation of the emerging global digital library environment



is shown in Fig. 1

The personal computers in the library is connected to the global network via institutional area networks and internet service providers. Using powerful, but very user friendly browser programs on their PCs, users will be able to seamlessly connect to and extract information from digital libraries distributed over a geographical area.

3. DIGITAL LIBRARY–PRODUCTS & SYSTEMS

The root technologies of IT are the telecommunications and audio-video systems of the pre-digital era. The requirement of communication between computers has contributed to the development of the branch designated as Digital networks. With the rapid development of micro-electronic and optical technologies, and the growing emphasis on information services, many new off-shoots, application technologies, have emerged and are continuing to grow at the same time in a multi-faceted way.

The evolution of computer technology, and especially networking systems, has impacted every aspect of the traditional organization. Electronic mail, electronic bulletin boards, shared files and other similar systems allow information transfer without the typical channels of hierarchy. This evolution is moving librarians out of the library, at least in the developed countries and will lead to similar situation in the developing countries like India. In future information will be not only recorded items of knowledge, it will also be digitized bits of information that could be moved through computers and telephone lines to where it is needed, rather than requiring users to come to the place where knowledge or information is stored (5).

3.1 Electronic Information Sources

In the context of development of digital libraries, users in developed countries are increasingly acquiring, and creating, their information electronically. Electronic information is beginning successfully to compete with information in traditional printed form. There is emerging trend among the librarians and academicians that the electronic dissemination of information might be a solution to the problems of scholarly communication in print form. According to Malinconico and Warth (6) electronic documents, which are the major component of the digital libraries, offer many advantages compared with their print alternatives. Publications can be more timely; can be more readily accessed; do not need to be indexed; do not need to be bound or shelved; missing issues and missing pages do not need to be replaced; they can be accessed wherever an institution's telecommunications network reaches.

3.2 CD-ROM's : Sorage Device per Excellence

Print on paper will continue to be the dominant information medium into the foreseeable future. However, information in electronic form is rapidly

gaining importance. The number of online databases that contain full text has increased nearly 40 per cent/year; and the number of CD-ROM databases grow more than 100 per cent a year.

Optical information storage systems have become syncnymous with electronic publishing. This is because of the success of the CD-ROM as the optical medium of choice for the publishing industry and also due to its adoption by major library and information centres around the world. The usability of CD-ROM's in networking environment made this technology more attractive and acceptable to library community.

4 IMPACT OF DIGITAL LIBRARIES ON INFORMATION TRANSFER

1. Digital libraries combine technology and information source and allow remote access of its resources to other libraries by breaking down the physical barriers through national and international computer networks.
2. Digital library provide rapid communication from author to the user.
3. These libraries offer Boolean search of the full text to browse and read only the selected information.
4. Electronic communications are now creating new electronic scholarly communities in response to the elementary need for intellectual collaboration.
5. Digital libraries change the mode of transmission of information. Video servers with stored lectures by outstanding scholars, electronic access to interactive reading materials, Video and computer conferencing hyper-text books and new forms of experiencing knowledge will gain importance in the place of campus based higher education.
6. The impact of digital accessibility on organizational hierarchy is noteworthy. Until the advent of modern information technology, an organization's structure was a relatively inflexible hierarchical channel, through which information flowed. Electronic mail, electronic bulletin boards, shared files and other similar systems allow information transfer without the typical channels of hierarchy, breaking down rigid organizational structures.
7. Significant growth in the use of the Internet to share and gather information will enhance rapidly due to advent of digital libraries.
8. Computer networks make it easy to locate the exact sort of specialist or product we want. In the past, poor communications often made it impractical or even impossible to retrieve information exhaustively and expeditiously. In the cyber society it becomes easier.
9. Inter-personal relationships are likely to be increasingly unstable in view of the emerging technologies. However, it will be possible for people to exchange and evaluate their ideas through e-mail, Internet and Tele conferencing.

10. A digital library enhances the quality of services offered by a library and information centres of any type.

These are only a few developments that can be anticipated. A host of social, economic and managerial uses are likely to crop up in addition to these.

5 LIMITATIONS

1. Digital libraries are mostly dependent on suitable telecommunication link and computer system for proper utilization and information transfer.
2. These libraries depend much on suitable technology and training of endusers in handling a variety of retrieval software, search strategy formulation and cost consideration in the case of on-line search.
3. As on today the technology has not percolated to the required level, to make the digital libraries acceptable on par with the conventional libraries with printed documents.

6 CONCLUSION

In view of the new trends in information transfer, the challenge is to cope with the changes in digital accessibility and optimize the value of information to the organization, to society as a whole and to the individuals that comprise both.

Finally, we shall remember that Digital Libraries rest upon: (1) basic human need for timely and relevant information; (2) advances made in networking, information storage and retrieval; and (3) changing characteristics of the users, authors and publishers.

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IMPACT OF DIGITAL LIBRARIES ON SERVICES AND PRODUCTS

S. L. Sangam*
V. G. Talwar**

ABSTRACT

This paper efines the concept of Digital library, identifies its different assumptions, discusses its impacts on education, services and products of the library, viz. cataloguing, editing, refereeing, indexing, result processing, image search, dynamic books and rural access. Finally the paper concludes that in a digital library system, the library is specialised, highly technical and better equipped to provide high-tech services.

1 INTRODUCTION

Libraries exist in many forms and are of may types. With multimedia technology we now have image libraries, audio libraries and even digital video libraries. We might also think of libraries when we refer to collections that now reside in databases, knowledge bases, text bases, gopherspace, or the World-Wide Web. At the same time, traditional libraries budgets devote an ever increasing share of their funds to electronic services, whether in the form of CD-ROM, online public access catalogues, or online database, CD-ROM, online public access catalogues, or online database. This trend will continue, as digital storage costs go down relative to the cost of the library shelf-space, and as electronic service become more useful, affordable, available and usable. Other forces are encouraging the demand for the supply of electronically accessible information, like the hunger for news and learning, the pride of authoring, the desire to collaborate and share with colleagues, the pressure of reorganisation and restructuring, the ubiquitous presence of electronic publishing, the excitement of exploring in an expanding sea of information, and the push to use new technological tools. There are many reasons that humanity is now working towards the grand challenge of a world Digital Library System.

* Professor, Department of Library & Information Science, Karnataka University , Dharwad-580003
** Dept. of Library and Information Science, University of Mysore, Mysore

The impact of digital library has been all pervading. However the largest impact seems to have been made on library services and products. It has changed the way we perceive of and disseminate information and has even threatened the traditional approach to library and librarianship. In the present paper an attempt has been made to study the impact of digital library on services and products of traditional library.

2 DEFINITIONS

The word digital library evokes a different impression in each reader. To some it simply suggests computerization of traditional libraries. To others, who have studied library science, it calls for carrying out the functions of libraries in a new way, encompassing new types of information resources; new approaches to acquisition, new methods of storage and preservation; new approaches to classification and cataloguing, new modes of interaction with and for patrons, more reliance on electronic systems and networks, and dramatic shifts in intellectual, organizational and economic practices.

To many computer professionals, a digital library is simply a distributed text-based information system, a collection of distributed space or interlinked information, or a networked multimedia informtion system. It may have materials that are mostly from outside an organization that are generally of high value, and that have had special electronic services added to its quality during creation, collection, organization, and/or use.

To modern day users of the WWW it suggests more of the same, with sure-to-come improvements in performance, organization, functionality and usability. Those working on education technology see digital libraries as support for learning, whether formal or informal.

3 ASSUMPTIONS OF DIGITAL LIBRARIES

In the context of digital library, four assumptions can be identified as below:

(i) Digital library is totally a paperless system with computer networks and communication facilities.

(ii) Digital library is a supplementary facility to traditional library for better retrieval and faster communication.

(iii) Any individual can have a direct link to electric publishers, their agents/ through computer-communication facilities, with or without knowledge of librarianship.

(iv) any commercially interested organization or an individual, with or without knowledge of librarianship, having a direct access to electronic publisher/ can become local promotional trade agent in information service, like one of the IST/STD centres, electronic typing centre, reprography centres etc.

3 IMPACT OF DIGITAL LIBRARIES ON EDUCATION

A library is fundamentally an organised set of resources, which includes

human services as well as the entire spectrum of media (e.g., text, video, hyper media). Libraries serve at least three roles in learning. First, they serve a practical role in sharing expensive resources; physical and human resources, support instructional programs by responding to the requests of teachers and students. Second, libraries serve a cultural role in preserving and organising artafiacts and ideas. Third, libraries serve social and intellectual roles by bringing together people and ideas. This is distinct from the practical role of sharing resources, in that libraries provide a physical place for teachers and learners to meet outside the structure of the class room, thus allowing people with different prospective to interact in a knowledge space that is both larger and more general than that shared by any single discipline or affixity group.

Digital libraries extend such inter-disciplinarity by making diverse information resources available beyond the physical space shared by groups of learners. One of the greatest benefits of digital libraries is bringing together people with formal, informal and professional learning missions.

In addition to expanding the formats of information (e.g. multimedia, simulations), digital libraries offer more information than most individuals or schools have been able to acquire and maintain. Remote access allows possibilities for virtual field trips, virtual guest speaks and access to rare and unique materials in classrooms and at home. The promise is one of better learning through broader, faster and better information and communications.

4 IMPACT ON PRODUCTS AND SERVICES

To be productive in the new world, individuals now performing information services will have to rethink their actions. Rethinking means trying to consider the likely locales of future services and who will provide them. There will be new methods and architectures for the information flow. Some of the services and products are mentioned as below.

5.1 Cataloguing

Library is a growing organism. As libraries grew due to print technology, a need evolved to locate books, hence librarians began cataloguing the books and non-print media. Over the years complexities in cataloguing grew. Cataloging codes and rules have been revised from time to time. Today many libraries contract their cataloguing to outside services. Online access over the internet is now available, permitting local librarins to rapidly cataloguing newa acquisitions and make them available to readers. This early use of digital technology illustrates how communication has shifted local work and authority to a service provider.

5.2 Editing

Manuscript editing, especially of technical material, requires knowledge that may not be locally availat e. Since many editors are freelancers, some are now providing these services remotely. Falling by the way side are the

traditional proof reader's mark, since their wiggles are hard to encode digitally. However, no new markup standards for editing have yet emerged, so that automated tools to record and enter incremental changes are hard to establish. In direct communication between a single author and an editor standards may not matter, but it is important for a publisher to be able to assess and market their work, then editor may wish to have a printer to their homepage in the marked-up manuscript, to serve as quality reference for subsequent customer inquiries.

5.3 Refereeing

A referee invests considerable time in assessing a work to be published, considers its worth in terms of quality and originality, attempts to validate its conclusions and may request clarification of assumptions that lead to the conclusion. It is rare that an academic paper escapes unscathed from the refereeing process and even popular literature is assessed and modified by professional magazine editors and their consultants prior to release. The reader of refereed material can have some confidence that the conclusions are not misleading and that it is worthwhile investing effort in understanding and applying the work.

In the electronic future, it may be that a work will remain visible from the moment an author releases it and all referees comments will be accessible through links. In this approach a referee may act more like a critic, who signs his/her opinions and becomes a participant in the information process. Since in an open electronic environment anyone could attach comments to a paper, the quality of the comments and commentators would have to be assured by special services that would identify trustworthy referees and their areas of expertise.

5.4 Indexing

The creation of indexes to bibliographic material is a service that adds value, because it greatly increases the precision and completeness of subsequent retrievals. A good example of high-quality and comprehensive indexing is that provided by the US National Library of Medicine. Using a thesaurus (MESH) that is regularly updated, certified indexers at several specialised sites provide entries from the MESH vocabulary for use in the indexes used for NLM MEDLINE systems. Most fields in science do not have such quality services; in computer science many redundant or near-redundant terms are used and searching for the right references depends on luck and is usually best accomplished by interrogating colleagues.

5.5 Results Processing

The processing of retrieved documents, through validation, abstraction, integration and presentation is also a candidate for services by specialists. Most end-users need more than rapid access to documents. Decision makers

today depend on their staff to analyse, abstract and rank alternatives according to their world view. Today these tasks are performed by librarians. To be successful in all these, digital services will be online, accessible through networks and responsive to the customers.

5.6 Image Search

Pictures, graphics and photographs are important representations of information. Images collected in libraries are now located by specifying some external parameters; for instance, satellite images can be located by naming the spacecraft, the observing instrument, the orbit number and the longitude. This type of information says little about the image content itself. Locating images instead by their content requires much knowledge and the supporting programs are likely to be candidates for improvement for improvement for many years to come. Image based retrieval services can deliver substantial added value for users that access image data.

5.7 Dynamic Books

In some cases books are prepared by multiple authors and composed for presentation. Textbooks, even those written by a single author, consist of distinct chapters and are organised so that a student or teacher can skip those chapters that are not relevant. A paper book that contains all possibly relevant material gets heavy and costly. Some publishers (McGraw-Hill, for example), now allow some books, especially those destined for classroom use, to be composed from selecterd chapters at the request of each individual teacher.

It is a small step to move to dynamic books, where a selection designating the candidate chapters is predefined, but the actual chapters are obtained from digital resources when needed. The chapters would be the latest versions, and convey the most up-to-date knowledge. Some anticipatory planning will be required to assure consistency. A cross-reference to a chapter that is not included has to become a remote link, to be followed only if the reader wants to explore outside topics. The table of contents and the index of a dynamic book might include all candidate chapters, with indications to distinguish chapters seen and optional chapters. The bibliography may only collect entries of chapters that have actually been accessed. Traditional copyright mechanisms need to be adapted to digital libraries and to the new dissemination methods made possible by the digital highways, and revenue collection will have to deal with the diversity of contributors.

5.8 Rural Access

There will still be the underserved, for whom the free public libraries provided relief in the past. People who live far from the main informtion highways now pay high access charges in the form of rural telephone tolls, which can cost more to reach the nearest town than the price of interstate

connections. It will be interesting to see what the Department of Agriculture will be able to do to help disseminate information to rural areas.

The functions of a library are to acquire works, store them, make the works available to the reader, and reimburse the author and the publisher for their efforts. We expect changes to occur as digital library technology takes hold, but no clear picture exists of the future, nor of its arrival time. Today computer storage, processing capacity, transmission, and presentation of literary text greatly exceeds the capabilities of previous methods. However, there are problems to be faced, such as compliance with standards of widely distributed linkages, and value-added services are interposed at many intermediary stages. It is foresseeable that new opportunities will develop for innovators, who will be able to provide responsive and high-quality online services, and who will know how to use electronic tools effectively.

6 CONCLUSION

Digital libraries provide a new format for library and information service interface to end users. The library staff have to be more specialised, highly technical and better equipped to provide high-tech services. The reader should become computer literate and develop the skills of exploiting computerised information services to the maximum.

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ELECTRONIC MEDIA VIS-A-VIS ACADEMIC LIBRARIES IN INDIA: OPPORTUNITIES AND CHALLENGES

***B. S. Maheswarappa**
****N. Vijayalaxmi**
*****P. G. Tadasad**

ABSTRACT

Discusses the importance of books for dissemination of information and as an aid for teaching and learning. Defines electronic books and brings out their characteristics, types, and advantages and disadvantages. Discusses the problems of academic libraries with respect to resources - information, manpower, financial, physical facilities, availability and use of computers and servicves. The opportunities and challenges for academic libraries in India, in the context of electronic information and networking environment are discussed as most of them have been developed in traditional lines where print media predominates

1 INTRODUCTION

Books are an important channel for dissemination of information. They constitute an important and useful aid for the support of teaching and learning purposes. They are playing an important role in promoting culture, education and everyday ways of life. Over the years, the process and media used for recording, storing and tramission of information have changed. One of the outstanding and exciting developments of twentieth centuries, is the publication of documents in electronic form. The electronic media has provided many possibilities and opportunities for providing faster and quicker access to information at the global level through communication networks, hitherto not possible, thereby making the whole world a global village. The print media - traditional and conventional type of documents - is still predominant in Indian libraries. The conventional books as carriers of information have the following limitations viz., difficult to reproduce,

* Professor, Department of P. G. Studies & Research in Lib & Inf. Sc. Gulbarga University, Gulbarga-585 106
** M. Phil Student, Department of P. G. Studies & Research in Lib & Inf. Sc., Gulbarga University, Gulbarga-585106
*** Lecturer, Department of P. G. Studies & Research in Lib & Inf. Sc. Gulbarga University, Gulbarga 585 106

expensive to disseminate , difficult to update, single copies can not be shared, can be damaged and vandalized easily , bulky to transport, embedded material is unreactive and static, cannot utilize sound, cannot utilize animation or moving pictures, unable to monitor reader's activity cannot assess reader's understanding, unable to adapt material dynamically, Further, they are also not suited for providing faster, quicker and speedy access to information at the global level. But now with the emergence of electronic media the potential to store large quantities of information has increased, with an advantage of accessing and transferring it to any place and from any where in the world through electronic means using the advanced network facilities is a boon to libraries. Surprisingly the technology for electronic transfer of information has also advanced so rapidly that it is now possible for electronic publishing, electronic storage, processing and delivery of information including text and images. The transformation, from print to electronic based media witnessed threatens to change radically the traditional role of linbraries.

2 ELECTRONIC BOOKS

The electronic books is a metaphor for handling and structuring large volumes of computer based information, consisting of a collection of reactive (screen based) pages of electronic information that are (usually) organized in a thematic way and that exhibit many of the characteristic features and properties of conventional book (page numbers, running heads and so on). Generally, three basic types of information are embedded with in the pages of an electronic books viz., consumer-oriented, control and aesthetic information.The electronic books may contain different types of information such as text, pictures, and sound and all of them. The electronic media are no doubt expensive. They lend themselves to concentrated corporate ownership, and are virtually unmonitorable having a global reach and can be operated instantaneously.

2.1 Types of Electronic Books

On the basis of types of information that they contain, the basic properties that they exhibit, and the functions that they have to perform, electronic books are classified into following types viz., textbooks, picture books, talaking books, moving picture books, multimedia, polymedia books, hypermedia books, intelligent electronic books, telemedia books and cyberbooks.

2.2 Publication Media

The electronic books can be published on a variety of different types of distribution medium such as floppy disk, magnetic diskettes, optical disk - read-only disk, recordable disk and rewritable disk. The computer communication networks in another important publishing medium for

electronic books.

2.3 Advantages and Disadvantages

The publications in electronic form "offer substantial advantages over paper books in providing aids for connectivity, audio-visualization, dynamics, customizability, interactivity and rapid information retrieval" [2]. It is said that the electronic publications are not ipso facto superior to those printed on paper, but they are very much more than print on paper presented electronically, provide greater opportunities for transfer of information from one location to another location easily and the information can be automatically searched in order to localte items of interest and facilitate better and faster access to information through networking.

Though, the electronic books have several advantage they are not free from disadvantages. They involve high initial costs to the publishers as well as to the libraries. The non-compatibility of hardware and the use of different retrieval software by different publishers. The use of electronic media also depends on the user friendly retrieval software. More than this as a prerequisite, electronic media necessitate the availability of a computer, communication network and electronic information access facilities.

3.ACADEMIC LIBRARIES IN INDIA

Academ ic libraries throughout the world are at cross roads and India is not an exception to it. New challenges and opportunities are emerging due to information explosion, shrinking budgets, rising costs of information resources and ever increasing expectations of academic community. The academic libraries in India are characterized by inadequate resources-information, manpower, financial and physical facilities including infrastructure facilities for the use of electronic publications such as computers - hardware, software and humanware. Most of the academic libraries do not have adequate information resources to support the academic and research programmes of their institutions, because of lack of planned and systematic approach to development of resources. The size of library collections range between few hundreds to few lakhs. Another problem is that collection are not balanced. A few college libraries have excellent collections, where as many libraries have very poor collections. Most of the academic libraries do not have any definite weeding out policy for their collections. Therefore many libraries have space problems. The staff working in academic libraries are inadequate both in terms of quantity and quality. The libraries have failed to recruit the right type of personnel with the right type of knowledge skills and techniques and most of them are not suited to work in electronic information and networking environment. Perhaps another biggest problem facing academic libraries is money. Added to this the rising inflation rates and shrinking budgets have hindred the development of academic libraries in India in general, and development,

organization and provision of services in particular. Most of the libraries are organized along the traditional lines and lack basic infrastructural facilities to provide services in the context of electronic information era. A large majority of libraries, have not automated their activities as they are handicapped to switch over to computerization and modernization becasue of lack of infrastructural facilities - computer hardware and software and humanware including telecommunication facility. Much emphasis has been given to inter link and integrate the activities of academic libraries at the national level through Inflibnet. But still there is a long way to achieve the objectives for which it has been set up. Hence, the academic libraries in India have to consider the possibilities of making use of the existing networks in India including Internet. The Internet connects thousands of computers and computer networks worldwide, thereby providing access to wealth of information at the global level and provides opportunities for exploiting the electronic information.

The collections of academic libraries in India have been developed along traditional lines where the print media predominates. The electronic publications are not found in many of the academic libraries especially in school and college libraries except few institutions of higher learning only CD-ROM databases are available in libraries. The academic libraries in India need to adapt themselves to the changes in formats as these new formats provide better opportunities for transfer and access to information.

4 OPPORTUNITIES

The electronic media by their very nature and characteristics provide new and exciting opportunities for libraries. For instance, in the electronic environment, the library need not own publications to be readily accessible. Many of the sources available in electronic form can be made available to the user community by developing electronic information access facilities. An electronic collection of documents is more flexible and dynamic, leaving wider variety of world's information resources and selecting only that part of the document which is relevant and the whole publication need not be procured by libraries. Another intersting feature of electronic publications is its speed and quality. The information can be accessed and delivered without much delay. The searching options for an item in electronic environment are easier and simplified if one is familiar with the structure, organization, the search facilities and software provided are user friendly. The location of information in the electronic media is much quicker that that of the printed media. Accessing the other library's collection rather than possessing almost all documents on a given subject is the opportunity that the electronic media has provided to the academic libraries through networking.

5 CHALLENGES

The challenges ahead of academic libraries in India to make best use of electronic media in order to meet the needs and requirements of clienteles are many.

Whether to own electronic publications or to develop infrastructural facilities to have access to information without owning the publications is an important issue to be decided by the libraries. Obvious challenge for academic libraries in India is the problem of how to integrate traditional forms with electronic resources as they have developed mostly along traditional lines where the print media predominates. Another challenge is the cost factor involved in developing and providing access to electronic sources. The electronic sources are no doubt expensive but economical in space have other advantages. Added to the cost of purchasing of electronic publications, libraries have to spend money for providing access to electronic sources through the communication networks. Another problem with the electronic media is the lack of ownership (only access) of resources to claim funds from the concerned authorities. These are not always adequately bibliographically controlled. Some times they are not easily locatable and reviewed. They are fluid, interactive and changed frequently and most often not owned by any library. The concept of evaluation in order to assess the relevance of information available in electronic format is another major challenge as it requires a different approach altogether from that of print media. More than collection development, it is the provision of access which has gained significance now in the context of electronic information era and networking environment. The problems and prospects of collection development in this context are discussed by Maheswarappa and Tadasad [3]. The nature and characteristics, different types and varieties of electronic publications, also pose challenges for professionals in India for their organization and maintenance in libraries.

Another major challenge faced by academic libraries is to educate and train the professionals working in academic libraries to: i) create computer culture, ii) using a computer to print on paper, iii) handling, developing, organizing and distribution of electronic versions of print on paper publications and publications existing only in electronic form, iv) using computer conferencing to facilitate collaborative authorship, v) producing new textual presentations and devising new types of publications employing movement, sound and other capabilities of electronic media.

There is also a challenge to educate and train the end users in using the tools and services, retrieval tools, browsers, bookmarks, notepad facilities, copy and paste facilities, on-line-help, tutorial modes, glossaries and dictionaries, traces, collectors, back-track facilities and navigation tools in making possible to use the information available in electronic publications through user education programmes, as they are used to conventional books all these years.

6 CONCLUSION

The challenge the libraries in India are facing with is not a paperless society but to maintain, nurture and optimize the resources of the libraries with the help of new technology. There is a need to develop readiness both emotionally, professionally and financially on the part of academic libraries in India to accept and make good use of new technology for supporting the programmes and activities of parent organizations. The librarians should be prepared for institutional reorganization keeping in view the future for this new media.

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ROLE OF DIGITAL LIBRARY TECHNOLOGY IN THE ELECTRONIC INFORMATION ENVIRONMENT

R. L. Arora *
Renuka Lekhi**

ABSTRACT

There is a growing need and worldwide trend to collect, organise, manage, protect and distribute information in digital form. This article presents in very simple terms, the definition evolution need and development of digitial library technology and its applications across all kinds of institutions. At the same time, the field of Digital Libraries is young enough to support entirely new approaches. The development and application of Digital library technologies continues to accelerate in electronic information environment.

1 INTRODUCTION

Today, however, the nature of access to information is changing rapidly and changing radically. The source of the change is well known, it is the emergence of the Internet and the transformative character of the world wide web technology, which, quite suddenly, has changed the ground rules for the production of and access to scholarly communication. In contrast to the evolution any trend of the past thirty years, today's developments are revolutionary in their impact and in their significance.

The increasing use of the Internet and World Wide Web (Wb) has developed awarness and concerns about access and retrieval of information across networks. There is a growing need and worldwide trend to collect, organise, manage, protect and distribute information in digital form.

2 EVOLUTION OF DIGITAL LIBRARIES

Digitial libraries have been in use for the last three decades. There has been a constant change and improvement in the technology used by digital libraries. In the 1970's, they were based on minicomputers and used to provide basic services of remote access and online search and retrieval. In

*Asstt. Librarian, A. C. Joshi Library, P. U., Chandigarh
** Library Assistant, Department of Philosophy, P. U., Chandigarh

1980's, sophisticated information storage and retrieval systems came into light. Digital libraries used different techniques to share bibliographic records and link different remote systems.

By the 1990's the technology has made it possible for digital libraries to include different text, image, audio and video. Now a days, visual information systems are getting more popular as compared to text based information systems. Therefore, digital libraries are becoming more graphical in nature. Also the concept of hypertext has been introduced in digital libraries.

3 NEED OF DIGITAL LIBRARIES

We need digital library technology to manage large amounts of digital content such as thousands of images or hundreds of audio clips and also to perform searches that are impractical manually. There are electronic tools which enable this to be done quickly and easily by text search.

Libraries and archieves with unique collections are digitising these materials to not only preserve them, but also provide more extensive access to their content from multiple locations, and provide a way to enrich the teaching and learning environment, which is not possible with traditional printed materials.

Also the growing use of multimedia data has introduced new challenges in storage and communication of diverse multimedia objects like video, audio and images. The World Wide Web (WWW) makes it easier to transfer such information over national and international networks. There is also rapidly increasing interest in digital libraries. Academia, libraries, publishers, system developers and diverse user populations are collaborating infexciting new ways to create digital library models and technolgies etc.

4 DIGITAL LIBRARIES: DEFINITION

Digital Libraries (DLs) provide access to digital information collections. Information content in DLs include a combination of structured/unstructured text/numeric data, scanned images graphics, audio and video recordings, etc. Digital librarians are required to select, acquire, organise, make accessible, and preserve digital collections. Deployment of DLs require integration of several information technologies.

Also digital libraries are being used as stand alone systems, the focus is on integrating them with existing integrated library systems and collection management systems so that users can access the content through a single interface. Also these are decentralised and easily extensible, able to support interioperability between different tools, applications and systems; able to support a rich information seeking environment; and scaleable in terms of the size of the system. As digital library is a relatively new technology and one of the ways to ensure success using this technology is through development and implementation of a technology strategy plan.

5 PLANNING AND DEVELOPMENT OF DIGITAL LIBRARY

Before implementing any new technology, it is very important, first of all to develop a strategic technology plan. The plan should be very systematic, keeping in mind the present and future needs and also the goals of the institution and department. The plan should be developed by a team which include librarians, computer services personnel which are responsible for information management.

Some initial considerations include issues related to physical resources which include, space, application systems installed and personnel issues include the training needs of current and future staff as well as identification of the changing role of information professionals within the organisation careful assessment of policies procedures on information access should be done. In addition budget planning for long-term maintenance and replacemenet of systems should be included throughout the planning process.

6 ROLE OF DIGITAL LIBRARY IN ELECTRONIC INFORMATION ENVIRONMENT

The term digital libraries refers to a new way of carrying out the functions of libraries encompassing new types of electronic information resources, new approaches to acquisition, especially more access to other libraries collection and sharing it, new methods of storage and prservation, new approaches to classification and cataloging, especially of electronic data, intensive use of electronic system and networks and dramatic shifts in intellectual, organisational and electronic practices. It is also known as a distributed text-based computerised information system and service. It may have several provisions to access documents, those are of high value, mostly from outside the organisation.

In an electronic environment publication need not be owned to be readily accessible. Many sources of information can be made available to the user community that could not be available if the library were to acquire or purchase and store the same. An electronic collection can be more flexible and dynamic, leaving wider variety and choice of selecting only that part of the document that is relevant and the whole source need not be acquired. Location of an item in the machine readable from is quicker than that of the conventional printed shelf collection. Implementation of innovative technologies that have revolutionised the library's operations is widespread. All the library's in developed nations have totally shifted to electronic environment and those of them in the developing countries are in the process of marching towards the new electronic environment to find their place and fit into the changing information society with all its limitations.

In digital environment, only digital information is disseminated, software is produced locally, and most of the information is obtained by remote accesses much of this information is less permanent in nature. In these circumstances it is very difficult for librarians to decide!

- Who should do it, as most of such information is accessed directly by users, without bringing into the knowledge of Librarians.
- What standards to be followed?
- Users located and access the information, infor. is not usually structured, no rules or codes are followed and no one controls the infor. that is made available.

The data or information m ay be of different types. To organise the data or information, we require cataloging practice and it calls for an appropriate data model for organising data with standard point Specialised technologies are needed for compressing as well as for organising information. These are the major challenges in digital library environment.

CONCLUSION

In last we can say that digital library technology play a major role in electronic information environment. Digital library technologies can be applied across all kinds of institutions. These technolgies were almost unheard of first a few short years ago and now the pace of development and application of these continues to accelerate. Advances such as high resolution capture devices, sophisticated search engines, and affordable large storge of digital content all contribute to the ability to implment a digital library. There is much theortical discussion about the nature of the Digital library but whatever for in it assumes in the future, its foundations are severely being laid now.

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TOWARDS AN EFFECTIVE SOLUTION FOR RESOURCE SHARING

S M Dhawan*

ABSTRACT

The paper attempts to highlight the current problems in resource sharing. From the users perspective, user services should have remained the major focus of activity in resource sharing. However, in actual practice, it is the rationalisation of periodicals, which has been receiving greater attention. To make resource sharing attractive to users the emphasis in its activities must shift to services. In the context of conceptual framework of resource sharing the paper suggests a viable solution for the purpose.

1 INTRODUCTION

Resource sharing has since long been heralded as an instrument of cooperation for harnessing library resources in the 'distributed information environment'. Individually libraries are unable to acquire information material as much as they require for meeting the total information needs of users on ownership basis. However, collectively these libraries do constitute a vast resource, good enough to fill the gap. Resource sharing provides the basic framework for pooling, sharing, and exploiting the vast but distributed resource. Being a cooperative venture, its success depends upon participation and support from all libraries, and especially from those who control the bulk of the information resources. Mutual interest is its driving force.

Undoubtedly, at conceptual level resource sharing sounds very useful and appealing. Several networks have since taken initiative and launched programmes for resource sharing. These include networks such as DELNET, BONET, INFLIBNET, and CALIBNET. Many of these networks claim to have made substantial progress in their resource sharing programmes. Their chief achievement is said to be in the rationalisation of periodicals in the participating libraries. Although they did succeed in scaling down duplication in journals but such developments have come to serve the libraries in reducing their financial burden. Truly speaking, such gains have benefited the parent managements in the respective institutions, and not the end-users in meeting their expectations. Rationalisation is only a means and not an end. The

* NPL Library, National Physical Laboratory, Dr K .S Krishnan Marg, New Delhi 110 012

resource sharing programmes have yet to mature to a level so that they could extend benefits to end users as required, in granting them access to publications in the distributed information environment. This paper develops an understanding of the issues, which are coming in way of exploiting and sharing the distributed information resources. The observations and analysis made in this paper are in the context of print environment of shared resources. It also seeks to offer solution, which could serve to fill the gap.

2. AREAS OF COOPERATION IN RESOURCE SHARING

For promoting the concept of resource sharing, the participating libraries need to come together and cooperate in two broad areas:

Developing a shared resource, and

Developing services for exploiting shared resource.

2.1 Development Of a Shared Resource

Developing a shared resource is central to the concept of resource sharing. This is an area of great importance and relevance to resource sharing. In developing a shared resource the focus is first on eliminating duplication in the holdings of various participating libraries to the extent possible. Thereafter, the focus is on the selection of such publications which the participating libraries agree to share, and later on their acquisitions. The organisational efforts in developing a shared resource are, therefore, directed in two distinct directions:

* Rationalisation

* Acquisitions

2.2 Developing Resource Sharing Services

In the distributed information environment, users themselves are unable to reach to the shared resource. They need services which facilitate:

*** Document identification**

* Document location
* Document delivery

The type of services which could serve such goals are:

Contents information in respect of shared publications

Information retrieval using bibliographic, textual databases on various subjects

Document delivery service

Access to union catalogue of library holdings(Monographs)

Access to union catalogue of library holdings(Serials)

Network connectivity for access and communication

The participating libraries have to cooperate in creating these services to help users exploit the shared resource.

3 LIMITATIONS OF RESOURCE SHARING IN PRINT ENVIRONMENT

3.1 Open Access to Shared Resource not Feasible

In a library comprising publications in print form, proximity to the resource is a pre-requisite for browsing and consultation. Such a process facilitates document identification without any intermediary from the library side. However, in distributed information environment there are geographical barriers and as such physical proximity to publications is not feasible. In addition to geographical barriers, there are administrative barriers to information access. To reach out to the shared resource, users have to come through their institutional libraries. In a distributed information environment dominated by print form of publication, user access to shared resources is, therefore, akin to that of a closed access system in a library. In both types of systems users have to approach through an intermediary from the library side for service. As such, the facility of open access to the shared resource is not feasible in a resource-sharing framework. This limitation comes in the way of exploiting distributed information resources in a resource-sharing framework.

3.2 Service to Users Depends Upon Library Performance

User services are critical to the resource-sharing programme for its performance and effectiveness in providing access to shared resources. The libraries as are required to organise and provide the user services are not always fully equipped to meet such obligations. The major reasons are: insufficient staff strength to undertake additional responsibilities, and shortage of necessary computing facilities. Under performance of the participating libraries on such accounts comes in the way of meeting the objectives of the resource sharing programme.

3.3 Access to Shared Resource at a Cost

Library users, being institutional employees, are entitled to free service in the respective institutional libraries. However, in the resource sharing environment access to shared resource is not for free. The holdings library charges for every service it offers to external users unless it has been decided otherwise. Failure to make payment upon getting service, or reluctance on the part of the library to remit payment in advance for obtaining a service, or non-settlement of overdues between the parties within the given time-frame, or cost of service being judged as high and unreasonable, or the institution has ran out of funds for meeting expenses for such services, etc. are seen as some of the reasons which come in the way of user getting either delayed service or no service. Access to shared resource at a cost is, therefore, another factor responsible for the under performance of sharing programmes.

4 APPROACH TO RESOURCE SHARING

Various approaches are possible for developing a shared resource and for organising facilities and services as are needed for using and exploiting the shared resource.

4.1 Approaches for Building a Shared Collection

* Sharing less used journals
* Sharing core and highly used journals
* Developing shared collections by subject
* Centralised acquisition and centralised storage
* Centralised acquisition but distributed storage
* Distributed acquisition and distributed storage

4.2 Approaches for Providing Resource Sharing Services

* Provision of facilities for centralised services for document identification, document location, and document delivery
* Provision of facilities for decentralised services for document identification, document location, and document delivery

4.3 Approaches to Membership

* Close group: Limiting the membership to libraries belonging to the same organisational outfit.
* Open group: Opening up membership to libraries belonging to multi-type organisations

4.4 Approaches to Governance

* Governance for closed group: An institutional member, or a coordinating agency
* Governance for open group: A society or a coordinating agency

5 MODELS OF RESOURCE SHARING

Given the wide scope for exploiting resources and facilities available in the participating libraries it is possible to work out a number of models for developing resource sharing programmes.

5.1 Centralised Collection Development and Services at National, or Regional Level

This model aims at cooperation between such libraries which are located geographically either within a region or the country. The resources which the programme intends to share are acquired centrally and stored at a single site. For running the proposed facility, the participating libraries contribute towards the capital fund and the recurring fund. Grants are also sought from the government and private agencies for raising capital fund. The facility

provides for an organisational structure for its control and governance. The structure also includes a governing body. Member libraries are elected to the governing body. Creating a new facility is central to the concept of this model. Central Research Library, USA illustrates the example of such a model. National Lending Library, UK is also cited sometimes as an example illustrating this model. However, in true sense of the term it is not the right example. National Lending Library is not based on the concept of library cooperation. It is a facility maintained and controlled exclusively by the National Library, UK. The subscribing member libraries are not its partners but its end users. They have no role to play in building its collections. Their role is limited to that of a consumer.

5.2 Centralised Collection Development and Services By Subject

This model also aims at developing a shared collection of documentary resources on specified subjects. City, region, or country may limit the geographic distribution of libraries cooperating in such a venture. The shared collection is acquired centrally and stored at a single site. Such a facility may piggy back an established library of repute. Membership fee and grants from the government and private agencies constitute the main sources of funds to support and sustain such a facility. Examples of such a model result in consortia. National Science Library at INSDOC, New Delhi, (India) which once had the mandate to develop a complementary collection of journals in science and technology, is also cited as an example illustrating this model. However, this notion is misplaced since this is not a venture based on library cooperation. The CSIR, the parent body of INSDOC, once used to provide funds for purpose. The user libraries are its consumers and not partners.

5.3 Centralised Collection Development at Orgnisational Level

This model aims at developing a shared collection of documentary resources by limiting the scope of cooperation to libraries belonging to a single organisation such as the CSIR, DRDO, DOE, ISRO, etc. The shared collection is acquired centrally at a single site. Such a facility, may piggy back a library belonging to the organisation. The parent body of the organisation may provide funds for acquiring shared resources. The participating libraries may also contribute towards the central funds for building the shared collections as well as for providing services.

5.4 Coordinated Collection Development at Institutional Level

In this model a group of participating libraries take the initiative to coordinate their acquisitions. Their objective is to eliminate duplication in acquisitions at the level of participating libraries to the extent possible. Further, the member libraries undertake to give services such as information access and document delivery. In essence, this model leads to the concept of decentralised development of collection at the level of participating libraries

and also to decentralised system of giving services, again at the level of participating libraries. The individual libraries, participating in the programme, determine their level of support to the programme for building the shared resource. The higher their budget the higher their support. User libraries are required to pay for the services they avail of. The geographical area of cooperation could confine to a city, region, or country. This model has been seen in operation in most of the resource sharing programmes started by various library networks such as DELNET, BONET, MALIBNET, and INFLIBNET.

6.DELNET PROGRAMME: A CASE STUDY

Usefulness of any resource sharing model can be determined in terms of:
* Its effectiveness in providing access to shared resources from the user perspective
* Its effectiveness in economising on library expenditure on acquisitions from the perspective of parent management in the institution.

DELNET started a resource-sharing programme in 1990. The libraries participating in the programme were located within the confines of Delhi region. It adopted the model of coordinated collection development at institutional level. It provides for
* decentralised shared resource
* decentralised acquisitions
* centralised access to cataloguing/holdings information
* decentralised access to contents information on shared resource
* decentralised document delivery service

In keeping with the requirements of this model guidelines were framed for the participating libraries as follows:
* provide access to heavily used journals on ownership basis
* provide access to little or less used journals by using shared collection

As a consequence of the application of this model for resource sharing the following developments took place
* The participating libraries concentrated on acquiring core and heavily used journals
* Duplication of heavily used journals continued to persist
* The shared resource remained confined to little or less used journals only

6.1 Drawbacks

1 This model focuses on cooperation between the libraries on developing shared collection of little or less-used journals and not of heavily used journals.
2 Shared collection of little or less used journals is usually not in great demand. Such a collection obviously could not make visible impact on a large cross section of end users. For, impact the benefits of resource sharing must reach to a larger cross section of users.

3 This model tends to create a vacuum in the availability of expensive journals since relevant libraries are unable to afford expenses for subscription on their own.

4. In this model document delivery is a decentralised service. It operates at the level of participating libraries. There is under performance in document delivery services to external users for two reasons. The libraries do not have staff in sufficient strength to take on additional burden of work. Secondly, they seem to lack necessary equipment facilities for document copying. Besides, under performance is on account of attitudinal problems on the part of staff in treating document delivery to external users as a second priority.

5. It failed to provide access to contents information in respect of shared resource.

6.2 Advantages

This model is very useful in eliminating and checking avoidable duplication of journals in the participating libraries.

7 BARRIERS TO RESOURCE SHARING

Print form of publication is considered to be a major barrier responsible for under performance of the resource sharing programmes. Lacking in features such as instant information portability, manageability for reformatting information print form of publication cannot be exploited in the same way in which electronic form of publication can be exploited for services such as contents information, and document delivery.

Lack of equipment facilities in adequate measures for network communication and document reproduction is also responsible for the under performance of resource sharing programmes.

Attitudinal problems form another barrier to sharing library resources. Institutional priorities, lack of motivation, staff shortages give rise to such problems.

Providing resource-sharing services costs money. The libraries providing such services would like to recover expenses from the beneficiaries of such services. Libraries have to evolve suitable models for ensuring post-delivery and pre-delivery payments on time. Since it does not happen, as expected, the libraries at the delivering end have no option but to hold up the service.

In brief, the major barriers to resource sharing are:

* The print form of publication
* Geographical barriers
* Lack of equipment facilities in the libraries for giving document delivery service
* Lack of manpower in the libraries for giving service to external users
* Attitudinal problems
* Problems in the settlement of charges for resource sharing services

* Problems of overdue payments
* Lack of motivation on the part of libraries providing resource sharing services

8 EMERGING OPTIONS

As long as publication activity has remained confined to print form, the library cooperative programmes had limited options to explore for providing user access to shared resource. Publication media is now fast becoming electronic at publication level and at product distribution level. Electronic form of publications are made available on Internet and also distributed as CD-ROMs. Electronic publications appear in different editions including workstation edition, and network edition. Network editions of journals allow multiple access, and multi-user access for information retrieval and portability. In the new environment, there are no geographical barriers in reaching to the resource. It is feasible to reach for contents information, information retrieval, or for full-text articles from remote workstations. Such emerging options have profound implications in making resource-sharing programmes effective in meeting users expectations.

9 THE PROPOSED SOLUTION

The solution being sought for evolving a resource sharing programme should be such that it does help in achieving the ultimate objective of providing access to such journals and publications which the participating libraries are unable to acquire on ownership basis. It should seek to promote and support access to information on sharing basis. Besides, it should also ensure the provision of such tools, facilities, and services as are necessary for document identification, document location, and document delivery. Furthermore, it should ensure economy in the library expenditure incurred on the acquisition and development of shared resource. Given these requirements the solution being proposed is as follows:

Use of electronic form of publication in sharing resources

The print form of publication has so far been perceived as a major barrier in the effective utilisation of shared resource. Now that information technology has changed the publishing scenario, making publication media electronic, the libraries should take advantage of the innovative features of the new media. The electronic media offers the advantage of providing user access to journals on the network, overcoming thereby the geographical barriers. It is capable of facilitating user access to contents information, information retrieval, and full-text copies of articles. Given such advantages of the electronic media, it should be possible to meet users expectations from the resource sharing programmes, in particular giving them opportunities to access to shared resources in the participating libraries. The proposed programme for resource sharing should, therefore, opt for acquiring and developing the shared resource in electronic form.

Sharing core and highly used journals

Core and highly used journals are duplicated most in the libraries. For reasons of economy in library expenditure it is desirable that shared resource should preferably include core and highly used journals.

Adopt decentralised form of acquisition and storage in building the shared resource

In the context of electronic media, the decentralised form of acquisition and storage in building the shared resource is considered economically and technically more viable than the centralised form of acquisition and storage. In the centralised form, sharing the cost of shared resource, equitably, between the member libraries is a task not so easy to handle. Some member libraries may have reservations on sharing the cost of such journals which are not on their priority list but have been placed on the list of shared resource to serve the majority interests. The centralised form of acquisition can even pose intractable problems of ownership issues. Eventually, the shared journals will have to go for storage for archival purposes in some library or the other. Who should own what, and why — is a problem which has economic connotations? In view of such foreseeable problems it is advisable to adopt decentralised form of acquisition and storage in building the shared resource.

Developing shared resources by subject and around established resource libraries

The shared resource may be developed preferably by subject areas since it offers several advantages. First, it helps to keep the size of shared resource as small as possible and within the manageable limits. The larger the size of the collection the larger the user population and accordingly larger the infrastructure requirements for effective management of service to end users. Developing shared resource around established resource libraries in the subject also makes an economic proposition. It helps to capitalise on the strengths and expertise available in the chosen library. It, therefore, minimises the expenses on maintaining an extensive infrastructure needed for service to endusers. It helps the participating libraries to take advantage of its richer holdings in the subject. In comparison the holdings of such other resource libraries as are serving several subject interests may not be as rich in the particular subject of interest.

Resource libraries may offer services for providing access to shared resources

The resource libraries owning the shared resource are required to offer services which seek to offer access to contents information, and full-text articles in journals on the internet. They should, therefore, organise all such tools and facilities as are necessary for the purpose. In particular, they need to create internet ready databases for providing access to contents information

in respect of the shared resource. In addition, they need to provide access to published databases for information retrieval, and offer document delivery service. Resource generation may be motivating force in creating interest in the resource libraries for undertaking additional responsibilities for providing such services.

Use internet for connectivity and access to contents information, information retrieval, and for document delivery service

The user libraries participating in the programme will need to set up internet facility for seeking access to such a shared resource. The network based access would help to address attitudinal problems, said to have been responsible for the under-performance of resource libraries in providing resource sharing services by using shared resource in print form.

Charging for services under resource sharing programme on subscription basis and per use basis

Set up a coordinating agency

A coordinating agency may be set up to undertake the following functions:

* Decide about the quantum of admission fee and membership fee to be charged from the member libraries
* Collect membership dues from the member libraries and to keep the accounts
* Evolve a mechanism for compensating the resource libraries for organising facilities and services which facilitate user access to the shared resource
* The coordinating agency may offer support services such as providing total access to contents information held in the individual resource libraries. It may organise arrangements for acquiring on demand such expensive journals which no library has been able to acquire on account of economic constraints
* The coordinating agency may set up its own internet site for providing support services
* Evolve arrangements for storing journals, acquired by the agency, in suitable resource libraries for archival purposes
* Any other function as necessary to support the objectives of resource sharing

10 CONCLUSION

Resource sharing is for the users. Users should be the focus of planning in resource sharing. Access to contents information on shared journals, information retrieval from bibliographic databases, and access to full text of articles from source databases are the key services which can benefit users. Such user services must receive attention in resource sharing. Contrary to expectation, the focus of action in the ongoing resource-sharing programmes has remained on the rationalisation of periodicals.

Rationalisation is only a means and not an end. It has so far benefited the parent managements in the participating institutions, and not the users.

Resource sharing programmes, organised so far, have been technologically backward. They did not exploit information technology as much as required for providing user services. To make resource sharing meaningful to users, user services should be technology driven.

10.1 Imparatives for Resource Sharing

* Economic constraints in libraries
* Emerging applications of information technology

10.2 Goals

* Improving information access through resource sharing
* Economy in information access through resource sharing

10.3 Objectives for Resource Sharing

* To pool and share information resources distributed across various participating libraries
* To provide such services which enable access to shared resources

In the science and technical libraries resource sharing may start first by providing access to electronic journals. In the subsequent phases other types of publications may be incorporated. The journals may be acquired at a single site and connectivity provided on the network. Initially, preference may be given to core and heavily used journals in building the shared resource. Such a centralised acquisition and storage is important not only from the perspective of minimizing duplication of periodicals in the participating libraries, but also from the perspective of widening the user base in resource sharing.

A resource sharing programme does need funds as well as an agency for its governance. The member libraries may agree to share expenses for running the programme. Funds may be raised by inviting annual subscription from member libraries.

There are two alternatives to governance for resource sharing. In case the participating libraries belong to multi-type organisations, it is preferable to form a society for governance. In case the libraries belong to a single organisation, it is preferable to hand over the governance to a library of established standing and repute from within the group. The question is which one of the two is a better choice.

In the case of multi-organisation group of libraries the spectrum of user needs is wide and may even spread over a number of subjects. The size OF shared resource has to be large. In a scenario dominated by centralised acquistion and storage, developing the need resource may prove capital extensive. Since the funding to is come from the member libraries, the burdon on financial share on each library may come out heavy and unbearable.

In case of close group formation, wherein the member libraries are from the same organisation, the governance is through an established library

It should be recognised that scientific journals are gradually, year after year becoming expensive , and library budgets are correspondingly declining in relation to the cost of journals. The future projections are that many important journals will disapper from the libraries. In particular, it will include expensive and unaffordable journals. Hence any resource sharing model must organise shared resource in such a manner that it provides access to needed journals. In view of the fact that publication media is fast becoming electronic, any resource sharing model should provide for electronic journals.

The model proposed is a Centralised Shared Resource at Organisational Level by Subject. It provides for:

* share journals in electronic form
* limit sharing to selected journals
* limit shared resource to specific subject areas
* centralise acquisition of selected journals
* acquire only of network editions of journals
* centralise storage of shared resource
* centralise facilities for access to shared resource
* centralise facilities for document delivery service
* limit cooperation to libraries of a system
* funding for acquisition to be supported by the headquater of the organisation
* libraries to pay membership fee for service and access

This model is similar to the INFLIBNET model except that it advocates for a central shared resource and centralised facilites and services for using the shared resource. The boundary conditions are that membership to the resource sharing group is limited to institutions belonging to same parent organisation such as the CSIR, ISRO, DRDO, and DAE. If such a group is large and unmanagable it can be further tailored and reduced by subject. The larger the group size the greater the problems in managing desired results. Hence such a model will work as long as the group size is manageable.

In resource sharing, providing access to contents information and full text of articles from shared journals is the key to its success. From the users perspective, user services should be the major focus of activity in resource sharing. However, in actual practice it is the rationalisation of periodicals which had attracted attention and bacame the major focus of activity in resource sharing. It has since helped to economise on library expenditure on periodicals. The resource sharing has, in essence, benefited the parent managements in the participating institutions more than it has benefited the enduser. To make resource sharing meaningful to users the emphasis in its activities must shift. The paper attempts to understand the current problems in resource sharing and suggest a viable solution for making it an effective and useful framework.

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RESEARCH SHARING MODEL FOR BHOPAL CITY

Balbir Kaur Khanuja

ABSTRACT

Bhopal is emerging as an educational centre, and for number of factors gap has been felt between enthusiastic readers and latest information. As a solution "Research Information Centre", a centralized, modern, Automated Nodal Agency is suggested. RIC will become a common platform of available database in the different college libraries.

This study paper is a full-fledged plan for development of this resource sharing model in Bhopal city. The plan includes need, objective and process for Research Information Centre. It also discusses about communication links, infrastructural requirement and financial implications for the above project.

RIC once implemented will continuously evolve with the needs of users, member libraries and changes in technology. Thus it will become the most modern operating library in the 21st century in Bhopal city.

1. INTRODUCTION

Bhopal is emerging as an Educational Centre, with the recent growth in number of under Graduate and Post Graduate Colleges. These new institutes are offering various new full time, part time and vocational courses. Libraries in these institutions are either in infant stage or are unable to provide minimum Library services to the students. Similarly the existing college libraries are also facing continuous resource constraint. Considering this situation the libraries are unable to provide costly relevant books as well as journals to the enthusiastic readers. Because of this, for a long time a gap has been felt better Readers and Information dissemination.

Moreover the readers are continuously using latest information technology, therefore they find the traditional method of information generation from library, uninteresting and time consuming. Recent advances in computer science also demands that the libraries should be upgraded, automated and networked according to the needs of reader.

2 NEEDS FOR RESOURCE SHARING MODEL

(a) Enormous growth of published records;
(b) Needs for effective control of library resources for retrieval purposes;

(c) Inability of library staff to handle enormous data;
(d) Complexity of user demands;
(e) Limitation of Library space and finance;
(f) Advances in computer science in terms of hardware and software capacities to handle effectively bibliographic storage and retrieval.
(g) Advances in library networking

Considering the above factors responsible, it becomes a necessity to launch a centralized, modern, automated "Research Information Centre" as a nodal agency for all the college libraries.

The main and the primary objective of Research Information Centre would be resource sharing amongst different college libraries in Bhopal city. RIC will become a common platform of available database in the different libraries. At the same time RIC will act as bridge between the readers and the latest available knowledge.

3 OBJECTIVES OF "RESEARCH INFORMATION CENTRE"

(a) To promote sharing of resources among the libraries in Bhopal by developing an network of libraries, by collecting, storing and disseminating information and by offering computerized services to the user.
(b) To coordinate efforts for suitable collection development and reduce unnecessary duplication wherever possible.
(c) To develop specialized bibliographic data-bases of books and non-book materials.
(d) To offer guidance to member libraries on cataloguing, editing, database services circulation, in line services selection of hardware and software etc. These services in turn will save time of member libraries to provide better services for readers.
(e) To establish a referral centre, to monitored facilitate catalogue search and maintain a central online union catalogue of books, serials and non book materials of all the participating libraries.

4 RESOURCE SHARING PROCESS

In order to make a beginning in this direction a survey of the important city libraries will be conducted. An organization committee could be constituted and the convenor could write to the heads of favourable institutions informing them the advantages of resource sharing and inviting them to joint the network.

The selection of libraries the network should be based on certain criteria:
(a) Each library should be willing to buy its own hardware and atleast have are telephone connection either a direct line or a line with EPABX
(b) The library should have at least two professional to handle the network.
(c) It should undertake to pay the admission membership fee when the network becomes operational.

(d) The participating libraries should follow rules and regulations of the network and be willing to create bibliographic records as per standards laid down.

The pre-requisite for RIC to be successful is that the participating libraries should be willing to share. Members should agree to abide by the minimum modalities worked out in the monthly meetings. Agreement should be reached regarding what can be and what cannot be shared amongst libraries. Similarly issues like loan period, renewals, payment of lost material etc. have to be discussed and should arrive at consensus.

5 COMMUNICATION LINKS: NETWORKING

The most cost effective way for connecting various members libraries to the nodal agency would be through internet. The internet is a collection of networks, a giant agreement among thousand of computer systems to connect together. This facilities or the latest technology resolution will be used for building resource sharing network. For this essentially each and every member library should have one pentium-II computer and an internet connection (which is only possible through a telephone or EPABX line). RIC being a coordinating authority will have to handles immense data on LAN which will have one serve with main computer and four nodes connected to it. (Initially).

RIC will be maintaining a website, through which member libraries can access any data any time based on their requirements through internet facility. Every bibliographical data will be maintained and updated regularly by RIC. Thus a strong communication network will be established amongst member libraries and Research Information Centre. Moreover separate internet at concessional rates are available for educational institutes.

6 INFRASTRUCTURAL REQUIREMENTS

It is essential that the project should be completed in three stages. And it is expected that each phase will be of six months.

Stage-I: The resource sharing concept has to be floated amongst various libraries and more than five libraries should agree for resource sharing concept. Their Bibliographical Data can be entered into RIC computer.

Stage-II: The basic infrastructural requirement should be fulfilled by 2nd stage of RIC. At the same time member libraries should be computerized and employees should be trained to work on computer.

Stage-III: In the final stage individual libraries will be networked with RIC and the latest information regarding availability of books and journals will be gathered from the centre.

6.1 Hardware/Software

Essential for Member Libraries

(a) Celeron 300 A processor, 128 KB L2 cache, 32 MB SDRAM, 1.44

MB FDD 2.1 ultra UDA HDD, inbuilt sound car, HP Mouse, HP Key Board, WIN'98, Microsoft Internet Explorer 4, Colour Digital Monitor, Multimedia including 36xCD-ROM Drive & 160 Speakers.

or

Equivalent Configuration

(b) Modern for internet connection. 33.6 KBPS.

(c) Internet connection (whole network can share the same internet connection by sharing password amongst the member libraries)

6.2 For Research Information Centre

(5 Computers connected in LAN)

- Modern 56. KBPS
- One Server Intel Pentium II 350 (440 Bx) MHz 512 KB L2 Cache, 64 MB SDECC RAM, 4.3 GB Ultra wide SCSI HDD, 1.44 MB FDD, 1.2 MB FDD, integrated PCI UW SCSI Controller, Creative multimedia (with PCI 64 Kit) HP Netserver AGP Display card with 4MB VRAM, 10/100 TX CI LAN Card, MP top tools for server 1.1, Build in automatic server restart:
- 15 "Digital Colour Monitor".
- Celeron 300, 32 MB SDRAM, 2.1 Ultra UDMA HDD, 2SI Port, 105 Key Board, Mouse PXI VGA with 1 MB VRAM, 1.44 FDD, 32 Bit PCI LAN Card 10 MBPS, 14" Digital Colour Monitor, 42xCD ROM Drive.
- (Four in No.) Celeron 300, 32MB SDRAM, 2.1 Ultra UDMA HDD, 231 P Port, 105 Keys Key Board, Mouse, PCI VGA with 1MB VRAM, 32 Bit PCI LAN Card 10MBPS, 14" Digital Color Monitor.

or Equivalent Configuration

Essential care will be taken regarding procuring software for RIC. It should be internationally tested for large databases. This software should be provided be free to member libraries. And as soon as the work on the network begin training should be organized for staff in Library automation and networking.

7 FINANCIAL IMPLICATIONS

This resource sharing model is being considered by Higher Education Department with keen interest. In this context funding for the I phase may be procured from Higher Education. Similarly UGC, membership fee from the participating libraries, membership fee from reader etc. will provide the required funding for above proposal.

Estimates of Expenditure for Bhopal Net

S. No.	Particulars	Investment in I Phase
01	Infrastructure & Site	75,000.00
02	Hardware auxiliary Equipment & System	2,75,000.00
	1) Every member 55,000 x 5 =	3,25,000.00
	2) RIC	
03	Communication hardware & Software	1,00,000.00
04	Application software	1,00,000.00
05.	Training	50,000.00
06	Miscellaneous	25,000.00
	TOTAL	**9,50,000.00**

The above investment is only in I Phase and similar investments are expected in II and III Phase also. Similarly for purpose of annual maintenance estimate has to be worked out for operating expenses.

Estimated Annual Operating Express of Bhopal Net

S. No.	Particulars	Investment in I Phase
01	Manpower (RIC) (Director on deputation, 3 data operator on contract, 1 peon)	2,00,000.00
02	Computer time (annual usage charges)	1,50,000.00
03	Maintenance charges	1,00,000.00
04	Others	50,000.00
	TOTAL	**5,00,000.00**

8 CONCLUSION

This Research Information Centre will become the most modern operating library in the 21st century in Bhopal city. It is suggested that the network should grow in relation to the changes in the technology, interest of the participating institutions, the performances of existing hardware and software, and the influence of the users and interested groups. Similar networks can be established in the major cities of Madhya Pradesh, which in turn can be connected to form a state level network for information dissemination.

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INFORMATION TECHNOLOGY AND RESOURCE SHARING

B G Saknure*

ABSTRACT

Most libraries in India are being required to operate more efficiently. The resource sharing and networking in libraries are the powerful tools for both increasing productivity and enhacing services to meet the changing needs of library users. Resource sharing in India like in many developing countries, in still in its infancy whereas in many developed countries like UK and USA it has been in operation since long. The signifincance of networking and resource sharing are highlighted. Author has also taken into consideration the objectives of resource sharing. Need of resource sharing through networks, factors making resource sharing a necessity, feasible areas for resource sharing and economics of resource sharing. Advantages of resource sharing by networks and problems of resource sharing by online networks are also described.

1 INTRODUCTION

Resource sharing in India like, in many developing countries is still in its infancy, whereas in many developed countries like U K & USA it has been in operation operated since long. Information is a very vital resource. It has been considered as a basic input. Overall development of a country depends largely on the volume of the knowledge it uses. It is required to support various activities related to planning, organising, policy making, and for decision making function. To provide pin-pointed, expeditious and exhaustive information at the right time to the right person, and it is essential to use modern information technology.

Today it is beyond the working ability of any library to cater and satisfy the information needs of the user withour using modern information technology. The aim of using information technology is enchacing efficiency, improving realiability and reducing costs.

Teaching and research in all the institutes is centered around their libraries. The libraries with their limited financial resources, face serious problems in manaing enormous information flow. It is essential for libraries to share their resources and organise services on a co-operative basis to

*Librarian, Shri Guru Gobind Singhji College of Engg. and Tech., Vishnuji, Nanded (M.S.)

satisfy collectively the information needs of users.

2 RESOURCE SHARING OBJECTIVES

1. Reciprocity: That is bi-directional movement is again needed if resource sharing is to be meaningful.
2. Bibliographic Access: Bibliographic access bacome increasingly interesting as the labour of catalouging books which are acquired in many libraries is distributed rather than replicated, through shared cataliguing.
3. Resource sharing requires access to circulation of information to avoid dis-appointment and to accelerate the process of document location at another library.
4. If resource sharing is to be successful, it must occur before the need for material disappears.

3 NEED OF RESOURCE SHARING THROUGH NETWORKS

The convergence of computer and communication technologies has expanded the horizons of the individual library to resources on a national scale. The computer networking has opened the possibility of sharing the bibliographic systems and the database of libraries. Recent progess in telecommunication has been a major impetus to the development and expansion of library network. The network function are:

1. Optimisation of collection in libraries with limited budget.
2. To promote and support adoption of standards in library operations.
3. To improve effeiciency of house keeping operations.
4. To generate new services and to improve the efficincey of the existing services.

4 FACTORS MAKING RESOURCE SHARING A NECESSITY

1. Exponential information growth.
2. Increasing cost of information materials.
3. Technological advancements that offer never methods of information processing retrieval and dissemination.
4. Increasing Imphasis on eliminating unnecessary duplication of information sources.

5 FEASIBLE AREAS FOR RESOURCE SHARING

5.1 Inter library loan

In the network environement inter library loan possible through electronic mail facility. The person at the other end reads the mail and locate the relavant document. If the document is available in machine readable from, it will be sent through e-mail otherwise the hard copy will be sent through

courier service.

In online environment one can search the holding of the other library. If the documents are available, a message can also be laft for sending it on loan.

5.2 Acquisition

The acquisition system can be easily possible with the help of online ordering facility. In developed countries online facilies enable the publishers and book sellers to link through networks. The libraries thus have access to latest information and can decide whether they should acquire a particular book. The sharing of cataloguing when the proofs of a book are at printing stage. The serial control is also possible in integrated system.

5.3 Staff training

Now-a-days as library automation and networks are growing the need for trained and skilled manpower also grows. It is essential that the expertise of the skilled personnel is shared.

5.4 Union Catalogue

Union catalogue of all participating libraries of network should bed complied and updated regularly in science and technology.

5.5 Information Services

As information is an important resource of the library, it can be shared through e-mail and networking tt is stored in machine readable from. Some information networks services are: 1. MEDLIND- U S National Library of Medicine. 2. IINFLIBNET 3. AGRIS 4. DIS.

5.6 Translation Services

Institutes like INSDOC provides translation services to scientists. They should crate translation banks in machine readable forms.

5.7 Development of Special Collection

To make information available through resource sharing networks, each library in the network should develop collection specialising in the areas of their interest.

5.8. Cooperative Storage

It is achiieved by arranging the deposit of publications at local and regional levels. It reduces duplication of material and provides more space for new books to the particular library. Information about new books additions is given in catalogue.

6 LEVELS OF RESOURCE SHARING

Resource sharing networks are available at local, regional national or internation levels. There are three levels of national resource sharing networks, These are : 1 Local: Information is stored in the form of Union Catalogue, 2. Regional: Information is stored and servies are provided on broad subject area. 3. National: National Union catallogue of documents is prepared and services are provided to users.

7 IMPACT OF TECHNOLOGY ON RESOURCE SHARING

Today the information function stretches a beyond the precincts of a library. It challenges all those engaged in the systematic organisation, processing and handling of information and data. There has been a remarkable broading of information requirement base.

For a number of reasons there is reluctance to accept change. But there is new outlook on the horizon climate a which promises an appreciable degree of if interaction is beginning to take place between prople working in different sectors. Areas in which co-operation is feasible are being actively sought and there is increasing evidence of attempts to undertake joint evaluation of new systems and techniques.

The impact of electronic computer on library services is dramtic. Distance over which data can be transmitted range from a few meters to any place world over.The machine has taken over all the routine work of selection, abstracting, indexing and cataloguing previously done by professional information officers and libraries. The steadily growing range of commercially available subject oriented current awareness services in hard copy forms has devalued the importance of in-house service. As the computer capabilities has increased, more convenient to use, onlice access to information will be only a telephoe connection away from him. Instead of phoning the library for information the inquirer will be in a position to dial the appropriate file from his terminal.

8 ECONOMICS OF RESOURCE SHARING

The economic benefits of resource sharing may be outlined as follows:

1. No library can afford to acquire all published materials in the areas of its specialisation, due to high procurement cost and investments on processing servicing, space and personnel. Each library will have to depend on the resources of the other library through network.
2. The application of new technology to resource sharing will ensure that useful information is made available to users effectively faste thus we can save valuable time of users.
3. Co-operative collection development can result in effective relationship of between libraries.

4. Shared cataloguing and clsssification through networking can reduce financial burden on each library.

9 ADVANTAGES OF RESOURCE SHARING BY NETWORKS

1. Cost sharing
2. Reduction of cataloguiing cost through co-operative
3. Inter-library-loans are made easier by the availability of up-to-date union catalogue
4. Sharing of a larger resource than an individual organisation can afford.

10 PROBLEMS OF RESOURCE SHARING BY ONLINE NETWORKS

1. Incompatibility between computing systems often limits cooperation between networks.
2. The computer networks that make resource sharing are not cheap.
3. Accessing information from international networks is a costly afffair for libraries in India.

11 CONCLUSION

Networks and online information retrieval system form an inevitable necessity for the libraries. An overview of computerised library networks at national and international level reveals that much progess has been made in the western countries. As far as India is concerned, inspite of launching serveral satellites during 1980s, it is difficult to predict when will materialise its plans and give users access to all information generated and available in the country. A lot of efforts is need for communication networks technology implementation. Automation of libraries to make their records available in machine readable form, in a standard format, can also bring about efficient implementation of online networks for resource sharing.

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INDUSTRIAL INFORMATION: NEED FOR INDUSTRIALA INFORMTION NETWORK [INET] IN INDIA

Jesudas Manalan*
A. Manoharan**

ABSTRACT

The paper outlines the industrial information and its diversity such as managerial informtion, marketing information, financial information and Information for R&D. Mentions the importance of industrial information to bring the output in the form of improved innovation processes, increases productivity, increased competitiveness, better environment and higher profitability. Enumerates the information needs of different industrial information users. Explains the Indian scenario of industrial libraries/information centres and their holdings and services. Highlights the need for having an exclusive Network for industrial Information in India in terms of aims and objectives authority, structure and information service. Stresses the role of government and national agencies in launching INET in India.

1 INTRODUCTION

Industrial information is an important resource in the creation, maintenance and development of any industry. It is a commodity which attains a true value to society only when it is utilised in the production of goods and generation of services. However inspite of these facts, so far little effort has been made to study the information needs of the Indian industry.

2 INDUSTRIAL INFORMATION

Richard L Meir defined industry as "an organised system of production including means, equipments, knowledge and institutional identities[1] industrial development within a solciety is judged by an expansion in the production of goods that are in demand. Industrial development implies increasing capability of the production only. In countries like India with a high ratios of population to natural resources, the manufacturing industry represents virtually the only hope, the successful exploitation of more favourable relation between population and material resources. During mughal period India had a considerable variety of arts and handicrafts industries. The East India company which was set up in 1600, set the pace of industrialization and

* Librarian, Bishop Heber College, Tiruchirapalli-620017, Tamil Nadu
** Lecturer (SS) in Library and Information Science, Tiruchiraplli-620017, Tamil Nadu.

trade in the country. The rural and cottage industries during this period were started.

The progress of industrialization in India in the post independence period has been remarkable. Large scale investments have been made in the industry in pursuance of a conscious policy of industrialization under five years plans.

Information is a symbol or string of symbols which has potential to imply meaning. Information defined by Farradane as Any physical form of representation or surrogate of knowledge or of a particular thought used for communication[2] Information in its wider sense is not limited to facts in documents but it covers a wide spectrum of issues including emotions, facts, opinions, guidance and persuasions[3]

According to Benergee, industry needs information for duel objectives-prediction and control. The prediction refers to factual and control deals with the immediate past having a direct bearing on the present. Information for control is almost exclusively internal. But in the planning stage itseif the process of fereasting occurs.[4]

Industrial information is much more wide and diverse and is quite different from scientific information. Besides the above mentioned general purpose, the industry requires the information for other activities.

1. Managerial information: Management accounting, organisational cost analysis, production cost, financial problems, productivity and sales promotion.
2. Marketing information: internal and domestic competitors, export, import, consumption, demand and supply, marketing customers, etc.
3. Financial information: Budgeting, funds management, financial policy, cost control and allied matters.
4. Information for research and development: R&D activities is essential for product development and quality insurance. R&D in engineering and technology, new products and process, technology import, machinery and equipments, raw material availability etc. Other than this the information for planning, decision making human resource management, Regulatory information, etc. are essential for industries.

3. IMPORTANCE OF INDUSTRIAL INFORMATION

Industrial information is a vital input to bring the output in the form of improved innovation process, increased producitvity, increased competitiveness, better environment and higher profitability. As stated by Sweeny, "any firm depends on its success in effectively operating as a learning system. If it fails in this it looses its markets and goes out of existence. The demands on the firm from government and from people are real and improvement in quality and standard of life. To meet these demands industry requires further inputs in the form of knowledge information."[5]

4 INFORMATION NEEDS

As a basic resource, information has to be harnessed and exploited and utilised for better performance of industry, agriculture or any other enterprises. It is a pre-requisite for effective functioning of industrial enterprise. The thurst areas of information for industrial development are feasibility studies, project reports, market survey reports, address of machinery suppliers and price lists etc. At pre-investment stage a prospective entrepreneur needs techno economic and financial information for selection of the product. Information on market feasibility is very much essential for promotion of a product in the competitive market. To establish a unit, information about machinery suppliers is very much essential. Usual sources of this information, like directories are not sufficent as the information available not updated. Latest information about prices of the machineries also very much essential for preparation of the project reports. But information of this nature is not available mostly in the unpublished documents of government organisations, institutions, etc.[6]

5. INDUSTRIAL LIBRARY/INFORMATION CENTRES IN INDIA

The Industrial library and information centres in India have the holdings of i) Documents (books, periodicals, patents, standards, translated articles, drawings, maps); ii) Non-documentary materials (audio video, CD-ROM, magnetic tapes microforms, etc.); and iii) Information on electronic media (CD-ROM, magnetic tapes/floppies, online facilities).

The Industrial library/information centres are also having computer facilities. It is obvious that automation in these centres is mostly PC based. The mostly used hardwares are PC/AT 486, PC/AT 386 and PC/At 286. At the same time the most widely used software packages are dBase, Wordstar, Lotus, CD/ISIS, etc.

As could be expected all most all centres are providing lending service. Besides, other services like abstracting, indexing, bibliographic, non bibliographic, digests, current awareness services (CAS), selective Dissemination of information (SDI), technical enquiry, translation and audio-visual service. Reprographic services and computerised information services also have been provided [7]

6. NEED FOR INDUSTRIAL INFORMATION NETWORK (INET) IN INDIA

Most of the Indian industrial LICs have small collections and emphasis is clearly on the acquisition of patents, standards, reports, etc., rather than books and periodicals. At the same time, information centres change their nature when their parent enterprises have some research or consultancy functions in addition to manufacturing.

Some of the information centres have started acquiring computer facilities, CD-ROM search facilities, on line access facilities and have started adding non-print materials. That every enterprise has its own information needs has been clearly brought out by the dependence of each information centre on a number of other centres which are attached to mainly academic and research organisations.

Besides the industries of national importance there are plenty of industries in the field of boilers, steels, sugars, cements, chemicals, rubbers, batteries, textiles, etc. in India. It appears to be imperative that there is a need for an exclusive data network to exchange the industrial information dissemination, assimilation and requirements of the industries in India.

6.1 Network—What

A network implies computer and communication links that permit computers to communicate with each other and to share programs, facilities, data and knowledge based. A network can be local, regional, national or international. It is for the electronic transfer of information between two or more points irrespective of distance. Networks have been developed to link industrial plants, banks, schools, offices, libraries and information centres etc. These networks provide resources and information to their users in larger volumes at a greater speed than the earlier methods did [8]

In the context of industrial information, it has been used to mean anything from the organizational resource sharing arrangements established among industrial libraries and information centres to automate networks such as those operated by bibliographic utilities.

6.2 Aims and Objectives

The major aims and objectives of INET should be

1. To promote sharing of resources among the industrial libraries in India through computers networking for maximum use of resources and better facilities for researchers and users.
2. To assist member libraries in cataloguing of books, serials, non book materials and catalogue production.
3. To co-ordinate efforts for suitable collection development and reduce unnecessary duplication wherever it is possible.
4. To establish referral centre to monitor and facilitate catalogue search and maintain a central online union catalogue.
5. To facilitate and promote delivery of documents manually or mechanically.
6. To develop a database of a industrial information and to maintain electronic communication of information for delivering industrial information.

6.3Authority

Ministry of science and Technology, Govt. of India, Department of scientific and Industrial Resaearch, National Information System for Science and Technology (NISSAT) and INSDOC can jointly launch this network with the assistance of SENDOC, Centre for Industry Information and the industries of national importance.

6.4 Structure of INET

There are three basic anatomical structure in computer network namely a) Star b) Hierarchial and c) Distributed. The distributed network structure being recommended in this case.

Each node in the distributed network is an Industrial Library/Information Centre. When this network is fully operational each member organisation will be able to tape information from national and International network through INET.

The proposed member organisation of INET should have their own independent libraries. The bibliagraphic and library related information could be automated in the respective libraries. A database could be created in individual member organisation. The database could then the accessed by other libraries through the INET. The resource to sharing library could thus be accelerated.

The member organisation may have any type of modern computer, a graphic work stations or mainframe computer. One modem is to be purchased for every member organisation subscribing to INET. The communication can be either regular telephone line or an exclusive line specially leased for networking Operations. The cost can be shared by member organisation for initial set-up subsequently the billing may be made based on the volume of information transfer. The guide line for these aspects could be prepared by INET committee.

6.5 Information Through INET

The INET centre could provide information on technology trends, business opportunities, Export marketing, joint ventures, technology sourcing, feasibility and detailed project studies, health and safety, transport, materials environmental protection, human resource management, etc. through world wide database to meet the specific needs of a wide range of users like entrepreneurs, technologists, engineers, service and project managers, marketing staff, contracts and finance administrators, researchers, students, library and information professionals etc.

Besides the above areas the centre also could provide the following database available in India.

6.6 Database on INET

Compiled by National Aeronautical Laboratory, Bangalore. This database covers law materials, sophisticated processes and products. It contains

information collected from international journals, publications, patents and technologies formulated in Indian laboratories and industry.

Food Technologies

Compiled by Central Food Technologies Research Institute, Mysore. Contains technology-related information on different sectors of the food industry-dairy, poultry, ready to serve drinks, beverages, sea food, fruit and vegetable processing. Some of the products have high exports potential.

Energy

Compiled by Tata Energy Research Institute Covers Technology related information on energy/power reactor energy conservation devices, concepts and techniques, renewable energy technologies (Solar, thermal and photo-voltaics, energy from wind and biomass, etc.). The new technologies have tremendous utilization potential in the country considering Indias vast resources in solar radiation, wind and agriculture residues.

Non-Ferrous Materials

Compiled by Materials Research Society of India, Hyderabad. Contains information both established and emerging technologies. It covers new fields like plasma coating, powder metallurgy, superalloys and special coatings for various end uses. Conventional Technologies like extraction of metals such as aluminum, magnesium, tungsten, titanuim are also included.

Environmental Technologies

Compiled by National chemical Laboratory, Pune. Covers various options available for waste utilization and sisposal-both in India and abroad. Technologies specific to different industries for reduction of pollution levels in air and water are available. Treatment of Effluents to prevent discharge of hazardous chemicals and other industrial wastes are also detailed.

7 CONCLUSION

The development and management of industrial information network involves high commitment and dedicated efforts in the Indian environment where majority of industrial libraries/Information centres do not have adequate computer facilities, financial crisis and qualified and computer-trained professionals to introduce networking. Co-operation not only among the industrial libraries but also among the various industrial information networks is essential for the success of networking of Industrial Information in India. In addition, necessary steps should be taken by the authorities to plan and operate the system with a further vision.

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LUCKNET : A PROPOSAL FOR NETWORKING OF LIBRARIES & INFORMATION CENTRES IN LUCKNOW*

Roshan Raina*

ABSTRACT

Need for establishing network of libraries and information centres in the city of Lucknow, under the anym, LUCKNET has been justified. Objectives, services, service stages, hardware and software considerations, architecture (communication and topology) paramaters, standardization, governance and training issues related to the proposed LUCKNET have been highlighted.

1 INTRODUCTION

Lucknow occupies an important places in the country in so far as scholarship is concerned. It has earned a unique distinction in the country of having four national research laboratories of the Council of Scientific and Industrial Research (CSIR). These are the CDRI, ITRC, NBRI and CIMAP. Other prestigous seats of learning, research and scholarship include: the Lucknow University, IIML, BSIP, IISR, KGMC, SGPGI, BBAU, NRLC, RDSO, BIRD, SIDBI, CIHNP, NBFGR, CIPET, SIHFW, HAL, GSI, GIDS, IET, RSAC, PICUP, IMDUP, the British Library, Acharya Narendra Dev Pustakalaya, Amir-ud-daula Public Library, State Law Officers Library, Legislature Library, and many rich college and school libraries.

With such a rich scholarship and learning resource base and having many firsts and uniquenesses to its credit, particularly in terms of social, cultural, religious and scholarship aspects, unfortunately, this great city has lagged far behind other parts of the country in so far as advantageous exploitation of the computing, communication and networking technologies in information acquisition, organisation and dissemination is concerned. This does not, in any way, mean that there havn't been any concrete efforts

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* Based on the discussions that took place in a "Seminar on IT Applications and Networking of Libraries & Information Centres in Lucknow", organised by the Uttar Pradesh Library Association (UPLA), Lucknow Branch, in Lucknow November 15, 1998.

**Librarian, Indian Institute of Management, Lucknow - 13

made towards sharing of resources among the libraries and information centres (LICs) of Lucknow, till today. In fact, way back in 1981, the professionals of Lucknow organised a successful "Seminar on Coordination in Resource Sharing", during Oct. 19-22, 1981. The seminar was a big booster to yet another serious effort in this direction and that was the formation of "Lucknow Special Libraries Consortium (LUSLIC)" on June 27, 1983 [1]. We know, we haven't progressed much, either through LUSLIC or otherwise, in networking (in the real sense of the term), but the efforts of LUSLIC in this direction, particularly in bringing out the "*Union Catalogue Of LUSLIC Libraries: Periodicals, Serials/Annuals*" can not escape attention. However, in view of the success stories of many efforts in this direction, particularly the DELNET, in Delhi; BONET in Mumbai; MYLIBNET in Mysore; BALNET in Bangalore, ADINET in Ahmedabad; etc., I strongly feel that we, the professionals of this great city, have to, without any further delay and with utmost seriousness work out the feasibility, practicality and operatability of a network in Lucknow. Status on the availability of the state-of-the-art Information Technology (IT) products and IT application in the LICs of this city, as seen in Annexures 1 through 4 [2] is quite supportive of the fact that all the important LICs in Lucknow have adequate infrastructure to take-up and absorb these technologies at the earliest. All that is needed, for exercises of this kind to take-off, is just the dedication and willingness on the part of the professionals and encouragement from the top management of these prestigious organisations of this great city. It is in this backdrop, it appears meaningful to refer to the following issues and facilities concerning library and information networks(LINs) and, in fact, these form the basic objectives of the LINs:

2 THE OBJECTIVES

Study reports and feasibility reports prepared for the CALIBNET[3], DELINET [4] and INFLIBNET [5] can serve as a guideline to formulate the objectives of the LUCKNET. However, LUCKNET will essentially evolve as a national network of the libraries of the management schools with the following objectives:

1. To identify all the potential users of the programme and to be responsive to their scholarly needs.
2. To encourage the participants to pool and share their resources so that a usable and exhaustive knowledge resource base is built-up and the limited funds are thus made to go a long way.
3. To overcome time, space and language barriers in: (a) accessing; and (b) obtaining the desired document/ information through: (i) compilation of union catalogues; and (ii) promoting faster modes of

document delivery.

4. To facilitate access to other related national and international databases, information centres and networks in India and abroad.
5. To evolve standards and uniform guidelines in techniques, methods, procedures, hardwares, softwares and services and promote their adoption.

3 THE SERVICES

These objectives could be fulfilled by offering the following services:

3.1 Catalogue-based Services

(i) Shared cataloguing
(ii) Union cataloguing
(iii) Online cataloguing
(iv) List of latest additions
(v) Retrospective conversion
(vi) Authority files

3.2 Database Services

(i) Subject searches
(ii) Retrospective searches
(iii) Author and title searches
(iv) National and local network support
(v) Connection to external networks
(vi) Non-bibliographic information
(vii) SDI
(viii) Referral services
(ix) Electronic mail
(x) Servicing of databases on CD-ROMs
(xi) Bulletin boards
(xii) File transfers
(xiii) Databases of projects, specialists and institutions in the field of management and related areas.

3.3 Inter-library Loan Request Processing, Record Keeping and Document Delivery (fax and non-fax)

3.4 Acquisition

(i) Pre-order searching
(ii) Integration with cataloguing, OPAC and searching
(iii) Account keeping
(iv) Supplier name/address file
(v) Updation of databases when documents are withdrawn

3.5 Serials Controls

(i) Serial cataloguing
(ii) Checking
(iii) OPAC for serials
(iv) Subscription ordering
(v) Full screen editing
(vi) Exchange lists

3.6 On-line Database

3.7 Budget Control

4 THE SERVICE STAGES

These services may be started in the following three stages:

4.1 First Stage

Electronic Mail; Bulletin Board, File Transfer, Fax Transmission and Referral Services are some of the facilities that can be started, once thelibrary systems are interconnected through reliable electronic communication links.

4.2 Second Stage

In the second stage, catalogue and other database based services like catalogue search,catalogue production, shared cataloguing, database searches, union catalogues and collection development can be taken up. The conversion of union catalogue into compact discs (CDs) and the sale/ use of such products in India and abroad could also be taken up eventually.

Rationalisation of acquisitions among participants, particularly in areas like subscription to electronic journals, acquisition of high cost reference materials and databases in CD-ROMs, etc. [6]

4.3 Third Stage

Services like CAS, SDI, Indexing, Abstracting, Bibliographic, etc. could be taken up in the third stage. The aim of the network has to be finally to link all the operations of the participant libraries, including circulations and acquisitions, within the network so that users get a clear picture of the document/s needed by them. Also interconnection with other networks/databases in the country or abroad to facilitate data access and input could also be taken up at this stage.

In line with the above, it will be appropriate for the prospective participants of the proposed Lucknow Libraries & Information Centres Network (LUCKNET), to have some clarity on the following critical pre-requisites:

5 HARDWARE

To start with, the participating libraries, given their size, may start with a

Pentium or Pentium Pro (with standard configuration), which can be upgraded at a later date as the bibliographical records grow in these libraries. Ideally, LUCKNET participants may have (or go in for) computer systems which:

* have minimum hardware redundancy
* have scope for upgradation
* have high computing facilities
* are compatible to improved softwares and
* are compatible with other computer systems [6].

6 SOFTWARE

Software required for LUCKNET can be grouped under:

* System Software
* Application Software and
* Networking Software

System software is a part of the hardware and is offered by the hardware vendor. It controls computers and peripherals. In the library environment, the application software in MS-DOS is good for database creation, while Unix and Xenix are essential for networking.

LUCKNET participants should go in for an integrated library software package which meets the following criteria:

* is an integrated software package
* compatible to various hardware systems
* compatible to Indian and International bibliographic standards
* should operate in a multiuser environment
* should be user friendly and menu driven
* should have least response time
* should be capable of handling bibliographical as well as textual data, also variable field, sub-field and record lengths
* should support data security through passwords
* should have provision for thesaurus and authority file maintenance
* should facilitate output through card printing, bibliographics and on magnetic media (taps, diskette, etc.)
* should facilitate search through Boolean logic, single term search and subsequent coordination, multiple term search, parenthetical grouping (=,>,<) set building, truncation (left, right, in between), adjacency search
* batch processing and editing features
* wild card, field directed searching
* import/export of data through standard exchange format
* the package should function on a LAN as well
* the software should be supported by well written manuals (user/programmer/ system manager level), on-line helps, tutorials.

UNESCO developed software CDS/ISIS is in use in many libraries in the country. Version 2.3 with enhanced capabilities under the name SANJAY developed by DESIDOC operates in a multi-user environment, MAITRAYEE, another software package developed by CMC Ltd. also operates in multi-user environment. However, since it is based on INGRES, it can prove costly for the network participants as they will have to buy INGRES. LIBSYS, an integrated library software package, is finding an increased acceptance level among reputed Indian library systems. Since none of the softwares has been tested for operation with large databases over some time, no software package has been regarded ideal for networking. However till a suitable networking software is available, latest version (3.07) of the CDS/ISIS could be used for bibliographical databases creation.

It will be ideal if all the libraries in the LUCKNET have the same software, as with different softwares the extent of networking will not be of a high grade.

7 NETWORK ARCHITECTURE

7.1 Communication

There are many options available to connect the different nodes in the network. LUCKNET participants fall in the Metropolitan Area Network (MAN). The appropriate channels of communication could either be dedicated telephone lines or satellite links or hybrid of both. The main advantages of the satellite based networks are: (a) reliability; (b) higher transmission rate; and (c) economy in access, etc. Since DELNET and CALIBNET programmes have gone in for leased DOT lines, LUCKNET, may also go in for similar arrangements. The exact choice will, however, depend upon the actual traffic flow in the LUCKNET.

Until the telecommunication support is made available, the libraries equipped with computer facilities should find alternative to interact with each other through fax, telex, telephone and speed post. The participant libraries of LUCKNET may extend off-line bibliography services to each other based on their local databases. The off-line facility should enable them to enjoy various benefits that include: (a) Consolidated Reference Service and (b) Coordinated Selection and Acquisition.

7.2 Topology

The nodes, when linked together, form patterns that are classified as star-like topology; tree-like topology; ring topology and meshed topology. In the star topology, the nodes are connected to a central host, hence this topology may be suitable for LUCKNET. However, the topology for LUCKNET must evolve, because there are several factors like funds, trained personnel, hardware, software and communication facilities that continually influence their growth.

8 STANDARDISATION

Observance of and adherence to standard techniques, procedures and methods is an essential pre-requisite for the effective functioning of a network. Participating libraries will have to follow certain procedures and practices, without which the resources held by them cannot be effectively and meaningfully shared. In the context of library networking, standardisation in areas like; classification, subject indexing and cataloguing of various kinds and types of library materials; bibliographic description, standard identification numbers, codes and abbreviations; transliterations; abstracting and indexing; interchange of bibliographic data; search command language to use the catalogue/bibliographic data; etc. is very necessary.

In view of the fact that the libraries proposed to get networked in the LUCKNET programme, have been following different classification schemes, catalogue codes and subject heading lists for various information handling activities, a quick changeover to some commonly agreed procedures and practices might be difficult. Also since the scenario, in other networks, in terms of standardization is not very clear, it might not be appropriate to make specific recommendations for any specified procedures and practices, as of now. Going by INFLIBNET, DELNET and CALIBNET recommendations in this area, however, it will be quite advantageous if LUCKNET advocates the use of CCF, as then, records will be generated much faster and they can be inter-changed with any ISO-2709 based format in the world. AACR 2 could be used for cataloguing purposes and LCSH for producing standard subject descriptors. In LUCKNET, the central host could maintain a directory of new words which could later form part of its thesaurus. The libraries could also use special additional thesauri to meet their local requirements. Ultimately, the network will have to firm-up its own thesaurus, which will evolve as participants become familiar with the use of the network, over a period of time.

Adoption to mutually agreed procedures and practices may be implemented in a manner that does not affect the regular work flow of the individual participants, yet, at the same time, some headway is made for future needs. May be the "Principle of Osmosis" could help in this context also.

9 GOVERNANCE

A clarity of the functions of a network helps facilitate designing, developing, and implementing an effective governance system for the network. In view of the proposed, governance mechanisms suggested for the CALIBNET, DELNET, and INFLIBNET as well as in view of the objectives and functions proposed for the LUCKNET, it is very important to monitor the network activities and guarantee sufficient funding for the network and its

maintenance, by the central host. The central host, could approach NISSAT (DSIR) and or other appropriate funding agencies through state level library association (UPLA) for seeking financial support, at least in the formative stages of LUCKNET.

Governance system should also ensure that [7]:

* the experts from other successful networking endeavours like the DELNET, etc. are invited to participate in all the meetings of the CORE COMMITTEE, appointed for the purpose, at least in the initial stages
* the transition from manual to automated system is smooth;
* a piece-meal approach is adopted to augment manpower, hardware, and software resources as also for the data to be generated in machine readable form
* the users are kept informed about the progress of the network and the services offered
* access to other national and international network is established; and
* the MOUs are created for all types of network activities among the participant libraries

10 TRAINING

For better results, the central host in the LUCKNET should offer continuous training to librarians in the use of software, hardware and networking techniques in an on-going manner. The training process should start as soon as the work on the network begins [8].

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ANNEXURE - 1

CODES USED FOR LIBRARIES & INFORMATION CENTRES (LICss) OF SELECT ORGANISATIONS IN LUCKNOW

CODE	NAME OF THE ORGANISATION
BBAU	Babasaheb Bhim Rao Ambedkar University
BCL	British Council Library
BISP	Birbal Sahni Institute of Paleobotany
CDRI	Central Drug Research Institute
CIMAP	Central Institute of Medicinal and Aromatic Plants
GIDS	Giri Institute of Development Studies
GSI	Geological Survey of India
HAL	Hindustan Aeronautics Ltd.
ICPR	Indian Council of Philosophical Research
IET	Institute of Engineering & Technology
IIML	Indian Institute of Management, Lucknow
IISR	Indian Institute of Sugarcane Research
ITRC	Industrial Toxicology Research Centre
LU	Lucknow University
NBRI	National Botanic Research Institute
NRLC	National Research Laboratory for Conservation
PICUP	Pradeshik Industrial Corporation, Uttar Pradesh
SGPGI	Sanjay Gandhi P.G. Institute of Medical Sciences
SLO	State Law Officers Library, High Court, Lucknow

ANNEXURE-2

HARDWARE INFRASTRUCTURE IN LIBRARIES & INFORMATION CENTRES (LICs) IN LUCKNOW

LIC	Computer Configuration	No. of	CD Drive	Multimedia facilities	UPS	Printer
BABU	586	1	NO	YES	OFFLINE	Dot Matrix
BCL	Pentium & 486	6	YES	YES	OFFLINE & ONLINE	Laser & Dot Matrix
BSIP	486 (1) & PC/XT (2)	3	YESt	YES	OFFLINE	Dot Matrix & Inkjet
CDRI	Pentium I (40) & II (1)	5	YES	NO	NO	NO
CIMAP		386	1	NO	NO	NO NO
GIDS	Pentium	1	YES	NO	NO	Dot Matrix
GIDS	Pentium	1	YES	NO	NO	Dot Matrix
GSI	-	1	YESt	NO	Laster	
HAL	-	1	NO	NO	NO	NO
ICPR	486	2	YES	YES	OFLINE	Dot Matrix
IET	PC/XT	1	NO	NO	NO	NO
IIML	Pentium(4); 486(1):386(5) & 286 (4) (Two Servers)	14	YES	YESt	ONLINE 45 minutes backup	Dot Matrix Inkjet & Laser
IISR	-	1	NO	NO	NO	Dot Matrix
ITRC	Pentium(1),486(1)&386(2)	4	YES	NO	NO	Dot Matrix
LU	486 (Two Servers)	25	YES	YES	ONLINE	Laser & Dot Matrix
NBRI	-	1	-	-	-	-
NRLC	-	2	NO	NO	OFFLINE	Laser & Dot Matrix
SGPGI	486	1	YES	NO	NO	Dot Matrix
SLO	Pentium 200 MHz 32 MB RAM	2	YES	YES	ONLINE 30 minutes backup	Dot Matrix

ANNEXURE-3

SOFTWARES USED: ACTIVITIES COMPUTERISED; AND SERVICES RENDERED BY THE SELECT LICS OF LUCKNOW

NAME OF THE SOFTWARE USED	NO. OF LIC
CDS/ISIS	4
INHOUSE D-BASE III	4
LIBSYS	3
SANJAY	2
ILMS	1

COMPUTER BASED HOUSEKEEPING ACTIVITIES PERFORMED	NO. OF LICS
ACQUISITION	5
CATALOGUING	7
CIRCULATION	5
SERIALS MANAGEMENT	5

COMPUTER BASED SERVICES PROVIDED	NO. OF LICS
BIBLIOGRAPHICAL	R
CAS	3
CD-DATABASE SEARCH	9
SDI	1
E-MAIL	8
INTERNET	5

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INFORMATION RESOURCES NETWORKING AND THE INTERNET IN LIBRARY AND INFORMATION CENTRES

J. Abraham *

ABSTRACT

Information technology has ushered a new era of efficient data management with reliable and accurate exchange of information through the INTERNET in the recent years. There has been changes in presenting information and upgrading information exchange facilities such as Fax, Modems, Notebook PC, Wide Area Networks, Internet Data Transfer devices and so on. Today it is essential for information professionals to learn the skills of surfing the Internet and know the tools and techniques for locating and exploiting the information resources in order to provide better information services. Right to information has drawn condiderable attention in recent years. Modern society produces and uses information. It is indeed a difficult job to search for a piece of information which is urgently required for immediate application. If the information is to be accessible, it must be well organised. This paper describes the information transfer and the role of information dissemination in the electronic information age and highlights the recent advances of information technology and its impacts upon on-line databases and networks with reference to INTERNET in transmitting and delivering information.

1 INTRODUCTION

For the best use of information the transfer of information from the point of generation to its end user is a essential as the existence of information itself. The invemsion of paper and printing machine have made possible the information transfer from one generation to another, from one corner of the world to another and from one community to another through print media reading materials. The importance of book as the major print media source of information and their role in our life cannot be exaggerated for some more decades at least. The conventional form of print media reading materials have given way to periodicals, audio-visual materials etc. As the modern library and information centres have great responsibility in harnessing

* Assistant Librarian, Gandhigram Rural Institute— Deemed University, Gandhigram-624302, Tamil Nadu

information, the library and information services emphasis the actual delivery of information rather then actual delivery of documents in meeting the generic as well as specific needs of the users. Today the developments in computer and communication technologies under broad spectrum of information technology have serious and lasting impact upon library and information systems and their organisational structure and functions and services of modern library and information Centres and have far reaching impact on improving operational efficiency in the effective management of complex information sources in the modern document filing system over a wide range of publications and information processing and repackaging of information. Computers can be used

(1) to automate the methods of processing information,
(2) to analyse information , retain, update and reproduce it and
(3) to present the output in a variety of forms.

The computerised method of information storage and retrieval provide serveral hundred of pages of upto date information by keying on a hand sized control unit. Further advances in atellite communication system have made possible a more versatile type of computer based information system for data storage, scanning and retrieval of the details of micro and macro documents, automatic indexing and free text searching. The development of digital representation of information the qualitative changes in the design and architecture of computers and the softwares have enlarged the sphere of computer applications in library and information system and services.

2 INFORMATION TECHNOLOGY APPLICATION FOR INFORMATION STORAGE AND RETRIEVAL

2.1 Modem

The micro computer can be used for on-line searching. A MODEM (Modulator/Demodulator) allows the computer to send and receive data through a telephone line. The sending modem modulates or changes the digital signal into audio tone which are sent over the telephone line toi a receiving modem which them demodulates the audio tone and coverts it back to a digital signal. All modems transfer data serially one bit at a time. The integration of computer and telecommunication is necessary prerequisite for an advanced information society. The present day society can be termed as information society. Information is considered a source of immense economic value and vital for the proper functioning of a democratic society. Telecommunication involves in transmitting information whereas the computer in processing information. The combination of computers and telecommunications has offered a new means of communication and storage such as electronic mail (E-mail), electronic journals and video text where transmitting information is mainly done by the telecommunications especially

by telephone.

2.2 CD-ROM

Optical technology involves the use of lasers which has creatged a new type of secondary storage media for computers namely CD-ROM. Compact Disk Read Only Memory (CD-ROM) is rapidly a emerging new technology for the retrieval of vast amounts of information. The CD-ROM is having a great impact on the information dissemination process as a medium to store large amount of information electronically. The CD-ROM is a read only optical storage device that contain data which can be read, but cannot be changed. The suers can only read data from it and cannot write data on the disk. Many bibliography databases are available on CD-ROM. The storage capacity, low cost and read only feature of CD-ROM bring an enormous new capability to microcomputers for information storage and retrieval of very large reference publications.

3 ELECTRONIC MAIL (E-Mail)

Electronic mail is used as a generic term for information systems in which plain text messages are transmitted to a central computer for storage and later interrogation by the addresses of the message. The use of electronic mail requires a microcomputer to be connected to the telephone network which translates the data into a form suitable for transmission through the telephone services

4 ON-LINE INFORMATION SYSTEM

On-line information search is a method of accessing and searching the information stored in a computer from a remote terminal. Access is through the telephone line and the searching is from a computer terminal. On-line search provide instant access to a vast resources of information stores in multiple databases from a time-shared computer through user-controlled remote terminals. On-line information/literature search provides the rapid method of identifying the published information on specif topics in couple of minutes and locating and searching the relevant information among the accumulation of a large volume of information and scientific knowledge all over the world. For instance, DIALOG is a on-line information system located at California, USA, DIALOG houses nearly 400 databases to which access is provided from all over the world. DIALOG databases cover almost the entire spectrum of recorded knowledge. Dialog On-Line information system can be accessed and searched in minutes from anywhere in India through telephone conntected to an inexpensive remote computer terminal. It permits using the resources on a pay by use basis without having to own them at a

high cost.

5 INFORMATION RESOURCE NETWORKING

Resource sharing is an essential library service due to the fact that no library can be a sefl sufficient to have all the reading materials which may be in demand by its clientele, nor it is possible for a library to meet all the information queries of the users by purchase of such reference materials that would meet the information needs of them. Hence resource sharing is an effective medium of library cooperation through which a number of libraries join together to form a network of libraries. Resource sharing amongst libraries is the cooperative endeavour that aims at extending access to all the resources and services of the member libraries to a wider category of users in the region. Effective resource sharing could be achieved only when the participant libraries of the network willingly and whole heartedly maintain a good cordial relations. It is reciprocal in nature not only sharing of reading materials but also of the functions, services and expertise of the professional and non-professional staff the cooperative utilisation of all resources.

The past few decades have witnessed knowledge and information explosion the world over and inadequate financial resources. Under these circumstances, resource sharing and cooperative functioning of libraries and information centres through networking becomes vital. Efficient resources sharing can be achieved by networking of libraries and information centres through local area networks, metropolitan library network, wide area networks and so on.

Economic pressures, enormous growth of publications and emergence of subject specialisation have compelled the libraries and Information Centres to think of sharing the information resources and optimising the use of existing resources within India as well as from abroad through various networking system. Some of the notable networks in India are NICNET, ERNET, SIRNET, INDONET and INET. In addition to there is INFLIBNET a major initiative from the University Grants Commission interconnecting Universities, Colleges and Research and Institutions country wide. In the present day of limited resources, it is imperative that an integrated view of these networks and National Information Systems and Centres on the possibility of sharing resources among them should be taken to avoid duplication of efforts, materials and resources and maximise their resource utilization. Access to any network in the globe can be obtained virtually through INTERNET which is a widely used international network.

6 INTERNET A GLOBAL LIBRARY

Internet has emerged as world's largest network of computers. It refers

to inter-connected network of networks a growing world wide communication system around the world linking together millions of people, based on a common set of computer communication protocols for inter operatiability. It is the world's largest on-line service which provides access to a large number of current information resource tools, thus complementing the traditional libraries. In the networked environment, INTERNET a virtual library that offers new breakthrough in remote access for the information across town or around the world. It is permeating the world so fast that the present day world may be termed as era of INTERNET. It is unique collection of networks which are built on using the Transmission Control Protocol/Internet Protocol (TCP/IP) a set of computer communication protocol programmes.

7 ACCESS TO INTERNET GIAS AND I-NET

I-NET facility a high speed data link between computer terminals, now provides a automatic access to internet connectivity. The I-NET subscribers have to do a dial Gateway Internet Access Services (GIAS) of Videsh Sanchar Nigam Limited which in turn would provide a direct Internet hookup with the help of a password. The Gateway Service (GIAS) is currently available almost all over the country. GIAS enables subscripers to log into databases, send e-mail, read news, develop files remotely run programmes on distant hosts and range other applications. The use of Internet connectivity have continuously been enhanced with the availability of hypertext information, world wide web, video and audio files. The I-NET connectivity is based on Packet Switching Technology with automatic error detection and correction techniques. The Packet Switching Technology allows for dynamic rerouting of calls in case of route failures and congestion and interconnection of computers and terminals at different speeds and protocols.

8 INTERNET TOOLS FOR SURFING OR BROWSING

Internet is the greatest single factor in recent years which has changed and is still changing the society. The world wide web has become a source of information in which a fund of information is scattered over a number of web sites across the world. Inspite of the fund of information Available on the web, the inability to access them would put the users at a disadvantage and could make very difficult to get information at the right time. Web browser helps the users to surf and can get best of the web sites with a good browser. The term browsing is changing in to surfing the channels as on TV for news, sports, movies, cartoons etc.

Currently a browser like Netscape Navigator, Internet Explorer or Mosaic is the main tool in the hands of the user, ithout which the surfer cannot access the multimedia content of the web. Netscape's browser now called as the communicator which combines web navigation and E-mail with HTML editing and push technology.

9 WORLD WIDE WEB

Web is the fast expanding and more websites are added. One recent estimate indicates that there are already more than 150 million ebpages today. The figure is expected to cross the billion by the end of the millennium. When users have found what they need with a browser, they either read it while (this means loss of time and money) the connection is on or downlod the text, graphics and the audio/video files on the their computer so that they can view them at their leisure.

10 PUSH TECHNOLOGY

Down loading web contents is not at all easy. If website developers have packaged the contents for download, then you simply have to download the file and the viewer for it, if that file is created in any special publishing format. But most website developers don't provide such short cuts. You have to do it yourself and when you do it you have to save each related image/graphic in the webpages to the local drive. The task of surfing and downloading becomes a bother until you discover the power of poush. The push is radically changing the way of people surfing the net. This new technology catches on as you choose the channel and the technology delivers the contents in the television.

We don't have to browse the web everytime when we need an atomic fragment of information from there, if we, apt for puh technology where the contents of our choice will be delivered to our desktop. That, is push technology delivers what we want whereas in the browser we have to seek and pull what you want.

11 CLIENT SERVER TECHNOLOGY

Many best interface and most friendly softwares and utilities which support internet applications are commercially available in the market for an orgnised access to internet resources. They can be used to retrieve, navigate and manage documents/information on the internet world wide web. Based on Client-Server Technology people who are not able to master or even remember the required computer commands, find most cost and time effective way of retrieving/delivering information world wide. For instance Gopher is one such utility the best interface and the most friendly software on Internet access to the information sources.

12 INTERNET SERVICE PROVIDERS (ISPs)

Now VSNL and many other Private Internet Service providers are offering Internet mail Services. There are about 35,000 subscribers for the service provided by USNL. Allowing Private Internet Service Providers (ISPs) in the country indicates that Internet scene in India is about to witness

a boom soon. With more Service providers and more switches and channels opening into cyberspace, the user can expect a significant reduction in tariffs and more people can surf the net especially in cities like Madras and small towns where the current service provided by USNL is inadequate to meet the demands.

with the entry of Private Service Providers, the Internet is poised for tremendous growth in India. Most ISPs now offer either Netscape Navigator or increasingly commonly Microsoft Internet Explorer as their user friendly interface. Besides various tools to access, search, query and update information from Internet exist are Archie, Gopher, Veronica, Telnet and FTP etc. java script today is the most popular scripting language on the Internet. Over the years improved technolgies like push technology continue to change the way of surfing the net and Web client server technology establish an Internet presence or provide internet-based, intra-office communication using Java Graphic User Interface (GUI) management application.

13 CONCLUSION

The scientific application of knowledge has necessitates and makes imperative that the enormous amount of infomation have to be closely scanned and collected for which the use of computers is envisaged for storage, retrieval and data scanning. The information is valuable only if it is retrieved timely and is to be cost-effective. In this age of information explosion/ overload, keeping track of information resources and managing the same are the key to achievement and success which in turn makes possible the sharing of data in an orderly manner and ensures the maintenance of integrity of databases. The computer applications in Library and Information System and Services has the ability to handle and manipulate large volumes of data from different sources and in many formats. The user friendly software packages and the information technology in Library and Information Services are having serious and lasting impact not only in serving the present user group but also expanding important and relevant services to a large number of users in the context of world wide networked environment and global village. Internet is becoming the single means of flow and availability of information in the world and bringing people from all walks of life closer to each other; and thus the concept of universal citizenship closer to reality.

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SUBJECT HEADINGS PROBLEM AND SOLUTION IN LARGE BIBLIOGRAPHIC DATABASES: PROPOSAL FOR THE INFLIBNET DATABASE

R.K. Chandrakar*

ABSTRACT

INFLIBNET is Inter University centre of UGC, giving access to the on-line catalogue records of Books, Serials, Expert, Projects and Institute databases to the largest academic research libraries, colleges in the India. Records representing the same document in the contributing university and college libraries. For accessing those records, keyword field is necessary for users. But in databases, universities have been sent records without subject headings. In additions, can't be approached to individual books for rendering subject headings. This paper discusses the ways that how to solve this major problems in databases without having documents.

1 INTRODUCTION

Information and Library Network Centre (INFLIBNET) is an Inter University Centre of University Grants Commission. It is a computer-communication network for linking libraries and information centres in universities, deemed universities, institutions of national importance, UGC information centres, R&D institutions and colleges, giving access to the online catalogue records of Books, Serials Theses, Experts, Projects and Institute databases to end user of the largest academic research libraries, colleges in the India via both text and web interfaces.

Centre is engaged in creating databases of Books, Current Serials, Serials Holdings, Theses, Experts, Research Projects and Secondary Serials & Bibliographic databases in CD-ROM. Records of books and serials databases are supplied with multiple copies of records representing the same document in the contributing libraries. So far there are 105 universities have been funded for automation and networking of university libraries by the centre and 69 universities have been sent data. At the time of writing this paper (Jan, 1999) statistics of databases as follows;

Books	7 lacks
Current Serials	8,000 unique records
Serials Holdings	8,000 unique records with 30,000 holdings

* Scientific–Technical Officer-I, INFLIBNET Centre, University Gerants Commission, Navrangpura, Ahmedabad 380 009

Theses	1,70,000
Experts	3,300
Projects	3,000
Institutions	15

For developing database INFLIBNET Centre has prepared a "Guideline for Data Capturing: a user manual" based on CCF-Bibliographic and Factual. The standard includes the bibliographical elements like language, ISBN, Title, Author, Place and Publisher, Year of publication, Part Statement, Serials, Note, Class Number, Subject Headings, Accession Number, etc. In these field subject headings in an important field of database for accessing point of view. In searching process, it brings out the subject content of a document with bibliographic details, which is entered in database. In certain respects, it is considered as the most intelligent aspect of database. Because patron's approach of any particular record is depend upon subject keyword, if does not know Title or Author's name of book. In this circumstances subject heading is an important segment for patrons, database managers and information scientists. Whilst in databases universities have been sent records without subject heading as well as we can not be approached to individual documents for rendering subject headings. This problem is occurring only in books database.

The author has studied some sample records for assigning the subject headings. In Books database out of 5,59,835 records 2,93,444 records are not having subject headings are also inconsistent as compare to standard. Some universities are following Library of Congress Subjects Heading (SLSH) and some other libraries special llst for rendering subject headings. In this paper the author tries to provide overview of how to solve the problem of subject headings in a database where we can assign subject headings without having the documents.

2 SOLUTIONS FOR PROVIDING SUBJECT HEADINGS IN BOOKS DATABASE

There may be several ways to assign the subject headings. For example using LCSH, SLCH, Subject Treasures, etc. where documents are there. Here the author is emphasising on providing subject headings in the absence of documents.

2.1 External Sources

Several bibliographic utilities and networks like OCLC, BNB, WLN, UTLAS provide retrospective conversion facilities. OCLC offers a variety of restrospective conversion services; the RatroCpon, Conversion Keying, MicroCon® MircoCon*Pro®, FullMarc &TapeCon®, TapeCon* and Online Retrospective conversion. ISBN has to be used for this purpose and subject heading can be assigned to records.

In addition to several databases are available on CD-ROMs also like BNB, LC, etc. BNB database provides bath precessing search through

ISBN. Following staps can be followed for providing subject headings to records.

* all ISBN should be in one text file line by line
* retrieved downloaded records has to be converted into ISO file
* then after this ISO file could be matched with original database for adding subject headings field. Centre has developed program for this purpose.

Thus ISBN field should be one solution for deriving subject headings by the use of external databases. Out of 3,30,849 records those are not having subject headings, 7384 records are having ISBN.

2.2 Bibliographical Records

As such database is a collection of records. And record is having database structure. In addition database structure is combination of fields that is being used in standard as a bibliographical elements i.e. language, ISBN, Title, Author, Place and Publisher, Year of Publication. Part Statement, Series, Note, Class No, Subject Headings , Accession No etc. In those fields, only two fields are having some sources for deriving subject headings i.e. class number. Title of the book, if subject headings not entered in record. Keeping in view the above facts, proposed solution is given below according to priority wise:

2.3 Use of classification number as a source

According to Library and Information Science: a general knowledge encyclopaedia definition of class number is "It is a translation of the specific subject of the book into an artificial language of ordinal numbers. It fixes the position of a subject relations of other subjects.

According to Dr J K Khanna and Dr R Vohra in Handbook of Library Classification, given above is equivalent to the concept that Class Number is a unique translation of the name of a subject in a natural language into the preferred Classificatory Language of the ordinal numbers."

In this view, the class number is unique number for specific subject. In other words, no class number can represent more then one subject and no subject can be represented by more than one calls number. There is such a uniqueness. A system of unique class numbers and such a system alone can provides a unique sequence of subjects. According to Dr Ranganathan's Chain Procedure Scheme class number may be system for assigning subject heading. Keeping in view this scheme cen derive subject headings without books. Chain procedure scheme is more successfully scheme for "Colon Classification" notation whilst is s less successfully scheme for DDC and UDC. But university are using different classification schemes for providing class number to the documents and the same data we are receiving.

In sample study of database out of 5,59,385 records total 2,93,444 records not having subject and 2,15,565 records are not having subject headings

and ISBN but they have class number. Out of these records 2990 records contain UDC class number, 6231 records CC class number and remaining records contain DDC class number.

Now we take some examples from Colon Classification Scheme for assigning subject heading. 011,2J64,6 is a class number, which is given for Macbeth. It is a drama written by William Shakespeare.

0111,2J6466	=	Macbeth (Sought Link)
0111,2J646,	=	Connecting Symbol (False Link)
0111,2J64	=	Shakespeare, William (Sought Link)
0111,2	=	English Drama (Sought Link) Connecting Symbol (False Link)
0111	=	English Literature (Sought Link)
011	=	Teutonic Literature (Unsought Link)
01	=	Indo-European Literature (Unsought Link)
0	=	Literature (Sought Link)

Here Literature, English Literature, English Drama, Shakespeare., William, Macboth are sought links. It presents that Macbeth is English Drama, is written by William Shakespeare. Thus according to special list for literature in library of congress subject headings, subjects heading should be

^aShakespear, William, 1564-1616. Hamlet

^aShakespear, William, 1564-1616-Characters-Women

Some other examples :

Y:433.8	=	Unemployment in Australia
Y:433.8	=	Unemployment -Australia (Sought Link)
Y:433.	=	Connecting Symbol (False Link)
Y:433	=	Unemployment (Sought Link)
Y:43	=	Social Destitution (Sought Link)
Y:4	=	Social Pathology (Sought Link)
Y:	=	Connecting Symbol (False Link)

Y = Sociology (Sought Link)

Sociology, Social Pathology, Social Destination, Unemployment, Unemployment–Australia are sought links. Thus according of library of Congress subject headings, Subjects heading should be

^aUnemployment

^aAustralia–Social Conditions

T2.44'N52t = Report of the Indian Education Commission

T2.44'N52t = Education Commision - India - Report (Sought Link)

↑

T2.44'N52 = 1952 (False Link)

↑

T2.44' = Connecting Symbol (False Link)

↑

T2.44 = Secondary Education - India (Sought Link)

↑

T2.4 = Secondary - Asia (Sought Link)

↑

T2. = Connecting Symbol (False Link)

↑

T2 = Secondary Education (Sought Link)

↑

T = Education (Sought Link)

Subject heading should be ^Education, Secondary

^aIndia - Study & teaching (secondary)

^aGoverment report writing - India - study & teaching (Secondary)

Same as, can explain it in Dewey Decimal Classification Scheme Class no.

336.240954 = Income tax in India

336.24095 = Income tax - India (Sought Link)

↑

336.24094 = Income tax - Asia (Unsought Link)

↑

336.2409 = Connecting Symbol for place (False Link)

↑

336.240 = Connecting Symbol for schedule to table (False Link)

↑

336.24 = Income tax (Sought Link)

↑

336.2 = Taxation (Sought Link)

↑

336.  Connecting symbol (False Link)

336  Public Finance (Sought Link)

330  Economics (Sought Link)

300 = Social sciences (Sought Link)

Subject heading should be

^aFinance, Pubic

^ATaxation-India

^aIncome tax

At last class number should be second for deriving subject heading by the use of list of subject. SLSH in one of the list who provides class number with subject headings. Some examples given below;

Dictionaries 403;413etc

See also Dictionaries. Polygot and names of languages and Subjects with the subdivision dictionaries. e.g. English Language - Dictionaries; Chemistry- Dictionaries; English Literature - Dictionaries; U.S. -Bibliography - Dictionaries.

Encyclopaedias 030; 031; etc

See also Subjects with the subdivision Encyclopedias, e.g. Sports Encyclopedias; etc.

Biography 920; 921-928

Also names of countries, cities etc. and Subjects with the Subdivision "Biography" e.g. Biography; Chicago - Biography; Men- Biography;, Musicians - Biography; Religions - Biography; Women Biography etc. and names of persons for biographies of individuals.

Engineering 620

See also Aeronautics; Effiency, Industrial; Engineers; Mechanics; also types engineering; chemical engineering, civil engineering; etc.

From the above examples we can draw a conclusion that subject headings referes to the class number according to SLSH list. Then with this calls number drawn from the SLSH we can match with he actual class number of a record of database. That is the class number has been checked with SLSH and it implies that subject heading can be assigned.

There might be two ways to derive subjects headings through class number:

- by use of LCSH through chain procedure scheme
- by use of SLSH with cross checked to class number

2.4 Use of title as a source

Title of book is a third source for deriving subject heading, if other possibilities are absent viz. Subject headings is not entered in record, ISBN and Class no is not presention record. But Title is a less reliable source for

assigning subject headings. Many Titles of Books are not representing actual content/subject. For example based on the title "Flowers of India", it is difficult to assign subject headings without looking at the book. The document may be dealt with "Indian Flowers" of Chiltern of India". Thus it can create conflict for a person who is assigning subject headings. If the record contains class number then we can assign the subject headings.

One may have to find some technique to derive subject headings. In Books database we finds many records entered with common words like "Textbook", Introduction", cases it those keyword can be searched from title field from book database to assign subject headings.

3387 records related to "Textbooks"
1311 records related to "Yearbook"
1221 records related to "Introduction"
498 records related to "Dictionary"
346 records related to "Encyclopaedia" or Encyclopedia
357 records related to "Fundamental"
1082 records related to "Handbook"
741 records related to " Manual"

About 10,000 records out of 94,158 records which a having Title but ISBN & Class Number is absent. Indeed, one can easily derive subject headings for those kinds Titles. Some examples are given below;

2.5 Text book of Physics

Here subject heading should be
^aPhysics

2.6 Text book of Mathematics

Here subject heading should be
^aMathematics

2.7 Introduction of Indian History

Subject headings should be
^aIndia-History

2.8 Introduction of Information Technology

Subject headings should be
^aComputer Science
^aInformation Technology

2.9 Encyclopaedia of Library and Information Science

Subject headings should be
^aLibrary science-Encyclopedias
^aInformation Science - Encyclopedias

2.10 Encyclopedia of Computer Science

Subject headings should be

^aEnglish Language -
Dictionaries

2.11 Handbook of Library Classification systems

Subject headings should be
^aClassification - Book - Handbooks, manuals, etc
LC Subject headings or any other list subject headings could be taken for help. Here above subject heading taken from LCSH.

3 CONCLUSION

In a sample study we found that some 2,15,565 records are don't have subject headings but they have class numbers. According to above discussed procedure for 90% records subject headings can be assigned on the basis of class number.

Subject headings are very importance access point of any database, especially in book database where the number of records is touching million. Subject heading is a very usefull tool for the end user. So the subject headings should be appropriate and disclose the actual contents of the document. To achieve this parameter the database should neccearily have the subject headings. Assigning of subject headings is solely responsibility of the creator of databases. Although assigning of subject headings is mandatory, but is ws not practised by some university libraries, hence they are contributing the records without the subject headings. The authenticity of subject headings will depends on quality of classification notation scheme also. Assigning of subject headings by using ISBN, Classification Number and Titles may not be a complete solution but working in this direction will definitely helpful and service the purpose of assigning subject headings in the database.

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NETWORKING OF LIBRARIES IN INDIA: SOME ISSUES

Shinde Ganapathi Z*
Mallikarjun Vaddankeri**

ABSTRACT

Discusses the need for networking libraries for optimal utilization of resources of libraries. Explains the important components of an ideal network system and provides and overview of library networking in India. Discusses the issue requiring consideration for the planing of the networks in India. Gives suggestions and concludes that issue and suggestions discussed are only indicative, the network managements have to make considerable efforts for detailed planning, implementation, successful operation of networks. These efforts require full time work.

1 INTRODUCTION

The persent society is characterised by the presence of ever growing technology and information explosion. There has been a tremendous increase in the number of users of libraries due to their realisation as to the utility of information in thier concerned disciplines as a means to enrich their knowledge. In this context information centres owe a responsibility to satisfy information needs of user community. These needs can not be satisfied by an individual library on its own resources due to diversified requirements users and also becouse of high cost involved in developing information resources. This has resulted in mismatch between users needs and what is available in libraries. To begin with, efforts were made for cooperation in the form in inter-library-loan to meet requirements of users, resulting in the emergence of library co-operative sharing of resources.

The individual libraries act together as one organisation with a set of responsibilities required of all members. It is said that pooled capability of all member libraries is greater than capability of individual library if taken independently. Such a system, ensures exchange of information quickly and well in time to users. It also aids in improving quality of research by providing access to information.

*Deputy Librarian, Gulberga University, K D R Nagar, Sandur 583001 Karnataka
**Senior Librarian, P D A College of Engg., Gulbarga 585102

2 COMPONENTS OF AN IDEAL NETWORKING SYSTEM

Installation and operation of networking system is not a simple excercise and requires proper planning. It should also be kept in mind that any failure in planning results in failure of the system. Hence it requires systematic and careful planning and put in to action in accordance with certain well established guiding principles.

2.1 Need for a clear-cut Definition and Specification of Objectives

It is better to organise the system as need-based and purpose oriented to get maximum benefits out of it. It is desirable to spell-out clearly as to what is intended of the system and specification of ways and means to achieve intended or planned objectives.

2.2 Need for Networking Manual

Networking manual is to be drafted by an competent experts by analysing the minute details about modus operandi of the system, it should clearly specify the nature and degree of automation, communication link and organisation structure to manitor the system.

2.3 Standardisation

All the member libraries should follow the standardised pattern of information acquisition and processing. Any deviation will create hurles and ulterior motive ot the system remains unachieved.

2.4 Ensure that the system work under the shelter of mandatory regulation framework

The large libraries may hesitate to join the system with small libraries and at the same time a small library may posses curiosity to join the system with bigger library centres. As a consequence it is imperative to ensure that the system works under the shelter of mandatory regulation frome work.

2.5 Sense of Belongingness

Success of the system largely depends on the level of co-operation, co-ordination and mutual trust among member libraries. Therefore a sense of belonginess of cared and shared approach is to be developed among participating libraries.

2.6 Trained Staff Members

With the phenomenal explosion of information coupled with galloping speed of development in information technology pressurises one to update one's own skills and knowledge arised out of the need of function in the midest of networking system. Therefore the regular training of professionals in required to cope up with the development and update ones knowledge in latest technology.

3 LIBRARY NETWORKING IN INDIA: A BIRDS EYE VIEW

Library networking efforts using computer communication technologies

started during the late 1980s with the initiation of metropolitan\city networks like Culcutta Library Network (CALIBNET) and the Delhi Library Network (DELNET) followed by the national level Information and Library Network (INFLIBNET) of the University Grants Commissions (UGC). The UGC proposed INFLIBNET for networking libraries of all the institutions of higher learning and research and development. These networks, however started functioning in the 1990s only. Apart from these some more city library networks like the Bombay Library Network (BONET), the Pune Library Network (PUNENET), the Madras Library Network (MALIBNET), the Ahmadabad Library Network (ADINET), the Mysore Library Network (MYLIBNET), and so on started functioning. The present status of library networking in India is that most of the libraries covered by some network are creating databases of their holdings but not in all the aspects of library activities. Much has been remained in the objectives form, rather than practical. The following issues are to be taken in to consideration for the planning of library networking in India.

1. Objectives of the networking system are to be practical oriented rather than theoretical.
2. Non-responsive attitude on the part of the professionals who are on the job.
3. Lack of adequate staff and expertise in design and planning of network and databases and in the use of network hardware and software. Hence their is a need for frequent training of library staff and also on the job training.
4. Unpreparedness of heads of institutions to change with change of the requirements is the silent features which is blocking the new comers for the fresh explorations in to the system due to their administrative superiority.
5. Attitude of library professionals towards the system and the users, causing as impediment backed by lack of enthusiasm, viberancy, commitment in promoting advanced likings of the users community by identifying unfelt needs of the users by awakening of advanced conveniences for them.
6. Grant-in-aid system should be introduced based on the requirement without the sufficient flow of fund nothing can be brought in as a change. Due to financial inconveniences, discourages the active functioning of the system. Therefore provision has to be innovated by way of grant in aid adding to the existing by special creations etc. is the demand of the successful networking system.
7. Global attempts are required to overcome the disparity with pace of development the movements of information spread over night by way of paperless media. Subsequently calling for bridging the gap of information, interms of uniformity, interms of its strength and quality of

information so as to have uniformed standards agreeable to all.

4 SUGGESTIONS

To sum up, properly planned and well organised networking system should be installed gradually phasewise to overcome the problems associated with its implementation at various stages. Following suggestions deserve carefull attention in this regard;

(i) Installation should be accompanied by proper education through orientation and training programme to existing employees to highlight the benefits of networking.

(ii) Effort should be made to see that user community gets fully acquainted with networking system. So that their attitude towards system can be improved.

(iii) Stadardised package of cataloguing and classification should replace the traditional ones.

(iv) Library professionals should be motivated to contribute with a sense of involvement and commitment to the success of the system.

(v) The perception of senior library professionals needs to be changed to suit the changing conditions.

5 CONCLUSIONS

Development and management of library networks involves high commitment and tenacious work, particularly in the Indian environment where majority of the libraries do not have qualified and skilled manpower and also the financial resources to intruduce automation and the current information technologies co-operation, not only among libraries, but also among library networks is essential for the success of these networks in the country. While the issues and suggestions mentioned above are only indicative, the network managements have to make considerable efforts for detailed planning, implementation, and successful operation of networks. These efforts call for full-time work; part-time efforts may not only effect the quality, but also delay the implementation of the networks.

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LIBRARY AND INFORMATION SERVICES OF COLLEGE LIBRARIES IN KARNATAKA: ISSUES IN ELECTRONIC INFORMATION AND NETWORKING ENVIRONMENT

B S Maheswarappa*
P G Tadasad**

ABSTRACT

Studies the extent of availability of information, financial, manpower resources, physical facilities, availability and use of computers based on the data collected from 571 out of 931 college libraries in Karnataka. Examines the existing library and information services provided by college libraries. Dis-cusses the issues connected with the resources and information services in the context of electronic information and networking. Suggests the steps for improvement of resources and services.

1 INTRODUCTION

Education plays an important role in social and economic development of a country. The institutions of learning have the responsibility for equipping the individuals with the advanced knowledge and skills required for leadership and positions of responsibility. It has been recognized that libraries are an important supporting agencies in improving the quality of education and learning process. This can be achieved by systematic development of resources—manpower, information, physical, technological base, resource sharing, management systems, and information services [1]. Among these, the design and planning of library and information services are of vital importance for dissemination and providing access to relevant information available in all formats including electronic publications. It is a complex process, which requires strategic planning involving systematic development, organization and the management of information resources, physical facilities and equipments, the design and planning of sustainable library and information services [2]. Such a strategic planning requires a review of existing resources and services provided by them and ascertaining the future needs for library and information services. Therefore, it is useful in this context to review

Department of P G Studies and Research in Lib & Inf Sc, Gulbarga University, Gulbarga-585 106

the availability of resources—information, financial, manpower and physical facilities including use of computers and to identify the current range of services that college libraries are providing in Karnataka with a view to consider the issues involved in electronic information and networking environment.

2 COLLEGE LIBRARIES IN KARNATAKA: EXISTING SCENARIO

A majority of the college libraries are established after 1976 (N=365) and offer purely under-graduate courses (N= 332) in different disciplines. More than four-fifth of the colleges are run by private management (N=477) and 350 colleges are located in urban areas. More than half of the college libraries have a teaching staff strength of less than 25 (N=315). The strength of students varies from few tens to few thousands. 285 colleges share common library facilities.

2.1 Manpower Resources

As many as 491 college libraries are being managed by full-time professionals, with the remaining managed either by clerks or teaching staff. A majority of the full-time professionals who are heading the libraries are basically either graduates (N=311) or post-graduates (N=179). As many as 256 professionals are library and information science gradu-ates and 197 are post-graduates in LIS. As many as 260 professionals who are heading the libraries, have an experience of less than ten years, with the remaining 231 having an experience of more than ten years. As many as 165 professionals are being paid a consolidated salary, with the remaining 321 are getting as per Govt/UGC pay scales. A majority of professionals who are heading the libraries are male (N=378) and have no membership for any of the professional bodies (N=318). Semi-professional staff are not found in majority of college libraries (N=371) and 489 college libraries have less than five professionals.

2.2 Information Resources

Approximately 60.24 per cent of college libraries have a collection of 10,000 (N=344) with a very few having a collection of more than 50,000 (N=18). A book collection of less than 10,000 is found in more than three-fifth of the college libraries (N=364). A majority of college libraries neither have back volumes of periodicals (N=408), nor subscribe current peri-odicals (N=410), nor have maps (N=432), micro-forms (N=558), audio-visuals (N=544), abstracting (N=542) and indexing (N=543) journals.

2.3 Financial Resources

The budget of the library is in the range of Rs. 10,001-20,000 in more than threefifth (N=374) of colleges and 20.66 per cent of college libraries

have a budget of less than Rs.10,000. An amount of less than twenty thousand is spent in a majority of college libraries (N=506) on information resources and specifically on books only (N=525), with a majority not spending on non-book materials (N=547) and periodicals (N=371). Library fee collected from students is the only major source of finance in many college libraries followed by assistance from management/society in case of private colleges.

2.4 Library Buildings

A great majority of libraries do not have independent buildings (N=456). Of the four hundred and fifty six that do not have independent buildings, 348 are placed in big halls and 102 are housed in small rooms. Though a majority of library buildings are suitable for library purposes (N=299), an equal proportion of library buildings are not suitable for library purposes. A majority of college library buildings are not adequate (N=362) while the remaining are adequate (N=209). Of the 309 college libraries, the adequacy holds good for more than five years, in 120. Out of 362 , colleges, having that have inadequate library buildings, are planning to have independent library buildings and the remaining are planning to move to other rooms or compact shelving. There is no provision for expansion of library buildings either horizontally or vertically in more than half of the college libraries (N=293), while library building can be ex-panded horizontally as well as vertically in 27 college libraries.

2.5 Availabiliyu and Use of Computers

Less than four-fifths of colleges do not have computers (N=450). Out of 121 colleges that have computers, 76 do not use them for library activities. Of the 45 college libraries that are using computers for different library activities, 26 are using them for administrative purposes, followed by four for financial control, 7 for serials control, one for circulation and seven for producing catalog cards. Computer readable databases and services are made use of by 14 college libraries. Medline is made use of in ten, Compendix, Multimedia & Medical Literature, Dentist Silverplatter and Dental Abstracts in one each of college libraries.

2.6 Library and Information Services

None of the college libraries are providing referral, bibliographical, SDI, in-house abstracting, in-house indexing, and translation services.(Table 1) All the college libraries are providing circulation of books service (N=571) followed by inter-library loan service in more than half of the libraries (N=327). More than one-tenth of libraries are providing reference service (N=66) followed by circulation of periodicals (N=48). Reprographic service is given by a few libra-ries (N=12); 2.45 per cent of libraries also provide on-line/CD-ROM service (N=14). Newspaper clipping service is provided

by a few libraries (N=7), and still fewer provide Current Awareness service (N=5).

Table-1: Types of Information Services provided by college libraries

Services	No	%
Circulation of books	571	100
Circulation of periodicals	48	8.41
Reprographic	12	2.10
Reference	66	11.56
Referral	-	-
ILL	327	57.27
Bibliographic	-	-
CAS	5	0.88
Online/CD-ROM	14	2.45
SDI	-	-
In-house Abstract	-	-
In-house Indexing	-	-
Newspaper Clipping	7	1.23
Translation	-	-

3 ISSUES IN ELECTRONIC INFORMATION AND NETWORKING ENVIRONMENT

Technology has dominated all the spheres of human activity and the libraries are not an exception to this. The new storage media have appeared after the invention of printing like microforms, magnetic tapes, compact discs etc., have found their places in modern libraries and are playing an important role in storage and dissemination of information. Since mid eighties develop-ments in computer technology have established a new platform for the use of information technologies for libraries and information services. These develop-ments include: high performance, cost effective microcomputers, cheap personal computers, low cost local area networks, wide area networks, and high density distribution media (CD-ROMS).

The concept of library network has also gained momentum in India with NICNET, ERNET, DESINET, SIRNET, BTISNET, CALIBNET, DELNET, BOMBNET, MALIBNET, HYDLINET, ADINET already functioning and BL-NET under proposal stage. Internet, the worlds first digital utility, all purpose network is also accessible in India. Sources like electronic journals, preprints, numerical and graphical data, software, campuswide information systems, databases, library catalogues, educational materials, company profiles, patents, standards, infor-mation on societies, institutions, associations are available on Internet. Much of these are

reference type in nature. Other resources on Internet can be classified as usernet, gopher, WWW, WAIS etc.,

Perhaps one of the most important developments in recent years is electronic publishing. There is a steady growth in number of electronic publi-cations. The products of electronic publishing are mostly reference materials and secondary sources such as abstracting and indexing sources, primary periodicals, such as full text electronic journals.

Inspite of these technological advancements, the primary purpose of library has remained the same, being unable to meet the challenges of providing its clienteles with increased access to knowledge base that is growing at accelerated pace[3]. This has had a tremendous and significant impact on libraries. One of the ways, in which the libraries can respond is to incorporate these in information resources development programme, as it is "... indeed to an opportunity to better serve the user community by developing a need based, relevant and cost effective collection, sometimes without owning but providing to access to information through networking"[4].

The availability of information in the electronic media has created opportunity for global access to information. Hence, the college libraries should not neglect the new media any more and should take it into account when planning for future library and information services.

The existing manpower in the college libraries lacks the professional skills to exercise in the electronic information context. They need to be given extensive in-house training and hands on assignments. Further, the range of skills to handle information in the electronic environment needed by professionals is changing rapidly. These factors have to be recognized and needs to be linked to a proper plan of professional human resource development. The Library and Information Science Schools in Karnataka have introduced basics of computers and Information Technology components, in their curriculam at Post Graduate degree level. It further needs to be strengthened by the provision of appropriate facilities. Organizations like INFLIBNET, and NCSI have to conduct extensive in-house training courses for working college librarians, to ensure that librarians are able to cope with the new technological and managerial changes expected of them to provide information services.

The present collection of the college libraries is dominated by print media and that too the collection is meager and inadequate to support the requirements of undergraduate education. With this, the librarians cannot dream of providing any services except circulation of books. Resources for learning especially reference works are available in electronic form. Traditional textbooks could also be replaced in the form of course work packages or electronic course packs. These electronic sources have to be integrated along with the print sources in order to provide quality information services. Further, if there is scope for supporting alternative provision of information by creating desktop publishing unit, with editorial support, for

teacher, issue of their course materials can be established in order to produce low cost and appropriate study resources.

The budget of the libraries in many colleges is meager, that it is in the range of Rs. 10,000- 20,000. Libraries cannot think of procur-ing quality and standard information materials with such a sum. Library fee collected from students is the only major source of finance in many college libraries, as severe financial constraints at the national level have reduced government funding for higher education to salary support and essential operating costs. In this context, if the libraries are to develop integrated information resources, they have to explore the possibilities of funding by students, employees and other beneficiaries of the higher education system. The range of support from doner or development agencies or Inter-Govt agencies that may be sought for the development of higher education can be examined. The possibilities of private sector investment, funding support through revenue earning sponsorship and other resources have to be explored to develop resources and services.

The existing library buildings are not suitable for library purposes. To suit the requirements of electronic information environment, International Standards should be followed to develop locally relevant standards, which are realistic and sustainable. The design of library buildings must match the needs of users and the growth of the library's collection and changes in its range of services have to be considered. Otherwise, it may not be possible for the libraries, to have electronic sources.

Presently a large majority of college libraries in Karnataka do not have computers and other infrastructure facilities required to exploit the opportunities provided by the electronic media. They can not the make best use of the electronic publications and on-line and networked access to international and national or regional databases backed up by systems based on photocopying or other forms of document supply. Keeping in view the importance of computers in electronic information environment, computer awareness should be created among the authorities of colleges. The apex bodies concerned with higher education viz., UGC, AICTE, ICMR etc., should take measures to enhance the use of computers.

College libraries in Karnataka are seriously under-resourced for current demands. In this situation, one can not expect developing quality information sources and providing better information services, except lending of books. Unless the libraries infrastructure is improved, it is impossible to improve the library services. To achieve this, the librarians have to devise strategic plan, taking into account the overall educational, financial and policy framework of Karnataka's higher education system.

4 CONCLUSION

Information is a key concept in all aspects of educational life and particularly in higher education. Hence, the library and information provision

has to be prepared for changing needs and current information requirements. But, the college libraries in Karnataka have often been seen as traditional repositories of textbooks and tended to fall behind in the application of electronic information environment.

In this context, a plan to improve library resources and services will need to take in to account the realities and have to adopt a strategic planning involving the following 32 steps as suggested by ILIAD[5] to improve the resources and services.

1. Define the economic and financial frame0work within which the higher education system is operating.
2. Identify and evaluate demographic, geographical, social and cultural factors affecting higher education system.
3. Identify and evaluate key economic factors including requirements of labour market, for graduate and post graduate staff.
4. Define the role and priority of education in national policy and development.
5. Define the role of higher education within the national policy framework.
6. Define the objectives and priorities of the higher education sector.
7. Assess the national education system and higher education infrastructure.
8. Assess the teaching, learning and research environment.
9. Identify and assess national policies and strategies for information and library development and their relationship to higher education for library provision.
10. Identify current patterns of investment, both govt and non-govt, in higher education.
11. Assess the reading culture and the pattern and extent of information use in higher education.
12. Identify and evaluate the role of libraries in supporting higher education and the relationship of libraries to the learning/teaching/research process.
13. Evaluate the role of libraries in the provision of instructional materials and information, and their relationship to the learning/teaching/research process.
14. Evaluate non-library sources of access to instructional materials and information.
15. Assess the national infrastructure of higher education library provision and evaluate its impact and effectiveness.
16. Examine existing financial and budgeting systems for higher education libraries and ascertain future user needs.
17. Review the range of services provided by higher education libraries and ascertain future user needs.
18. Assess resource-sharing systems and define future models.

19. Review the current range and coverage and future requirements of information materials provision [Local publishing issues, book shops, procurement, language issues, availability of imported books and electronic media, copy right, legal deposit].
20. Assess management systems, staffing models, academic status of professional staff.
21. Assess the current usage of and future need for information technology, library and automation and information networks.
22. Evaluate the built environment and assess its relevance to service requirements.
23. Define requirements and future strategy for professional human resources development.
24. Note possible model for library system development and investment.
25. Prioritize areas for investment based on user/system needs and evidence.
26. Design and cost project.
27. Assess the rates of return.
28. Establish and verify technical feasibility.
29. Ascertain and evaluate project management and implementation capabilities.
30. Establish financing and affordability.
31. Evaluate financial and technical sustainability.
32. Develop and implement impact evaluation measures.

The above strategic plan must be perceived as the single most important development that a library needs to undertake. None the less, there are possibilities for libraries in Karnataka, to make technological leaps in this direction.

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IMPACT OF INFORMATION TECHNOLOGY ON THE QUALITY OF RESOURCE SHARING IN THE ELECTRONIC INFORMATION ERA : A CASE FOR ICFRE LIBRARIES.

M.G. Ahmad*

ABSTRACT

The present paper highlights the role of information technology for effective utilization of printed and electronic resources available at local, regional, national and international level with the objective to provide comprehensive and quality based access to the information resources and services to the foresters, scientists and scholars of ICFRE.

1 INTRODUCTION

Currently the role of library has drastically changed when we compare it with ancient period wherein library used to be treated as merely storehouse of books and similarly librarian was also treated as the custodian of the books. But with the passage of time and introduction of information technology, the concept and the role of library and librarian have drastically changed. Now the role of librarian has become more vital to provide not only the books and documents but also the access to the resources available at remote places through the tools of IT which may be defined as the method for collecting, processing, storing, disseminating the information through the use of tools and techniques for the benefit of the users of the library and information centre. IT has been successfully applied almost in all the areas and to a large extent, it directly and drastically affects the role of libraries and information centres in the area of forestry also. Before discussing further, we would like to discuss here about ICFRE and its mission. Recognising the importance for forestry research and the need for expanding the forest resource base and to protect the existing natural forests and environment, the Government of India created the Indian Council of Forestry Research and Education (ICFRE) in December 1986, with the following objectives:

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*Scientist--SE (L & I) National Forest Library & Information Centre P.O. New Forest. Dehra Dun (U. P.)

(a) To undertake, aid, promote and coordinate forestry education, research and its application.
(b) To develop and maintain a National Information Centre for forestry and allied sciences.
(c) To act as a clearinghouse of research and general information relating to forests and wildlife.
(d) To develop forest extension programmes and propagate the same through mass media, audiovisual aids and extension machinery.
(e) To provide consultancy services in the fields of forestry education, research and training and allied sciences.
(f) To do other things considered necessary to attain the above objectives.

To achieve the above objectives . the Government of India has also created the following research institutes.

1. Forest Research Institute, Dehra Dun
2. Institute of Forest Genetics and Tree Breeding, Coimbatore
3. Institute of Wood Science and Technology, Bangalore
4. Tropical Forest Research Institute, Jabalpur
5. Arid Forestry Research Institute, Jodhpur
6. Institute of Rain and Moist Deciduous Forest Research, Jorhat
7. Temperate Forest Research Institute, Shimla
8. Institute of Forest Productivity, Ranchi
9. Advanced Centre for Social Forestry and Eco-Rehabilitation, Allahabad
10. Forestry Research and Human Resources Development Centre, Chindwara.

2 IMPACT

With the experience and exposure in the area of library and information science with specific reference to its application to forestry areas, the potential impact of information technology on the following:

(a) Collection building
(b) Method of storage
(c) Processing
(d) Dissemination
(e) Information service
(f) Information products
(g) Human resource development
(h) Budgeting
(i) Automation strategy
(j) Acquision policy

3 RESOURCES

The libraries and information centres are always in one or the other form have been discussing the resource sharing and its application in various

forms like library cooperation and library cooperatives. These factors and motivations are visible in all areas and affecting almost all the disciplines. Therefore, we can visualise its effects and utility in forestry also. We can not remain silent spectator for merely seeing this phenomena but we have to utilise this for making our library and information centre capable for providing information to all the foresters, scientists and users for making available these resources irrespective of all difficulties.

4 FACTORS

The foresters, scientists and students are interested and also eager to know the latest developments, trends and other happenings in the forestry like other areas. In addition to this, there are various other factors which are motivating us to utilise resource sharing. Some of them are listed as under :

(a) Users expectations
(b) Resource crunch
(c) Self - sufficiency
(d) Document explosion
(e) Information explosion
(f) Information thrust
(g) Comprehensive coverage
(h) Future challenge
(i) Telecommunication developments
(j) Social need

5 NATIONAL FOREST LIBRARY AND INFORMATION CENTRE

ICFRE being very large organisation and extensively involved to develop and maintain a National Library & Information Centre for forestry and allied sciences. To achieve this goal of ICFRE, (NFLIC) is also committed and involved to achieve its mission. For this purpose, we are already sharing printed and electronic resources for the benefit of the users of ICFRE and its institutes.

5.1.CD - ROM Technology

CD - ROM is one of the most important electronic resources available at NFLIC keeping in view its importance and utility.It is also providing the CD - ROM literature search services through the following CD - ROM data bases :

9a

(a) AGRIS
(b) Biological Abstract
(c) CABCD
(d) ECODISK

(e) TREECD
(f) Woods of the World
(g) Science Citation Index

These databases are extensively used through CD - ROM networking which is available for access to the following institute's libraries.

(1) Institute of Forest Genetics and Tree Breeding, Coimbatore
(2) Institute of Wood Science and Technology, Bangalore
(3) Arid Forestry Research Institute, Jodhpur
(4) Tropical Forest Research Institute, Jabalpur
(5) Temperate Forest Research Institute, Shimla

The users of the above institutes log in to our system to access our data bases and conduct search on various subjects. The use of this service is so high that we have recently decided to charge for conducting CD-ROM literature search from various non-members so that we can generate resources to maintain atleast the services. We are also planning to upgrade the existing CD - ROM networking system with the financial assistance of the World Bank.

5.2 Human Resources

Human resources are the most important base of an activity and an organisation. The concept is being visualised and implemented at NFLIC. We have recently identified librarians of ICFRE institutes and deputed them for training to CABI to provide advanced training in the utilisation of forestry literature and providing effective services to foresters, scientists and students. In addition to this, we are also sharing our experiences and expertise to make aware and keep updated the librarians of all the institutes regarding the usage of Library of Congress Subject Heading List, so that all of the other Centre's librarians can assign the subject headings of international standard which will help us to interchange data without any difficulty when we switch over totally to electronic environment.

5.3 Services

Under the World Bank assistance, we are planning to provide various services which are provided to all other libraries with the objective to share the resources. We have identified nearly 106 journals, newsletters and other publications available free. A list of these publications has also been sent to these centresfor the benefit of those resources and making available to the foresters, scientists of respective institutes without financial commitments.

5.4 Grey Literature

Grey literature in the area of forestry is very important source of vital information which is not available through normal channels of publishing. With this objective we have proposed to introduce the document imaging

system so that all the literature which can be scanned, processed and will be ready for providing access to the users of these institutes from the main node of the NFLIC.

5.6. Union Catalogues

Union catalogue is very important which indicates the availability of the journals. With this objective, we have requested different centres to send their list of journals subscribed at respective institutes for creating a union catalogue of all journals which will be available for accessing to the libraries of ICFRE centres.

5.7. Content Page Services

We have also introduced this service for our foresters, scientists with the objective to provide access to the journals which are received at NFLIC. For this purpose, we have identified the potential areas of the users and regularly sending the contents page of the journals as and when received at NFLIC along with a cumulative content page bulletin for all centres with the objective to keep them in a library so that other users may take advantage of the same.

5.8. Expertise Database

We have seen that major academic and research institutes involve in the consultancy and research. This activity can not be accelerated without the help of a good database containing information about the facilities, services, expertise of the institutes and its staff. This database helps to provide ready made information to the institutions who are interested to know about the institutes and also to identify the concerned staff for giving consultancy assignments. With this objective, we have initiated to collect the information from all research centres of ICFRE.

6 FUTURE STRATEGY

As we know that resource sharing can generate very fruitful and useful results to face resource crunch in the area of collection building for journals which need annually increased budget to a tune of 15% to 20% due to hike in price and foreign currency. This factor affects all libraries and information centres especially in the area of journals which are the only and basic resources for current information to the scientists, foresters and other users. Keeping in view these factors, we have identified various institutions in agriculture, forestry, science and technology to have better linkages and interaction to utilise their resources and services for the benefit of our scientists, foresters and students on mutual basis.

CONCLUSION

The above discussions establish that there is an urgent need to utilie the

concept of resource sharing in all the areas including forestry. The resource sharing has great potential for assisting us to face the challenges in the area of forestry and provide better comprehensive access to the availability of the electronic and printed resources at remote places with the help of IT. We have experienced that IT has great potential to affect the forestry disciplines also. With this objective ,the World Bank is assisting us to develop services, resources and information products for the benefit of the large number of people spread all over the country in the area of forestry and related disciplines with the help of international and national consultants in the area of library management, computer networking, closed circuit TVs, electronic security system and grey literature.

ESSENCE OF INTERNET FOR LIBRARIES AND INFORMATION CENTRS IN ELECTRONIC INFORMATION ERA

Ajit Singh Siwatch*

ABSTRACT

We are entering in the 21st Century The Electronic Information Era very soon. Information is considered as a very important resource for various developments. We need a very fast communication technology in such a fast generating information age. Computer and Communication technology in such a fast wonderful technological tools which give origin to information sharing through accessing Internet. My paper stress the essence of the Internet Accessing in the library and Information Centres for developing collection and satisfying the Users' hanger towards getting latest Information on his Subject. Paper also focuses on the development of Internet, its tools and uses.

1 INTRODUCTION

Information explosion is at the extreme. Every field of knowledge is generating Information second by second. Libraries and Information Centres are the only places where this generated information are stored, compiled is provided to its users as and when they want even at any corner of the world. For this, every library or information center wants such a fastest communication technology which can provide the information within no time. So, in this electronic information era, Internet is only that wonderful Information technological tool which can provide the information faster beyond imagination. This information technological tool is fueled by the merging of computers and telecommunication technology.

Internet is the network of networks, scattered all over the world. It is the world's largest computer network. It was developed in 1969 as a project for the U. S. Department of Defence known as Advanced Research Projects Agency Network (ARPANET). Its aim was to create a method for widely separated computers to transfer data effectively even in the war period. It was started with a handful of users and computers. Today, The Internet has grown to thousands of regional networks that connect millions of computers, and millions of users getting benefit of its services. The special feature of this global network is that it is not owned by any single individual,

*Asstt. Librarian (S. G.) Imsar Library, M. D. University, Rohtak-124001

company, institution, or country but is a combined effort of the networks available on the earth.

2 DEVELOPMENT OF INTERNET

To access the information through Internet is called the Information Revolution as it affects the entire human race on the earth. Albert, Gore (1991) advocated networks of Information superhighway to link scientists, business, people, educators and students for efficiently processing and dealing with information. Albert Gore's information superhighway is nothing but it is the Internet. Today, we all are talking about Internet. But Internet can not develop overnight but takes years to develop. Copmputer is the essential component of the Internet. So, the development of the Internet starts with the invention of abacus, then the development of the slide rule in 1622, the mechanical calculator in 1647, the automated loom in 1820 and the use of punched cards are the early development of the computer and also of the Internet. Better we can say that these were the first form of primitive programming. In 1983, Charles Babbage laid the foundation for the computer on his analytical engine. This was the first invention which was known as first Harmon of the Internet. The second Harmon of the Internet was the invention of telephone in 1876, and other important inventions which takes an important role for the development of Internet are, the microchip in 1954, the minicomputer in 1968, the microprocessor in 1970, the microcomputer in 1974 floppy disk in 1975. All these inventions are the developing hand towards the interneting and helping in launching more and more consumer friendly Net services globally.

Other helping development are the commercial personal computer and super computer in 1980, and Microsoft Disk Operating Systems (MS-DOS) in 1981, which made the Interneting services much more simpler and effective. In 1981, the development of modems with a speed of 300 bps added to the development of Internet. In 1996 the Optical Carrier (oc-3) came at a speed of 122 mega bits per second, which provides the Internet a fast speed to work. At last, the Pentium PC came into existence with a greater speed and a larger memory. More and more user friendly operating systems like Windows-95, Windows-98 came and made the interneting services more speedy and user friendly.

All the above innovations made the Internet come into existence and work effectively. Internet, in real sense, come into existence in 1969 when U. S. Government created an agency called Advanced Research Projects Agency (ARPA), with J. C. R. Lickliders as the head of the computer department. ARPA developed a network called ARPANET with the financial help of the Department of Defence. The network was mainly experimental for military defence purpose. It was used in research and to develop and test networking technologies. At first, four separate Universities of U. S. A. were connected with four host computers. Upto 1972, 37 host computers

were connected to ARPANET. England and Norway were connected with ARPANET in 1973. In the same year, APANET split into two networks namely APRANET and MILNET in order to keep non-military and military network sites separate.

In 1972, National Center for Supercomputing Application (NCSA) developed Telnet application for remote login and in 1973, File Transfer Protocol (FTP) for standardizing the transfer of files between networked computers was introduced and make Internet work more easy.

First, desktop computers equipped with Berkeley UNIX etc. operating system appeared in 1982 and 1983. In the same year, DARPA (Defense Advanced Research Projects Agency) decided that TCP/IP protocols would be used by computers connecting to ARPANET.

In 1986, The National Science Foundation (NSF) connected the Nation's six Supercomputing Centres together and this networking called The NSFNET or NSFNET Backbond. In 1987, NSF awarded a grant to Merit Network Inc. to operate and manage future development of NSFNET Backbone. Merit Network Inc. collaborated with International Business Machines (IBM) Corporation and MCI Telecommunications Corporation to research and develop faster networking technologies. NSFNET Backbond was upgraded to T1 (i.e. able to transmit data at speeds of 1.5 million bits of data per second or about 50 pages of text per second) in 1989 and upgraded to T3 (i.e. able to transmit data at speeds of 45 million bits of data per second or about 1400 pages of text per second) in 1993, in 1995, the NSFNET backbond is replaced by new network architecture, called vBNS (very high speed backbond network system) that utilizes Network Service Providers, Regional networks and Network Access Points (NAPs).

In 1991, University of Minnesota developed the Gopher. It provides a Hierarchical, menu-based method for providing and locating information on the Internet and makes the use of Internet much easier.

Year 1993, was a land mark in the development of Internet, when The European Laboratory for Particle Physics (CERN) in Switzerland releases the World Wide Web (WWW). WWW was developed by Tin Berners-Lee. Another development in Internet come into existence in 1993-94 when graphical web browser Mosaic and Netscape Navigator were introduce and spread through the Internet community (Leon and Leon, 1998). What we are accessing on Internet is the results of the efforts of the scientists, and technicians working on computers and communication technology.

In 1998, total networks available on earth cross 65,000 numbers and more than 16 million computers connected to it and more than 100 million users are getting information through accessing it, spread over 140 countries.

Who Governs The Internet?

There is no single organization, country, institution, or person who look after the Internet but it is a joint effort of more than thirty thousand different networks available on the Earth. There is a society of Internet called ISOC

(Internet Society). It is a voluntary membership organization whose purpose is to promote global information exchange through Internet technology. It appoints a council of elders, which has responsibility for the technical management and direction of the Internet. The council of elders is a group of invited volunteers called the Internet Architecture Board (IAB). The IAB Meets regularly to bless standards and allocate resources like address. It doesn't actually assign the addresses, but it makes the rules about who to assign addresses.

The Internet Engineering task Force (EITF) is another volunteer organization, which also think about the bitterness of the working of Internet Globally. The users of Internet express their opinions through meetings of it. It meets regularly to discuss operational and near-term technical problems of the Internet. Anyone can attend IETF meetings. When IETF considers a problem important enough to merit concern, it sets up a working group for further invention and asks it to submit a report. The report could be accepted voluntarily as a good idea which people follow, or it could be sent to the IAB to be declared a standard.

3 TOOLS/SERVICES

Internet contains a hidden treasure of information. If any one, who know how to get this treasure, can gather the vast amount of information from Internet. People develop the skill and technique to explore the resources of Internet than he can mined the diamond from this treasure. There are so many services available on the Net. It include direct communications (e-mail, chat etc.), Online conferencing (Usenet News e-mail discussion lists etc.), distributed information resources (WWW, Gopher, etc.), remote login and file transfer (Telnet, FTP etc.) and many other valuable tools and resources are available to access and collect information on Internet. Few of them are given as:

Telenet (Remote Login)

Telnet is a terminal emulation protocol that enables users to log-on to a host computer from remote computers using a Telnet program. It can provide access to many resources around the world, such as library catalogues, databases and other Internet tools and applications.

FTP (File transfer Protocol)

FTP is the protocol or set of rules that enables files to be transferred from one computer to another on the Net using an FTP program or through Netscape. FTP is the part of the TCP/IP protocol suite.

E-mail (Electronic Mail)

E-mail is a network, service that enables users to send and receive messages and data. It is one of the most popular services of Internet. It is the fastest, most economical and highly used modes of communication.

BBS (Bulletin Board Service)

BBS is a forum for users to browse and exchange information. BBS is usually comprised of small groups of users who have a common interest. Computer BBS'a are small operations run by a single person that allows several users to log-on at the same time. Some are much larger allow hundreds of users to login simultaneously to use the system. Usenet system of newsgroups is in effect the world's largest distributed BBS.

3.1 Usenet

Usenet is a system of distributed Bulletin Boards looking after discussion groups or chat lines who regularly gather to speak, to exchange views and comment. Usenet is a world wide 3 community of Electronic BBS's developed to facilitate discussion groups called Newsgroups, in which any user of Internet can participate in a public dialog with every one else on the networks.

3.2 WWW (World Wide Web)

The World Wide Web is a system, based on hypertext and HTTP, for providing, organizing, and accessing a wide variety of resources (text, images and sound) that are available via the Internet. The web also includes gateways to sits using other Internet protocols such as Gopher and FTP.

3.3 Archie

The Archie service is a net-based service that lets you locate files that are available for down loading through anonymous FTP developed by the McGill University School of Computer Service.

3.4 Gopher

Gopher is a protocol designed to reach, retrieve, and display documents from remote sites on the Internet. You can access a Gopher server are registered with the Mother Gopher at the University of Minnesota.

WAIS (Wide Area Information Servers)

WAIS is an Internet search tool that has the capability of searching many databases at one time. WAIS can be accessed through Telnet, Gopher, or a WAIS client program and increasingly, WAIs indexed databases are accessible through the World Wide Web.

3.5 Veronica

Veronica is a computer program that helps Internauts find what they are looking for on Gopher servers around the world. Instead of looking through menus Veronica allows users to enter key words to locate the Gopher site that holds the information they want.

3.6 TCP/IP (Transmission Control Protocol/Internet Protocol)

TCP/IP is a collection of protocols, or rules that governs the way data travel from one machine to another across networks. The Internet is based on TCP/IP. TCP/IP protocols work together to break the data into small pieces that can be efficiently handled by network, to communicate the destination of the data to the network, to verify the receipt of the data on the other end of the transmission and reconstruct the data in its original form.

3.7 HTTP (Hpertext Transfer Protocol)

HTTP is a set of rules or protocol that governs the transfer of hypertext data between two or more computers. The WWW encompasses the universe of information that is available through HTTP. HTTP enables users to retrieve a wide variety of resources such as text, graphics, sound, animation and other hypertext documents and allows hypertext access to other Internet protocols.

3.8 Web Page

A web page is a document (a unit of information) that is available over WWW. Web pages are created using HTML, which defines the contents of a web page such as images, text, hypertext links, video and audio files, etc. Web pages are sent and received through HTTP a method used to transfer hypertext files across the Internet.

3.9 What Internet Does?

Internet is the cheapest and fastest means (a) to get information; (b) to provide information; (c) to compile information. Internet has a wide capability of International Communication between over than 100 countries. There are so many activities which you can do on the Internet. A few of them which you can do on it are given (Leon and Leon 1998).

a. Send and receive electronic mail (e-mail)
b. Visit any web sites available on Internet.
c .Read and post articles in newsgroups
d. Download files to your PC.
e. Chat with other users on line.
f. Access on-line multimedia including radio and video-broadcasts
g. Play games with others on line globally.
f. Access on-line multimedia including radio and video-broadcasts
g. Play games with others on line globally.
h. Search the Internet for information.
i. Subscribe to electronic newsleters, e-mails etc.
j. Join contests
k. Contribute articles and other materials.
l .Do online shopping.
m. Post your resumes on the Internet.

n. Create your Web Sides.
o. Create an e-mail ID and account for you.
p. Use the e-mail remainder service.
q. Find a person's details.
r. Find an institution or organization's details.
s. Create your or your institution or organization home page.

4 NECESSITY OF INTERNET FOR LIBRARIES AND INFORMATION CENTERS

Internet is the gateway for Libraries and Information Centers to enter in the Electronic Information Era. Internet is providing the information generated by the different organizations, institutions, research centers and individuals, all over the world. Nearly 10%, printed information is available on Internet and it is increasing day by day. So, many resoruces are available on net which you can access in your library and information centers and provide information to your users. Some of the important resources available on Internet include, E-Journals, Preprinted Materials, Bibliographical tools, Books, Dictionaries, Encyclopedias, Directories, Reports, Patents, Standards, Library Catalogues, Newspapers, Magazines, databases, Files, Audio, Video, and home pages of Companies, Institutions, Organizations, Association, and individuals, experts, etc.

Users of the Libraries, who were geographically limited, after Internet expanded globally. The valuable information present in our library can be fed to our home page and be made available to the users everywhere in the world and we make our Library Without Walls, through Internet.

The coming days are the days of Electronic Era. Information is moving in the air around us. We have to catch it and make available to ours users. It can only be through Internet. Every Library and information centers available in our country should be attached with Internet and should create a home page of the library and its holdings so that we may stand at par the other part of the world and become able to enter in the Electronic Information Era.

A Library, which wants to access information on Internet, have a connection of Internet. Your Library can connect to the Internet through dial-up connection into an Internet Service Provider's Computer or with a direct connection to an Internet Service Provider. To establish a conventional dial-up connection to Internet, Your library or Information Center needs the following:

a. An account with Internet Access Provider. The account can be either TP/IP or Shell.
b. A STD Telephone connection.
c. A computer with serial port (for External Modems) or an expansion slot (for Internal Modems).

d. A modem (External/Internal).
e. A communication (or terminal emulation) software. For SLIP/PPP (tcp/ip) account holders the browser software (Internet explorer, Netscape, Navigator, etc.) and e-mail software (Microsoft Internet Mail, Netscape Messenger, Eudora, etc.). For Sheell account holders the browser software (Lynx) and the e-mail software (pine are available opn the VSNL server and can be accessed using the Shell account menu. At present only one Internet Access Provider is available in India i.e. (Videsh Samachar Nigam Ltd.). If you want to access at very fast speed and can spend more money than you can get a direct connection to your ISP through a fixed cable or dedicated phone line.

5 IMPACT ON LIBRARY AND INFORMATION SERVICES

Internet is the latest innovation which has given the drastic impact on the services and collection of the Library and Information centers. On the one side Internet reduced the task of library and informatikon Centers in retrieving and disseminating the information and on the other side, the library paradigm has shifted from locally storing information to facilitate the connectivity to distributed information center world wide.

5.1 Collection Development

Internet convert the Libraries into Virtual Libraries and Digital Libraries. There is no need to collect the books and reading materials available on papers by the libraries. It creates problems of space and increaing the cost for maintaining it. The Internet will do it for your library. Internet established itself as a storehouse of all world's information and resources in the electronic form ready for accessing for your users and for your library. So, through internet, you can add a big kind of collections in your library and information centers like dailies, reference books, text books, reports, directories, periodicals, maps, monographs, catalogues of different Libraries in the world etc. For all of these, Internet has so many good sites and services to access for you and our users. I am presenting some of the good services and sites available on-line on In ternet.

5.2 Libraries on Line

Internet had mad it possible to access library catalogue of Libraries throughout the world. This is possible through the Online Public access Catalogue (OPAC). Media Net OPAC, University of Maryland Library, Library of Congress, Catalogue of Catalogue Guides to several OPACs are the some example of catalogue online. Many Academic, Research and National Libraries have mounted their OPAC on Internet and it is possible to provide them in your Library.

5.3 Library Correspondences

All correspondences of the Library; may be the correspondences of

the Librarian's Office; may be the or price verification or dealing with Booksellers and Publishers; may be correspondences of the CCirculation Section regarding reminders to users, or Inter Library Loan can do through Internet more quickly, economically and easily at the Campus or outside the Campus through out the world. Marketing of the Library Services become more effective through Internet Services.

5.4 UGC for Interneting in Indian University Libraries

UGC is the sponsoring body for University development in India. Library and Information Networking Center (INFIBNET), Ahmedabad, is an autonomous body working under UGC, trying its best to provide fund technology and training to University Libraries all over India. It provides financial support to 87 University Libraries up to March, 1999 for procuring computers and associated systems and help to star computerize operations by sending a team of experts and organizing training to the staff in their local environment to work with computer. It is going to set up a 170 node VSAT network for sharing of acadmic information in this year.

It also going to provide V-SAT dish antenna to every University Libraries in India. It is the best effort of the UGC towards Interning the University Libraries. The result olf the INFLIBNET's efforts came to existence when Inter University Library Network start working. It is announced by the INFLIBNET that five University libraries of India are connecting on the in March 1999. The project, sponsored by INFLIBNET UGC will help Libraries exchange information as well as books within themselves. These Libraries are the Library of the University of Hyderabad, Hyderabad; Jawaharlal Nehru University Library, New Delhi; Tata Institute of Social Sciences Libraries, Mumbai; Indian Istitute of Science Library, Bangalore: Punjab University Library, Chandigarh. These Libraries are working on Libsys, The Library Software, developed by Infotech Consultants, Delhi. Step is good but progress is slow. The University Librarians should take effective stapes to bring their Libraries in digital form and train their staffs to work on computer and Internet, only then UGC can fulfill its aim of bring all the University Libraries on line.

6 CONCLUSION

Information Technology is a wonderful gift provided by the present day technological advancements and innovations. In order to meet the growing needs of information for its enthusiasts, we must make use of the best possible services in ours profession which can benefit a lot of its user a by providing abundant of information very quickly at lower cost. Internet services is the one, benefikting academicians, ordinary information seekers or miscellaneous groups by providing the right information at the right time. Internet changed the total information scenario and it has become the need of the day and demands its worldwide acceptance for meeting the enormous

growing information need. There is a need to get Internet connection in every Library and trained all the personnel of the Library for accessing it and providing the best services to users so that we can face the Electronic Information Era effectively.

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Appendix

Accessing Internet: Some Important and very Useful Resources for Library and Information Centres

Alphabetically compiled list contains some of the important resources very useful for Libraries and Information Centres, LIS Professionals and Library Users to access Information on Internet. It contains the Sites of Networks Organisations, Discussion Lists, Electronic Conferences, Electronic Journals, Newsletters, Alerting Services, Reference Works, Information Gateways, OPACs and Journals, Newsletters, Alerting Services, Reference Works, Information Gateways, OPACs and Library-based Information Servers, Booksellers, Publishers, Government Organisations, International Organisations, Library and Information Science and Related professional Associations, Library and Information Educational Institutions Pre-prints, Technical Reports, Thesis and Dissertations Discussion forms, Journals Library Catalogues, databases, Subject Directories etc.

1 Altavista Search Tool. (http://altvasta.digital.com/)

2 American Society of Idexer Reference Sources. http:// www.as.indexing.org/refbooks.htm)

3 American association for the Advancement of Science National Geographic. &nationalgeographic.com/)

4 American Library Association Home Page: American Library Association, USA. http://www.ala.org/)

5 American Mathematical Society Preprint Server http://www.ams.org/ preprints/)

6 AMS Journals. http://www.amas.org/journals/)

7 APNet Home Page Academic Press. http:// www.academicpress.com/)

8 Argus Subject directory University of Michigan Clearinghouse. http:/ /www.clearinghouse.net)

9 Ariadne: University Library, University of Abertary Dundee and UKOLN, UK (http://ukoln.bath.ac.uk/aradne/)

10 ARL Directory of Electronic Journals and Newsletters. (Gopher:// arl.cni.org:70/11/scomm/edir/)

11 Asian Studies WWW Virtual Library. (http://coombs.anu.au/wwwvl-assistudies.him)

12 BAILER WWW Server: British Association for Information and Library Education and Research, UK. (http://epip.lboro.ac.uk/bailer/)

13 BIDS: Bath Information and Data services, UK. http://

www.bids.ac.uk/)
14 Biology esource Guide at Harvard. http://www.golgi.harvar.edu/)
15 Blackwell science Journals Online. http://www.blacksci.co.uk/online/)
16 Blaise Web: The British Library, UK. (http://blaiseweb.li.uk/)
17 Britannica Online: Britannica Advanced Publishing, Inc., USA. http:/ /www.ed.com/)
18 BUBL Information Service: BUBL, UK. (http:/bubl.ac.uk/)
19 BUBL Journals: BUBL Information Service, UK. (http:/bubl.ac.uk/ journals)
20 BUBL Journals. (http://bubl.ac.uk/journals)
21 BUBL LINK: Libraries of Networked Knowledge: BUBL Information Service, UK. (http://bubl.ac.uk/link/)
22 BUBL Seach: BUBL Information Service, UK. (http://bubl.ac.uk/ searches)
23 CARL Corporation: The CARL Corporation, USA. http:// www.carl.org/)
24 Camegine Mellon University Online Reference Works. http:// www.cs.cmu.edu/references.html)
25 Center for Science and Environment. (www.oneworld.org/cse)
26 Chem Center of the American Chemical Society. http:// www.chemcenter.org/)
27 Clearinghouse of Subject Oriented Internet Resource Guides; Rrgos Associates, Inc., USA. http://www.clearinghouse.net/)
28 Colleges and Universities Home Pages. http://www.mit.edu:8001/ people/cdemello/univ.html)
29 Conservation On Line: Stanford University Libraries, Presentation Department, USA. (http:/palimpsest.stanford.edu/)
30 COPPAC : COPAC Project, Manchester Computing, University of Manchester, UK. (http://copac.ac.uk./copac/)
31 CORDIS Homepages: European Union, EC. http://www.cordis/lu/)
32 CRISTAL-ED: School of Information and Library Studies, University of Michigan, USA. http://www.si.umich.edu/eristaled.)
33 CTILIS Home Page: Computers in Teaching Initiative, Center for Library and Information Studies, UK. (http://info.lboro.ac.uk/ departments/ls/cti/)
34 Current Cites: University of California, Berkeley Library, USA. http:/ /www.lib.ncsu.edu/stacks/currentc/)
35 Deja News the Source for Internet Newsgroups: Deja News Inc., USA. http://www.dejanews.com/)
36 DeLiberations: Educational and Staff Development Unit, London Guildhall University, UK. http://www.lgu.ac/uk/deliberations/)
37 Devline Home Page http://www.ids.ac.uk/)

38 Diane Kovac's List of Scholarly Electronic Conferences. http://www.mid.net/kovacs/)
39 Dictionaries and Reference Works on HUMBUL: University of Oxford, UK. (http:/info.ox.ac.uk/departments/humanities/dic.html)
40 Digital Librarian A Librarian choice of the best of the web. http://www.servtech.com/~mvail/home.html)
41 Digital Librarian Librariana. http://www.servtech/com/~mvail/librariana.html)
42 Digital Librries Cataloguing and Indexing of Electronic Resources: International Federation of Library Associations, Canada (http:/ifla.inist/.fr/IAI/ctalog/htm) or http://www.ncl-bnc/ca/ifla/II/catalog.htm)
43 Directory of Electronic Journals, Newsletters and Academic Discussion Lists: Association of Research Libraries, USA. (http://arl.cni.org/scomm/edir/)
44 Directory of Scholarly Electronic Conferences: Diane K. Kovacs and team, Kent State University Libraries, USA. (http://n2h2.com/KOVACS/)
45 D-Lib: Defense Advanced Research Projects Agency (DARPA), USA. http://www.dlib/org/) or (http://uklon/bath/ac/.uk/dlinb/magazine/html)
46 eBLAST Encyclopaedia Britanica's Internet Guide. http://www.eBLAST.com)
47 Einet Galaxy (http://www.galaxy.einet.net/)
48 Electronic Library Programme UKOLN The UK Office for Library and Information Networks, UK. (http://ukoln.bath.ac.uk/elib/)
49 Elsevier Science Catalogue on the Internet. http://www.elsevier.nl/)
50 Elsevier Science. http://www.elsevier.nl/locate/contentsdirect)
51 E-maths the web site of AMS (ww.ams.org)
52 Encyclopedia Britannica Online http://www.ed.com/)
53 ESA/IRS: European space Agency Information Retrieval, Italy, http://www.microsoft.com/ie/)
54 ESTOC Elseiver Science Tables of Contents Service http://www.elsevier/nl/estoc/)
55 Eurek Alert http://www.eurekalert/org/)
56 Europe and the Global Information Society Bangemann Report: Bangemann Commission, EC. http://www.earn/.net/ec/bangemann/html)
57 European Patent Office: Austria. http://www.austria.eu.net/epo/)
58 European Patent Office: European Patent Office, Austria. http://www.austria/eu/net/epo/.)
59 Excite Research Tool http://www.excite.com)
60 Fed World Information Network: national Technical Information

Service (NTIS), USA. http://www.fedworld/gov/) or (ftp://ftp.fedworld.gov)
61 Globewide Network Acaemy. http://www.gnacademy.org/)
62 Globle Publication Private Limited International Subscription Agency. http://www.globepub.com/globe/subscr.html)
63 HotBot: Hotwired, USA, http://www.hotbot.com/)
64 HUMBUL Gateway: University Computing service, UK. http://info.ox.ac.uk./oucs/humanities/)
65 Hytelnet: Peter Scott, Canada http://www.com.ac.uk/hytelnet/)
66 IBM Patent Server. (http://ptment.womplex.ibm.com/)
67 Ideal alert/Overview, (http://darwin.apnet.com/www/ideal/alert/)
68 IFLA Internet and Library Software Archieve : International Federation of Library Associations, Canada (http://ifla.inist.fr/II/software htm)
69 INFLANET: IFLA-International Federation of Library Association, Canada & Netherlands. (http://ifla.inist.fr/) or http://www.nlc-bnc.ca/ifla/)
70 India directory of worldwide India related resources (http://hindustan.net)
71 Info Watch. http://www.ncsi.iisc.emet.in/ncsi.infowatch.html)
72 Infoseek: Infoseek Corp., USA http://www.2.infoseek.com)
73 Infoseek. Ohttp://guide.infoseek.com/)
74 Innovative Internet Applications in Libraries: Ken Middleton, Middle Tennesse State University, USA. (http://frank.mutsu.edu/~kmiddlet/libweb/innovate.html)
75 Institute of Information Scientist: UK. http://www.dcs.gla.ac.uk/IIS/)
76 International Graduate summaer school (IGSS), UK. http://www.dil.aer.ac.uk/igss/)
77 Internet Bookshop Homepage: Internet Book Shop, UK. http://www.bookshop.co.uk/)
78 Internet Explorer UK Mirror: Microsoft. Demon Internet, UK http://www.ie.demon.co.uk/) or
79 Internet Library for Librarians. http://www.itcompany.com/infortriever)
80 Internet Public Library : School of Information and Library Studies, University of Michigan, USA. ?(http://ipl.sils.umich.edu/)
81 Internet Public Library MOO: School of Information and Library Studies, University of Michigan, USA. (http//ipl.sils.umich.edu/ref/MOO/)
82 Internet Resources Newsletter: Heriot-Watt University, Internet Resource Center, UK http://www.hw.ac.uk/lib WWW/.irn/im/html)
83 Internet Resources Newsletter. http://www.haw/ac/uk/libwww/im/

im/html)
84 ISI Current Contents Connect (http://connect.isihost.com)
85 ISO online: ISO, Switzerland http://www.iso.ch/)
86 JANET Information Server: UKERNA United Kingdom Educational and Research Networking Association, UK http://www.ja.net/)
87 John Wiley & Sons, Inc. http://www.wiley.com)
88 Katherine Sharp Review: Graduate School of Lirbary and Information cinch, University of Illinois, USA. (http://edful.lis.uniue.edu/review/)_
89 Kluwer Online. (http://wkap.nl/kaphtml/kodetails)
90 Knight Ridder Information Web Sit: USA http://www.dialog.com/)
91 LANL Preprint Server (http://lanl.gov)
92 LASER: London and South Eastern Library Region (LASER), UK. O(http://lirn.viscount.org.uk/laser/)
93 Library Association: UK http://www.fdgroup.co.uk/la.html)
94 Library of Congress Catalogue. (Http://leweb.lor.gov/catalog/)
95 Library of Congress Home Page: Library of Congress, USA. (http:// lcweb.loc.gov/homepage/)
96 Library Oriented Lists and Electronic Serials: Steve Bonario and Ann Thornton, University of Houston, USA. (http://info.lib.uh.edu/liblists/ liblists.htm)
97 LINK. (http://link.springer.de/test-accolunt/index.html)
98 LIS Schools on the Net: Internet Training and Constancy Services, USA. http://www.itcs.com/topten/libschools.html)
99 LIS-BALER: British Association for Information and Library Education and research, UK. http://www.mailbase.ac.uk/lists/lis-bailer/)
100 LIS-FID: Faff of Queen Margareet College, Edinburgh on behalf of the International Federation for Information and Documentation, Netherlands. http://www.mailbase.ac.uk/lists/lis-fid/)
101 LIS-IIS-Members of the Institute of Information Scientists, UK. http:/ /www.mailbase.ac.uk/lists/lis-iis/)
102 LIS-link: Mailbase, UK. http://www.mailbase.ac.uk)
103 LISSPS-Library and information Studies and Prospective studies: Andrew Brown and UKOLN, UK. (http://ukoln.bath.ac.uk/lissps/)
104 LISTSERV List-of-Lists : E-mail-(listserv@isoft.com/lists/lis-link/)
105 LISTSERV User Guide: EARN Association, Europe. http:// www.earn.net/lug/notice.html)
106 Liszt Directory of E-mail Dircussion Groups. http://www.liszt/com/)
107 LOCIS Library of congress Information System: Library of Congress, USA. Telnet (locis.loc.gov. 140.147.253)
108 Lund University Electronic Library, Library and Information Science, Liberarianship. http://www.ub2.lu.se/lisers.html)

109 Lycos Subject directories, http://www.lycos.com)
110 Mathematics on the Internet, (http://e-math.ams.org.)
111 Media UK Internet Directory: Media, UK http://www.nediauk.com/directory)
112 Megallan Rating Service. http://www.mclinley.com/)
113 Melvyl University of California library Catalogue (http://nelvyl.ucop.edu/)
114]Merch Manual Medical Refernce Source http://www.uln.edu/rtc-95/restools/cmshp.html)
115 NASA Technical Reports, (http://techreports.larc.nasa.gov)
116 National Academy Press, USA. http://www.nap.edu/readnggroom/)
117 Natural Remedies Private Limited http://www.naturalrenedy.com)
118 NCET Home Page : Council for Education Technology, UK. http://www.ncet.org.uk/)
119 Networked Computer Science Technical Reports Library (NCStrl) http://www.NCSTGRL.ORG/)
120 New Jour. Ann Shumelda Okerson (Yale University) and James J. O Donnell (University of Pennsylvania) (http://gort.ucsd.edu/newjour.)
121 NISS Directory of Networked Resources: NISS, UK http://www.niss.ac.uk/subject/)
122 NlightN Home Page: USA. http://www.nlightn.com/)
123 OCLC Online Computer Library Center: Online Computer Library Center, Inc., USA. http://www.oclc.org/)
124 Online Catalogus with Webbed Interfaces: Eric Lease Morgan, North Carolina State University, USA. http://www.lib.ncsu.edu/staff/morgan/alcuin/wwwed-catlogs.html)
125 On-Line Reference Works : Carnergie Mellon University, USA. http://www.cs.cmu.edu/Web/references.html)
126 Open Text Index. (http://index.opentext.net) or (http://moondog.usask.ca/hytelnet
127 PACS-L The Public Access Computer Systems Forums: Dana Books, Gretchen McCord Hoffiman, Linda Thompson, University of Houston, USA. (http://inb.lib.uh.edu/pascl.html)
128 PACS-P (Public access Computer Systems Publciations) University of Hoston Libraries, USA. (http://info.lib.uh.edu/pacsp.html)
129 Physics Express Letters Abstacts. http://www.iop.org/rel)
130 Pick Librarianship and Information Science. http://www.aber.ac.uk/~tplwww/e/resources.html)
131 Pick Quality Internet Resources in Library and Informatikon Science selected by Thomas Pary Library (http://aber.ac.uk/~tplwww/e/pick)
132 Pick Use of Internet in Libraries. http://www.aber.ac.uk~tplwww/e/intinlib.html)
133 PICK: Quality Internet Resources in Lirbary and Information Science,

selected by Thomas Parry Library: Thomas Parry Library, University of Wales Aberystwyth, UK. http://www.aber.ac.uk/~tplwww/e/pick.html)

134 Planet Earth http://www.nosc.mil/planet-earth/)

135 Point Rating Service. (http://point.lycos.com/categories/index.html/)

136 Portico: British Lirbary, UK. http://www.bl.uk/) or (http://portico.bl.uk/)

137 Project EARL : EARL, UK http://www.viscount.org.uk/)

138 Public-Access Computer Systems News: University of Houston Libraries, USA (http://info.lib.uh.edu/pacsnews.html)

139 Publishers Catalogues Home Page: Peter Scot, Northern Lights Internet solutions Ltd., Canada. http://www.lights.com/publisher/)

140 Rearch. com: CNET, Inc., USA http://www.search.com/)

141 REFLAW The Virtual Reference & legal & Government & Politics: Washburn University School of Law Library, Kansas, USA. (http://law.wuacc.edu/washlaw/relaw/reflaw.html)

142 RLG Home Page. Research Libraries Group. Inc., USA http://www.rlg.org/)

143 Royal Society Journls. http://www.pubs.royalso..h/register/summpage.html)

144 RRL Web Sever: Association of Research libraries, USA (http://arl.cni.org/)

145 SALSER Scottiswh Academic Library Serials: Scottish Confdederation of University and Research Libraries

146 Scholarly Journals Distributed via the Web: Charles W. Bailey, Jr., University of Houston Libraries, USA. (http://info.lib.uh.edu/wj/webjour.html)

147 Scholarly Societies, Academics and Federation http://www.lib.uwaterloo.ca/society/overview.html)

148 Science Journals http://www.sciencermag.org/)

149 Science Direct Elsevir http://www.sciencedirect.com/)

150 Science Direct Latest News http://www.sciencedirect..lash-newshtml#8)

151 Scout Report Homepage: Net Scout Services, USA (http://rs.internic.net/scout-report-index.html)

152 Scout Report: (http://rs.internic.net/scolut/report)

153 SENN Scientific and Engineering Networking News. http://www.senn.com/) Serials in Cyberspace Collection, Resources and Services, http://www.uvm.edu/~bmaclenn/)

154 Shareware.com: CNET, Inc., USA http://www.shareware.com)

155 SIGIR Information Server: association for Computing Machinery Special Interest Group on http://www.sliverplatter.com/) or (http:/flp.silverplatter.com/)

156 SOFT-AID Computers Pvt. Ltd. India http://www.softaid-india.com/library)
157 Springer Link (http://link.springer,de.)
158 STAR Scientific and Aresopase Reports file http://www.sti.nasa.gov/reselect/star.html)
159 STN International: Scientific and Technicla Information Network (STN), Germany http://www.fiz-karlsruhe.de/stn.html)
160 STUMPERS-L Concordia University, USA http://www.cuis.edu/~stumpers/intro.html)
161 Survey of Bibliographic Tools: Dena Jacobsen, ACM, USA http://www.ecst.csuchico.edu/~jacobsd/bib/tools/)
162 Technical Processing tools Online (TPOT): george J. Janczym, UCSD. Libraries, USA. (http0:/tpot.uscd.edu/) telnet (esrin.esa.it 192.106.252.1)
163 TERENA Trans European Research and Education Networking Association: TERENA Secretariat, Nethlands, and Euore. http://www.terna.nl/)
164 THOR+: The Virtual Reference Desk: Libraries of Pureaue University, USA. (http://thorplus.lib.purdue.edu/reference/)
165 Times Higher Internet Services Type Alerting Service: Times Higher Education Supplment, UK http://www.timeshigher.newsint.co.uk/)
166 TIPTOP The Internet Pilot to Phyics http://www.www.tp.umu.se/tiptop/)
167 UK Higher Education Library Catalogues: NISS, UK. http://www.niss.ac.uk/refernce/opacs.html)
168 UKOLUN Information Service: UKOLN-The Officer for Library and Information Networking, UK. http://www.uklon.bath.ac.uk/)
169 UMI;s Desertations Explorer http://www.uni.com/hp/support/dexplorer/)
170 UMI The Answer Company UMI Inc. USA http://www.umi.com/)
171 Uncover Content pages of over 16,000 journals. (http://uncweb.carl.org)
172 UnCover : CARL Corporation, USA; BH Blackwell Group, UK. http://www.carl/org/uncover/unchome/html)
173 UNDP-Development Programme: United Nations http://www.undp.org/)
174 USPTO and AIDS Patents (http://patents.uspto.gov/)
175 Virginia Tech. University (Electronic Thesis and Dissertation project), USA (http://etd.vt.edu/etd/)
176 W3C the World Wide Web Consortium: The Laboratory for Computer Science at MIT, INRIA (Institution National de Recherche en Informatique et en Automnatique) and Keio University with support from DARP and the European Commission. http://www.w3.org/)

THE IMPACT OF INTERNET & MULTIMEDIA ON LIBRARY

K. Muthusamy*
S. Palanisamy**
R. Thangarajan***

ABSTRACT

The evolution of Internet, Multimedia and advances in the communication technology plays a vital role in information dissemination. Since the advent in television, computer and internetworking, the role of librarian and libraries is changing repidly and becoming more challenging. This challenge is partially overcome with the help of multimedia and internet. Multimedia is the interactive use of audio, still image and motion video cameras and audio telephony that will enable the users to share information over network. Internet is a network of networks which connects million of users through computers. World Wide Web (WWW) provides an unlimited information resources to the users.

Future library information depends on advances in information technology field. Incorporating new combination of information to make more powerful may modify existing applications such as information database. Reduction in cost will make the technology widely available by the end the decade. In future the multimedia system dominate every library in the world to provide information to users in effective and efficient way. In this paper the various technological growth in information technology field that changes the traditional library systems are discussed.

1 INTRODUCTION

Many of the difficulties that arise in developing multimedia systems do so because multimedia is not a single technology. Rather it is the convergence of many different technologies that reached different degrees of maturity. It is now quite conventional to describe multimedia as lying at the convergence of three of four separate industries namely computing, telecommunications, entertainment and publishing. There are many simple multimedia platforms on the market at present. The basic system might consist of

- a personnel computer with high resolution bit mapped screen
- a CD-ROM drive, which may be standalone but it is more likely now incorporated in to computer.
- Speakers and microphone
- one of more adapter broads to decompress and play back audio and video material
- Software support including device drivers for the adapters and runtime libraries for the development tools used.

*Kongu engineering College - Perundural

2 ELECTRONIC PUBLISHING

Electronic publishing is the dissemination of information in electronic form and its distribution to potential users either on electronic networks such as internet, local area network, metropolitan area network and wide area network. Information stored in CD-ROMs and diskettes may also be used by the potential users. The products of electronic publishing are text, graphics, audio, video and text databases. The development in the following fields greatly influences electronic publishing.

- Computer Technology
- Networks
- Computer & Telecommunication
- Development in data warehouse and data mining

Digital libraries have been in use for the last three decades. Over this time there has been a constant improvement in the technology used by digital libraries. In 1980s information science had progressed to the point where sophisticated information storage and retrieval systems were in operation. Digital libraries made use to techniques to share bibliographic records and link different remote systems.

Today's technology has made it possible for digital libraries to include different media objects such as text, image, audio and video. In particular, visual information systems are getting more popular as compared to text based information system. Therefore the digital libraries become more graphical in nature. In addition, the concepts of hypertext have been introduced in libraries. Traditional library systems can not handle backward tracing of references. Following a referential trail is also a problem with traditional online systems.

3 MULTIMEDIA AND DIGITAL LIBRARIES

Multimedia is seen as one way of solving the growing problem of the skills and availability of the workforce and the increasing demands of technology in the industrialized countries. The early use of multimedia was largely for offline training and education using videodisk and standalone players. The growing use of multimedia data has introduced new challenges in storage and communication is diverse multimedia objects like video, audio and images. Internet on demand and Global Information System require communication of image and video data in a distributed environment. The World Wide Web makes it easier to transfer such information over national and international networks. Image and video data are very large in size, of the order of gigabytes. This large amount of memory requirement in need of high speed networks. ATM, fibre optic FDDI and DQDB technologies are very much useful for transferring data in very high speed and matches the requirement of multimedia. The message compression and decompression algorithms are used to reduce the size of the messages exchanged over the network.

4 INTERNET

Today with in every 100 days the number of users in the worldwide networks i.e., internet is doubled. It shows the importance of the internet and its usage. The internet has changed the way we view information sources. Not only is the idea of library as a place being questioned, but librarians are finding they must learn how to organise, manage, use and provide access to unlimited information. Personal computers are now usually part of the network, spanning the entire globe. Internet reduces the globe into a small village.

Reduction in computer hardware and development advances in the software becoming more computer literate and systems becoming simpler and easily accessible. Computers are changing the way we communicate and how we think about intellectual property and the ownership of information. It forces the users to re-examine our ideas about information and library users. The internet provides the following services. E-mail, Telnet, FTP, Electronic Documents, OPACS, Databases, Online research and freenets. Internet is probably most useful in the publications and distribution of scholarly electronic journals . The advantage of electronic journal over their printed materials is indisputable.

5 STORAGE OF INFORMATION

Optical storage is making a major impact on the multimedia market as a result of the benefits that it offers interms of capacity, life span and cost. The different types of optical media reviewed include analog video disk, compact disk and the use of writeable storage media such as write only read many and magnetic optic disks. All forms of optical storage disk provide higher storage capacity, random access to data, a guaranteed life span of between 30 and 40 years, removability and portability. CD-ROM is an economic medium for the duplication and distribution of information to users.

Users will be able to access information that is stored in multimedia databases on optical disk, Already an increasing number of companies are using CD-ROM as a distribution medium for software. Some also use it to distribute information. Apple, for example uses it as a means of keeping its staff informed whilst sun has put its entire third party software catalogue onto disk, including demonstration versions of some of the packages,. This in turn will ensure that CD-ROM drives are bundled with new PCs. By the end of the decade most desktops will have access to such a drive, either locally or over the network. Most CD-ROMs for business use are still mainly text. However, just as printed publications may contain illustrations, so increasingly will electronic ones. For example. CID publishing has produced a directory, aimed at the corporate travel and entertainment market, which contains details on 5000 venues in UK. Each venue has a text entry at no

cost. Those that are willing to pay can have photographic images of their rooms and grounds included on the disk.

As operating systems such as Microsoft windows are extended to support a wider range of data types, a new generation of multimedia user interfaces (MUIs) will evolve naturally from today's graphical user interfaces. These will allow the users to communicate with the computer in new ways, using speech or even gestures to issue commands, for example IBM claims that users of its personal dictation systems can dictate text straight into applications such as Lotus notes or word perfect, whilst at the same time using speech to control both the application and the operating system.

6 COMMUNICATION

In the future desktop and multimedia is expected to provide better communications between persons separated by space and time, which needs to work together on common projects. For example the use of video communication will enable to support staff at manufacturer's head quarters to view the internals of an aircraft at a line station and offer immediate advice streamlining the entire maintenance operation. In addition to the economic benefits of videoconference, social benefits may arise through the conservation of natural resources and reduction in pollution levels as unnecessary travel is eliminated, improving the quality of life. By providing better communication between the remote workers and the office, multimedia may go some way to bridge the gap between the aspirations of workers and anxieties of management.

Improved communication will also have an impact on the employment prospects of particular groups such as the long-term unemployed, mature people, women returners, single parent families, people in rural communities and the disabled. The european commission has conducted research into the use to telematics to assist such groups. Under the fourth framework programme, this research will be expanded to include the use of multimedia technology and applications.

7 EDUCATION

The introduction of digitized applications that can be stored on CD-ROM and delivered over the networks will enable companies to achieve savings in staff time by turning to on-line training. Network supported multimedia plays a vital role in library. Users from their respective places can easily access the required information from the library. Multi-users can effectively share journals and textbooks available in CD-ROMs. Java and Internet are very much helpful in the information sharing facility. Students from one country may easily communicate with other country student for their requirement. This online multimedia provides excellent facilities for research students to share his view with experts available anywhere in the

universe. If the library of the educational institute is linked with worldwide libraries the students and researchers can effectively use the scarce information. The task of librarian and the objective of library are fulfilled.

8 CASE STUDY: ELECTRONIC JOURNALS ONLINE

In USA most of the universities has launched a project to provide access to electronic journals. Twelve North American Libraries have agreed as partnerts in the project, to assist in the design of the user interface, help resolve licensing issues with publishers, and to determine the best access options.

At the initial only 250 electronic journals will be available in the project. The content of each journal will vary from publisher to publishers but will include tables of contents, abstracts, and articles. The aim of this projects is to provide access to material irrespective of location and format. The most frequently used format is HTML, XML and Adobe PDF.

Later the project will involve issuing user names and passwords, verification of logon and view, connecting to the service and evaluating basic service. Throughout the project management records of usage will be tracked. To supply libraries with valuable collection development and access data. The full electronic journal service is available to other libraries now.

A total of 40 libraries will be participating in the project. Publishers participating in the initial stages of the project are Aslib, Blackwell Science, Chapman and Hall, Blackwall publishers, Institute of Mechanical Engineers, John Wiley and Sons, Kluwer, Oxford University, Rapid Science Publishers and Taylor and Francis.

9 CONCLUSION

The development of successful multimedia systems for library requires a much wider range of skills than that of conventional systems. For this reason librarian must extend the project team to include people with the background of graphics design, television production, knowledge engineering and even psychology. The project plan must also be revised to incorporate a process management stream that will be concerned with the selection, creation and capture of content.

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INTERNET SERVICES FOR LIBRARY AND INFORMATION CENTRES IN THE ELECTRONIC INFORMATION ERA

T. Ashok Babu*
A. Raghavaiah**

"The danger of the past was that men became slaves
The danger of the future is that men many become robots".
Eriech Fromm

ABSTRACT

"What is new at dawn is obsolete by dusk" in the Internet

The role of the library in the context of Internet is highly revolutionized; the last four years have witnessed an explosion of Internet activity. This paper traces the history of the Internet and examines the major Internet services such as E-mail, Usenet, Telnet and FTP and describes various information discoveries and retrieval tools such as Archie, Gopher, WAIS and WWW etc. Also discusses the contribution of the Internet to library and information services and out lines the advantages of working on the Internet

1. INTRODUCTION

The Internet is one of the most important and complex innovations of the mankind. Internet is a network of net works. Physically the Internet is a lot of computers connected to each other talking a common language, or protocol known as TCP/IPC (Transmission Control protocol/Internet protocol). It is the largest and most complete tool for information exchange for the global population. It serves as a good encyclopaedia giving detailed information on a wide variety of subjects. Presently it is possible to access to about 40,000 networks all over the world through the Internet.

* Scientist, RCI/DRDL Hyderabad-500 058
** Librarian (Retired) Ithanagaram, Tenali 522 201

1.1 History of the Internet

During 1969 the US Department of Defence, through their Advanced Research Project Agency (ARPA) created an experiment. This is a Pocket Switched Network over telephone lines. Out of this initial network Advanced Research Project Agency Network (ARPANET) one of the early fore runners of Internet was born. During 1970's the ARPA developed a set of rules, called protocols, that helped in connecting different networks having different host computers. The number of networks connected to ARPANET continued to grow over the years.. In 1982; ARPANET Joined with MILNET (The Military Network) and a few others and it is said that the Internet was thus formed from this consolidation of networks. As per the latest information available there are 2,20,00,000 current users on the Internet, and every month 1,50,000 new users are joining it. It is estimated that by the end of the year 2000 there will be 10 crore users and 10 lakh hosts on the Internet.

2. INDIAN SCENARIO

In India, the Networks offering online services on the Internet are:

1 Educational and Research Network (ERNET)
2 SOFTNET of Software Technology parks of India (STPI)
3 National Informatics Centre Network (NICNET) and
4 Videsh Sanchar Nigam Limited (VSNL).

Ernet

It was started in India in November 1986 and is offering Internet services to the academic and research community since 1989.

Softnet

It started offering Internet services apart from point to point links since 1993.

Nicnet

It offers Internet services since 1994. It is a viable gateway to internet in the country. With more than 700 micro earth station nodes all over the country, it has the widest reach in the country.

Vsnl

Since August 1995 for commercials use the Internet connections are

provided by Videsh Sanchar Nigam Limited (VSNL). VSNL offers shell' or terminal dial up and TCP/IP' type of connections. As per the latest announcement by VSNL, the charges for shell' type of accounts will be Rs. 5,000 per year or 500 hours which ever is earlier, for all categories of dialup users. But this type of account cannot download graphics. The service for the students to be priced at a confessional rate of Rs. 500 per year maximum 500 hours is expected to be launched shortly. VSNL's Internet access node was commissioned at Mumbai connecting to interned at USA via satellite and to the Internet node in Europe via submarine cable providing diversity and highly reliable network connectivity. At present VSNL has commissioned remote Internet access nodes in 10 cities and this will be expanded to 10 more cities very soon. Currently VSNL has approximately 1300 users all over India.

3. INTERNET SERVICES

There are basically four things we can do on the Internet:
—Communication,
—Document or file transfer,
—Interactive browsing, and
—Bulletin boards

Correspondingl to these activities there are four basic tools:

—E.MAIL - Electronic message exchange.
—FTP (File transfer protocol) moving electronic documents, images, sounds, etc.
—TELNET accessing another computer system's database or archives
—USENET global bulletin board service.

In addition to the above in recent years some new tools have emerged that expand upon these four basic activities:
These are

1 World Wide Web (WWW) - a hypertext interface to information on the Internet.
2 Gopher - an information browser that lets us retrieve what we find.
3 Veronica - an enhancement to gopher that searches many gophers databases.
4 WAIS - a powerful tool for searching some large databases.
5. Archie - a simple but effective mechanism for searching FTP archives.

We can discuss the above services in detail.

1 *E-Mail*

It is the most commonly used application on the Internet. The main attraction

of E-mail lies in its speed, it is much more powerful than paper mail (or "snail-mail"). With the E-mail we can send and receive any thing we use or create on computer: words, documents, programs, photos, images and sounds.
It is much cheaper than other modes of communication services.

2. *FTP (File Transfer Protocol)*

This facilitates transfer of files over the Internet. The complete process involves the transfer of file from one host to another. FTP has become popular and most widely used tool because of the number of anonymous FTP servers available.

3 *Telenet*

Telenet is one of the major Internet applications. It is a tool that delivers you to the front door of other networks. Through Telenet we can browse library card catalogs, search for papers or journals of interest. Telenet allows one to log on to another system and use various services available on that host computer.

4 *Usenet*

Usenet is conceptually a huge bulletin board system. This allows us to send messages to a specific person or group, network news, lets one send messages on an electronic bulletin board for any one to see. Both e-mails and news groups are extremely useful Internet tools.

3.1 Advanced Applications

These applications provide the users with advanced facilities. Some of these applications are mentioned in the following sections.:

1 *Archie*
Archie is the companion software tool to FTP (File Transfer Protocol). The Archie program reaches a constantly updated index of FTP sites, file names and descriptions. Archie system helps us to find information located anywhere on the Internet.

2. *Gopher*
Gopher is a software tool that connects a variety of computers and information databases on the Internet and displays them as a series of menu items. Gopher servers accept simple query and sends to the clients a document or a list of documents.

3. *Veronica*
Veronica ("very common rodent-oriented network index to computerized

archives") is the companion tool to Gopher. It is a search tool that allows one to quickly scan gopher for particular files and directories. It is a program that one can access through gopher.

4 *WAIS*

The wide area information system (WAIS) is a full text indexing software that is used to index large text files, documents and periodicals.

5. *World Wide Web (WWW)*

It is a client-server based distributed hypertext multimedia, an information system on the Internet. It was originally developed at the European Prticle Physics Laboratory (CERN), Geneva. It has now become the most popular navigation tool on the Internet, Just as one can access Gopherspace through a gopher server or client, one can access the WWW through browser.

NEEDS OF LIBRARIES TO ACCESS THE INTERNET

There are atleast five reasons why the users required accessing information centres and libraries through the Internet

To get help for publishing their information.
To get help for locating information (online services and catalogues).
To get help in determining the quality of various information resources.
For delivery of documents.
Full text documents and information is also available via Internet.

Following are some of the possibilities for exploiting the Internet or Intranet for publishing and delivery of information to the users.

E-Mail can be used for delivering information to the users. It could be used for the preparation of the list of additions, CAS/SDI bulletins and for updating databases.
It can be used for preparing electronic news and for letter reporting new resources, services etc.
This is used for maintaining up to date information about library services, collection, staff etc.
It is useful for providing access to databases, OPAC current contents etc.
This is useful for preparing union catalogues.
It is also used for database indexing and searching.

The role of library with the use of Internet is highly revolutionised. The user who had goegraphical limitations can have access to information available anywhere in the world.

5.INDIAN FUTURISTIC SCENARIO

In India the newly formulated information technology policy envisages

that the Internet related services would be available in all district headquarters by 2000 A.D.

When Videsh Sanchar Nigam Ltd., (VSNL) launched the commercial Internet services it had only 703 customers, by 1997 the figure rose to 15,000 subscribers and by June 1998 it touched around 1,50,000 subscribers.

Presently India's telephone density is hardly 1.3 percent (telephone per 100 population) against world average of 11%, whereas Sweden has 70^% density.

The ninth five-year plan laid emphasis on providing telephone facility in all villages by the year 2000. According to the plan report the Department of Telecommunications (DOT) will open internet nodes and authorised ISPS at all district head quarters and local charging areas by 26 Jan 2000.

Under the proposed plan, computers and Internet would be made available in every school, polytechnic, college, university, and public hospital in the country by 2003 A.D. Whereas all universities, engineering and medical colleges, R & D organisations and institutions of higher learning would be networked for a supplementary programme of distance education for improving the quality of education by 2000 A.D.

The Ninth five-year plan has indicated that by 2002 A.D. the Internet subscribers in the country would be around 1.5 million.

According to the latest paper from STPI in the year 2000, the Internet will:

- Have more than 100 million connected hosts
- Have more than one million connected networks
- Have traffic which exceeds voice telephone
- Available world wide
- Support thousands of different applications
- Reshape institutional, business, financial and political boundaries
- Form part of every communicative and collaborative aspect of our lives.

6.CONCLUSION

Although many libraries have access to the Internet, radical changes in library and information services have yet to appear. There is a tendency to put new wine into old bottle's i.e. to add network access to traditional bibliographic information services, while the librarian jealously guards his role as intermediary. Library services must centre now on user needs and wishes. Internet is changing the notion of a library as a closed place into a virtual library i.e. a library without walls. It is no doubt that, Internet has brought a tremendous change in the Information transfer (IT) more effectively.

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USE OF INTERNET : USER EDUCATION IN ACADEMIC LIBRARIES

C. Sasikala*
K. Rama Patnaik**

ABSTRACT

The Internet offers on-line access to information in which formatted,textual,visual and audio form from almost any location globally and is not bound by time. Academic libraries have a responsibility to support educational and research beeds of its users comprising of teachers, research scholars and students. In order to make use of the Internet needs to have proper knowledge about at least the basics of Internet features.This paper examines various problems involved in the use of Internet.

1 INTRODUCTION

The Internet, a network of computers with incompatible and distinctive software and hardware features,offers voluminous information in almost all disciplines, and in order to take full advantages of the possibilities offered by it many skills are required to navigate through such ocean of literature. It is indeed an electronic treasure trove with baffling terminology, divergent searching techniques, complicated network topology offering a variety of services which could be very daunting to a novice surfer[1]. Hence this paper emphasizes the need as well as methods of guiding and educating the users especially in an academic library environment in services offered by the Internet

However banal it may sound,but the fact remains that every organisation handling information is affected by the advent of latest technologies, and libraries and information centers could be said of more as it is evident in the transition of its role as a storehouse of information to gateway to information resources worldwide.

In India, the academic and special libraries have been under pressure for quite some time now to modernie their infrastructure and offer valued added services for its users. The perceptible efforts of academic libraries in particular to provide innovative, value-added services and current information services were given impetus by the INFLIBNET programme of Universities Grants Commission, which not only funds the networking program of the academic libraries but also offers expertise, training and other resources to

*Associate Professor & Head, Department of Lib. & Inf..Sc.,. Visakhapatnam, A.P.
**Senior Research Fellow, Department of Lib. & Inf. Sc., Visakhapatnam A.P.

modernise and automate these libraries. In addition to the above, the liberalied policies of the Government, the availability of computers and other required accessories at reasonable prices are also instrumental in encouraging the use of the Internet services. Recently as the provision of Internet services is opened to private sector offering competitive accounts, the provision of Internet services is expected to proliferate at a faster rate.

2 NEED FOR USER EDUCATION

The underutiliSation of Internet services is also observed in other countries as well. While discussing about the worldwide use of Internet Brown [2] states that "a widely quoted fact on the Internet is that only 10% of the faculty at institutions with access to the Internet actually use the Internet. And of those only 30% use it for anything other than E-mail. There are many possible reasons for this. One is the lack of awareness of the information resources on the net and of the skills to locate the specific information required"[2].

The findings of a survey of faculty of a four campus center libraries of SUNY University by Adams & Bonk also emphasised the need to train the academic community to exploit fully the advantages of electronic information technology and sources. The survey revealed that the most common obstacle to the use of electronic information resources by faculty is a lack of knowledge about what is available and that user training is considered by faculty to be a high priority.[3] Even Bane and Milheim [4] survey of use of Internet by "academics" states the fact that many academics are, even in this age of electronic revolution, are still not aware of Internet's resources and possibilities. Exploring the role of Internet in enhancing the teaching by academics, an Australian study revealed that the Internet for Australian academics represents "a mechanism for overcoming the disadvantages to academic teaching which may arise from institutional amalgamation, geographic remoteness or the under-representationof certain teaching disciplines in Australian universities".[5]

The situation in developing countries like India is somewhat different. In addition to the already stated reasons, other factors like computer illiteracy, non-availability of Internet services in sufficient measures, cost and time , lack of awareness about the potential of Internet services in sufficient measures, are also responsible for not broadening the user base in using the Internet services. As stated earlier , it is a network of networks which is so volatile and with innumerable databases, each having its own searching interface ,there is need for a well planned and structured user education and training programmes in an academic library environment.

3 ABOUT INTERNET

The Internet, a network of computers with distinctive software and hardware, interconnects millions of people worldwide and offers tremendous amounts of information. The first true Internet was Arpanet, a military network established in the United States in the late sixties. The phenomenal growth of Internet over years can be illustrated with the following figures. In 1981, 213 computers were only in operation in the Internet. By August 1993, the Internet comprised of 15,160 different networks supporting atleast 1,776,000 host computers in 60 countries. The number of users is estimated to grow by a million every few months [6].

Internet is not governed by any one person, organisation or Government. The Internet Society(ISOC), is an international, non-governmental organisation whose members comprise governments, corporations, individuals and non-profit organisations which coordinates the activities related to technical standards, globalisation, administration procedures and education and training.

The technical advisory group of ISOC is responsible for oversight of Internet technical standards for the standard making process and for all protocols and architecture used on the Internet. Protocols and standards are researched and developed by the Internet Engineering Task Force(IETF), which also administers the overall Internet standard making process.

4. APPLICATION/SERVICES OF INTERNET

4.1 Electronic Mail, Mailing Lists and News Groups

Electronic mail, popularly known as E-mail, is used to send messages to other people or programs on other computers. It is the most extensively used service on Internet. E-mail is sent to and from the Internet from other networks through interconnections, called gateways Users of INFLIBNET, ERNET, NICNET, etc. may send and read messages, participate in discussion with Special Internet Groups (SIG) through LISTSERVERS (mailing lists) and USENET news groups. SIGs are very helpful in locating information. Most groups constitute experts in the field from various countries and since many of them depend on the Internet for help they are usually most willing to provide it to others. SIGs also act as platforms for exchange of information with colleagues around the world and to stay abreast of the latest developments in the field.

4.2 Telenet, Hytelnet and Remote Login

Telnet allows Internet users to log into other Internet computers to access on-line databases, electronic catalogues, Internet Information services, or to access their account . Two types of access are available through telnet. To gain full access to databases and other information services available through Telnet, a password and a login name have to be obtained from the

host organisation. Some sites offer guest logins which provide limited, yet useful, capabilities.

As mentioned earlier telenet provides access to on-line public access catalogues (OPACs) maintained by hundreds of university libraries all over the world. In addition to locating resources from user desktop, OPACs are also very helpful in terminology work (e.g. finding equivalent terms in different languages). In addition, remote catalogues may offer detailed cataloguing information for certain types of publications such as government publications or periodicals. Many OPACs also facilitate access to specialised databases, ranging from manuscript and statistical collections to full text documents, such as new papers periodicals, or literary classics [8].

There are several tools available to find out which libraries provide their catalogues on-line. One such tool is Hytelnet, a hypertext guide to on-line libraries and other Internet sources. Telnet also offers access to various text archives resulting from various projects around the world which collect language corpora for research and other purposes. e.g.: Oxford Text Archives. Some specialized databases also can be accessed through Telnet.

4.3 Retrieval of Information and files

Navigating through Internet and retrieving the information from various sites and files using either file transfer protocols (FTP), servers like WAIS, GOPHER or ARCHIE or through World Wide Web.

File Transfer Protocol (FTP) is the primary method of transferring the files over the Internet. With the help of FTP different types of files like computer software, games, documents, data, about Internet etc. can be copied from any site using simple commands. It normally requires user ID. FTP has also made it possible to set up publicly accessible archives on Internet with all kinds of documents, software true to the Internet, through what are known as 'Anonymous, FTP sites. These sites can be accessed browsed and transferred by anyone under the user name 'Anonymous' using the e-mail address as the password.

While surfing the Internet, the user faces problems in accessing diverse databases, as each database requires a new and unfamiliar interface to the user. Wide Area Information Services (WAIS) addresses this problem by providing a uniform, user-friendly interface on the user's desktop computer which translates the query into a language the database can understand WAIS is particularly useful for retrieving textual information.

GOPHER servers provide a menu driven interface to allow users to browse through the network without knowing telnet addresses and ftp sites. Gophers do not provide anything that not available via Telnet or FTP. Only one drawback of Gopher is that the user has to negotiate several layers of menus before locating the right information. Archie is also a server which helps in finding files via Telnet or by e-mail. It also enables the user in locating files on the anonymous FTP servers on the Internet.

World Wide Web or WWW or simply Web is a client-server based distributed hypertext multimedia information system on the Internet. WWW has completely reshaped the Internet. The tools for locating relevant information stated earlier like Gopher, WAIS, Telnet, Ftp etc. are being merged and are becoming accessible through a single common interface with the overwhelming popularity of World Wide Web. There are three important components which characterise the WWW- URL (Uniform Resource Locator) which specifies the protocol and locations for information retrieval; The Hyper Text Transfer Protocol (HTTP) which specifies how hypertext documents are transferred through the Internet on the WWW; The Hypertext Markup Language (HTML) which contains rules for document publishing on the WWW. HTML contains the text and structure of the document pictures and links to other Internet sites and locations. There are different Web browsers like Netscape, Mosaic, Cello or Internet Explorer. They provide facilities like maintaining the history of the hyper links across the Net, bookmarking the URLs of information sources for later reference, saving the web page, search for a string within the displayed web page, configuring the Web browser for playing multimedia document objects etc.

5 AREAS WHEREVER USER NEEDS TRAINING

The objectives of user education and training on Internet are two- fold: to provide the user basic understanding of how the Internet and its components work, and to educate and train the user to identify and use relevant Internet information sources.

In order to attain the stated objectives, the training programme has to focus on the following areas:

1. Basic Internet vocabulary and concepts (FTP, Gopher etc.)
2. Developing familiarity with and ability to use one or two important Web browsers like Netscape, Internet Explorer etc. and their commands and functions.
3. Developing navigational skills in users to access and use different sites with in the Internet.
4. Developing the ability to use tools like lists and search engines.
5. Developing the ability to move, transfer and copy data from an Internet source to a personal storage device.
6. Training the user to configure and use the e-mail capability of the browser
7. Training the user to use HTML coding and create home page.

6 DESIGN AND IMPLEMENTATION

Management of the programme:

It is essential to see that a separate training group of library professionals, consisting both from university library and teaching department who are qualified and experienced and trained in the use of Internet, take the

management of the overall instructional programme. It is only the library staff and the teachers of library science, who possess an understanding of both the content and context of the instruction. Though the training group takes the responsibility for managing the programme, they need not be the sole agents for delivering the training. Specific steps in the instructional sequence can be delivered by outside consultants or training specialists. The training group should concentrate on planning the overall program and delivering the continuing support function. As part of this effort, it is necessary for the members of training group to be visibly present in the venue throughout training sessions. The main tasks of the members of this group in the training class are to confirm that they are experts and experienced in the content taught, to assist the trainer in localising the content, to make the users aware of complementary resources and skills not otherwise covered in the training sessions and to begin function as a consultant which is essential to continued success of the programme.

A user undergoing training may be a novice or experienced in the use of computer services. Planning the instruction programme must give due consideration to different user connected factors in the university environment. Prior knowledge of computers and other technologies, academic background, mental maturity, ease of access to the Internet facility, capacity of the user to spare time and money on the Internet services and many other factors prevailing. on the campus have to be given due weightage. Especially while framing the content of the programme, nature and extent of skills to be taught and the duration of the programme, the above mentioned factors are to be kept in mind.

User community of the university library includes teachers whose primary activity will be formal instruction. Most of them simultaneously may be busy with their own research and publication activities besides the responsibilities as research guides. For both instructional purposes as well as research purpose they need information at different intervals through Internet which is not available to them from other sources. The level of treatment of a subject; its coverage; the form of presentation; currency; the source information all vary when the information requirements of teachers, researchers and students are compared. Hence, it is always advisable to conduct separate training sessions for each category of users in the university environment.

6.1 Duration

In the academic environment, Internet use instruction is sometimes offered as part of a bibliographic instruction program. It may be offered to students in the form of a single course of several sessions. Such programmes require substantial amount of staff time and infrastructure facilities at the departmental level.

Teachers also could not be away from their primary tasks to take a long course for learning skills on Internet . Research scholars may be having comparatively more time to spend in learning these skills, simultaneously collecting relevant information on their topic of research over Internet. Ultimately, the length of time over which a training programme should last depends on the objectives of the training and one's perception of the availability of time for the users intended to be covered by the instructional programme.

In the words of Fisher and Bjorner "frequently, taking short, meaningful instructional steps results in better understanding and long-term retention than taking one gigantic step. A vital consideration, then, is to plan end/user training as a continuous process".

6.2 Program Implementation

User training programme for University library users can be conducted in two phases.

Phase I

Concept Based training which covers emphasizes the general and fundamental aspects of computers, On-line and Internet. The benefits of concept-based instruction which have been suggested by previous research are :

1. Improved User Performance

- Perform better on advanced or non-routine tasks;
- Have less trouble extricating themselves from errors;
- Be better able to make inferences and predictions;
- Be able to better structure searches and interpreting results.

2. Learning Transfer

The Users will

- Be able to apply their knowledge to new situations;
- Be better able to move from one vendor's system to another, or to deal with a new release of an existing system;
- Be better able to use other related systems

3. Judgment

- Users will understand the limitations of the system.

Phase II

The second phase of training programme adopts procedure-based instruction which concentrates on the specific procedures to be followed while using Internet and develops skills on the use of Internet. It also focuses on the mechanics of operating the system at hand.

7 EVALUATION

For assessing the success or failure of any programme evaluation of the effectiveness and the results of the programme is essential. Both formal and informal feedback during the sessions from the participants will be of immense help in measuring the effectiveness of the training programme on imparting the basic knowledge about and required skills for using the Internet. Usually feedback will be ascertained from the participants through a programme evaluation questionnaire. The degree of impact of the programme will be measured in terms of its ability to achieve the stated objectives of the programme; rating the appropriateness of the content of the training programme; extent of coverage and need for further assistance or follow-up sessions.

8 METHODS OF INSTRUCTION

In any instructional programme which is formal in nature demands lecture session at different stages involving the instructor. Usually lecturing is needed while introducing, defining, describing the basic features, characteristics and functions of Internet along with its origin and development unless the lecture method is supported with some kind audiovisual materials like films, slides, audio or video tapes, charts posters etc. It cannot hold the attention and interest of the audience. The problem of monotony, the main drawback of lecture method can be minimised by employing combination of different audio visual materials..

The presentation about the overview, and objectives of the programme can be interestingly presented with the help of transfer and slides via an overhead projector which is controlled through a personal computer. Since the instruction is aimed at groups of teachers, researchers and students. Lecture session requires a 16mm screen in the venue of training programme.

The capacity to handle on single platform the textual, graphic images and sound together and the large storage and calculating capacities of the computer suggest potential for its use in the class room. It can give instructions to the learner call for responses, feedback the results and modify his further learning accordingly.

In a fully computer/assisted instruction programme on Internet, the computer takes over from the instructor in providing learner with basic understanding of different procedures and facilities available on Internet, drill , practice and revision systematically at each stage on what has been taught, as well as testing and comparing the user performance.

The form of teaching by computer may be simply linear or branching. Or sometimes it can be extended to thinking and problem solving by a simulation method. Simulation is a research or teaching technique that reproduces actual events and processes under test conditions. In computer simulation, a model of a real system in the form of a computer program is

used to train the user. For example, use of on-line public access catalogue (OPAC). Through Telnet user can access various OPACs maintained on-line by different information centers. The same situation can be created artificially with the help of a computer program and a locally made database with similar features to educate and train the user in the use of on-line catalogue OPACs over Internet.

Live demonstration on Internet facilitates creating a real life situation for both instruction and learning. The user can gain practical experience and exposure by viewing and using the Internet tools and techniques. Some of the previous studies[11] indicated the success of using the web browsers as an instructional aid through live demonstration. Users found that the use of world wide web with browsers is so simple and such experience made them capable of accessing the remote tools and resources and transferring them to their individual computer workstation with ease. It provides an accurate portrayal of the Internet and might also include the occasional technical snags such as failure to connect to host computers. Moreover, demonstrating live on the Internet makes the instruction more easy and simple and givers real satisfaction to the instructor as well as the learner. It arouses real enthusiasm and interest in the user to learn more and more about the Internet.

There are many software packages and programmes locally created which per form Internet applications. For example, Fetch is software which retrieves articles via file transfer [12]. In Australia, Tony Barnyat the Australian National University has used NCSA Mosaic in June 1994 in presenting Internet training program[13]. In United States, Mark Maimone [14]at Carnegie Mellon created a World Wide Web instructional programme using NCSA Mosaic. An instructional programme in the form of Internet overview for academic staff at the University of Sydney was developed by Ryan [15] . Under this a forty minute demonstration and discussion was presented on e-mail, electronic conferences, news, FTP, Archie, Gopher, WAIS, and World Wide Web using Mosaic as a presentation tool via local HTML documents . Second module covers a forty minute "hands on " session using a specially prepared "things to see" home page that included a range of resources ranging forma birdcalls to subject specific bibliographic sources with links to Internet tools & resources. The third session includes a twenty minute demonstration and discussion of HTML and publishing possibilities for academic researchers.

8 CONCLUSION

The Internet services are a combination of protocols and software programs, which would allow people to use Internet in different ways. Information in Internet is also stored in an unstructured way with innumerable databases—each having its own searching interface, the volatile nature of

the sites, lack of uniformity in organisation of data making its accessiblity a drudgrery.

Hence, there is dire need to encourage its use by proper education and training to make use of the services offered by it. Though there is much to learn, but the core content of user education programme depends upon the objectives of the library, its users, their information needs and level of computer and Internet awareness. These issues must be taken into account before designing the structure and components of such user education programmes. It is also advisable to gather information about the course objectives, content, instructional methods and associated aids used by other institutions which has already offered similar programmes.

Besides the hands on training on the use of Internet, the provision of hands outs explaining the steps in technical presentation along with carefully designed exercises given for practice; reprints of excerpts of required manuals on browsers used in the instruction and copies of few pertinent articles on Internet like those of Fletcher/ and Greenhill , Ladner[16] Narasimhamurthi & Amba[18].

The role of librarians as planners and trainers cannot be underestimated in this context. As providers of information they perform different roles in the organisation. Internet training is comparable to the librarian's role in teaching information access and retrieval from databases. As trainers they need to develop their expertise on Internet by attending meetings, training demos and courses on the Internet, taking suggestions from another Internet trainer and regular and systematic use of Internet . They also need to think about continuing education of trained end-users. This can be achieved in a way by using point-of use-instructional aids in different forms[19]. They can be "canned" demonstration of searchers and explanations presented via computer, video, slide tapesets , or paper products. They can also be in the form of more interactive individualised search help delivered by telephone voice mail, faxback services, or e-mail. To ensure the success of help desk instructions frequent checking of voice mail/fax/email and providing a fast response with answer is very much required.

By designing and implementing good training on Internet based on sound objectives, anchored in the academic context and planned as a continuous process , university libraries can successfully promote awareness on Internet and impart skills in its use among the teachers, researchers and students enabling them to use it effectively and independently for teaching, research and learning pursuits.

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COMMON INTERNET GRAPHICS FILE FORMATS AND ITS TOOLS: A WAY TO GIVE MODERN INFORMATION SERVICES

Sumit Kumar Manna*

ABSTRACT

WWW is a vast storehouse of information presented in multiple formats. No doubt, graphics add value to the electronically published textual information. Meanwhile graphics play a significant role in the whole gamut of WWW. It makes the document compelling to read and can express some of the ideas of the document in a more attractive way. Needless to mention that some graphics format is not supported by many browsers. Here is an ttempt to discuss a few graphic file formats and some of the tools used to handle them effectively.

1 INTRODUCTION

Web based information services have become more complex than ever before, especially when WWW uses a wide variety of document formats. Besides, new file formats are being introduced day by day. Knowledge on how to use these formats in a way that would help us enhance information services are increasingly being reviewed.

Perhaps, it won't be unfair to say that graphic intensive services like management digest, services, electronic document delivery services, etc. would be the areas of concern. Nevertheless, if the value of information needs to be recognized, it is customary to provide user specific information (what we call the right information) in the right time, right format and at the right place. It is this context that underline the need to explore the various file formats available on the Web. This paper is extended to unfold the mysteries involved in handling the most commonly used file formats on the web.

2. GRAPHICS DEFINED

Graphics belong to any computer device or program that makes a computer capable of displaying and manipulating pictures. For example, laser printers and plotters are graphic devices, because they permit the computer to output pictures. A graphic monitor is a display monitor that can display pictures. Many software applications include graphics component.

3. TYPES OF GRAPHICS FILE FORMAT

* Documentation Research and Training Centre, 8th Mile, Mysore Road, R. V. College, P.O., Bangalore-560059

Graphic file formats are designed specifically for representing graphical images. It can be broadly categorized into (1) Bitmapped graphic format and (2) Vector Graphic Format.

In bitmapped format of graphic, information about each pixel is stored as a sequence of bits in the file. These bits can represent colours, brightness or some other characteristics. Each sequence of bits informs the computer how to paint the pixel on the screen. So bitmapped graphic store information exactly the same way the computer displays it on a screen.

A vector graphic stores mathematical information, which is used for drawing the graphic on the screen. Computer reads the instructions and follows those. One advantage of this approach is that one can rescale the image to new sizes without loss of resolution, as there is no relationship between pixel-by-pixel graphic. Computer Aided Design (CAD) drawings are examples of this type. As these graphics are found to be less used on the Web these graphics formats are beyond the scope of this paper. [1]

Commonly known bitmapped graphics are GIF, JPEG, PNG, BMP, TIFF etc.

3.1 GIF

GIF was introduced by compuServe in 1987 and stands for Graphics Interchange Format. It was updated in 1989 and 1990. It is platform independent format.

The current standard is 89s and it supports 8-bit colour. So a GIF image contain 2^8 or 256 colours. Typically the compression in GIF is 3:1 to 5:1.

How GIF works : Image data in GIF file is organized into related blocks and sub-blocks that provide information on how to paint screen pixels to reproduce the image.

A program called encoder is used to produce a GIF data stream to the destination machine. Other program called decoder accepts those data stream and assembles the image.

Transparent GIF: In a transparent GIF one can specify the colour to be transparent. The advantage of transparent GIF is that they make a graphic appear to float freely on a page.

Interlaced GIF: In an interlaced format, nonadjacent parts of the image are stored together. When the GIF will be decoded pixels from all over the image are filled in, rather than being filled in row by row.

In an interlaced file format, visitor can view the image before the browser has finished downloading.

When to use GIF : One should consider GIF in the following types of images:

- Black-and-White line art and text,
- Images with a limited number of distinct edges,

- Graphics which are overload with text.[2]

3.2 JPEG

JPEG stands for Joint Photographic Experts Group. It supports full-collour and grayscale images. It is a compressed format, supporting 24 bits per pixel, allowing an image to contain 224 or over 16.7 million colours. This format is useful for photographs. Through JPEG compression ratio can be achieved between 10:1 and 20:1.

How JPEG Works :JPEG can handle many colours. It can compress image data more than GIF. During decompression, there will be some amount of loss of image data. But the lost image data mostly in the higher colour frequencies, so it is harder for human eye to detect the differences.

When to use JPEG :JPEG can be used in the following situations:

- Scanned photographs,
- Images with complex mixture of colours,
- Any image that require more than 256 colours. [3]

P-JPEG : p-JPEG is a new type of JPEG. It stored as a series of scans that together comprise the entire image. When the first scan is read in, visitors can see an approximation of the whole image, so they quickly get an idea of what they are ultimately going to see. As subsequent scans are read in, the image comes into sharper focus.[4]

3.3 PNG

The Portable Network Graphic (PNG) format is given by the members of the World Wide Consortium (W3C) in 01 October 1996. PNG is a portable, well-compressed, well-specified standard for lossless bitmapped image file.

The initial motivation for developing PNG was to replace GIF, the design provides some useful new features not available in GIF, with minimal cost of developers.

GIF features retained in PNG include:

- Indexed-colour image of up to 256 colours
- Files can be read and written serially
- Progressive display: a suitably prepared image file can be displayed as it received over a communications link, yielding a low-resolution image very quickly followed by gradual improvement of detail
- Transparency: portions of the image can be marked as transparent creating the effect of a non-rectangular image
- Textual comments and other data can be stored within the image file
- Complete hardware and platform independence
- Effective, 100% lossless compression

Important new features of PNG not available in GIF. include:

- True colour image of up to 48 bits per pixel

- Grayscale image of upto 16 bits per pixel
- Full alpha channel (general transparency masks)
- Image gamma information, which supports automatic display of images with correct brightness/contrast regardless of the machines used to originate and display the image
- Reliable, straight forward detection of the corruption,
- Faster initial presentation in progressive display mode. [5]

3.4 BMP

BMP stands for bitmap (BMP) file. BMP is a format commonly encountered in the windows and OS/2 operating system. These files are completely uncompressed and take time to download. Only Internet Explorer supports BMP files.

3.5 TIFF

Tagged Image File Format (TIFF), stores many different types of images e.g. monochrome, grayscale, 8-bit & 24-bit, etc.

It is developed by the Aldus Corp. in the 1980's and later supported by the Microsoft.

TIFF is a lossless format. It does not provide any major advantages over JPEG and is not as user-controllable as it appears to be declining in popularity.

Most versions of TIFF format allow for image compression as it is a handy format for large files when one wants to move them between computers.

4. HOW TO USE GRAPHICS EFFECTIVELY

It is always to be remembered that properly designed image can enhance value to a document, but a poorly designed image can detract from it. So proper explanation is to be taken to maximize the effectiveness of Web graphics.

4.1 Size of Graphics

If the graphics in large size, then it will take time to load. This prompts a visitor to move to another site. So one has always to be careful that graphics should be of reasonable size. In main page, graphics should be between 50 K and 100K and in other pages less than 20 K.

4.2 Consistency

It will be better to use graphic elements (colour, icons, heading) consistently throughout the site. This gives visitor to navigate the site easily.

4.3 Provision of Text Based Alteration

Users with text based browsers or who have image loading turned off, won't be able to see the graphics. To check this, one hypertext links should be given, so that they can easily navigate the site.

4.4 Icons

Icons are small graphics that contain a piece of information of a site. As icons are smaller (generally 5K-10K), it can be downloaded quickly. But again it should be used consistently and the meaning of icons should be clear.

4.5 Background Image

A well-suited background image should be chosen. It can make a page compelled to visit. The proper approach to background images is to use very small pattern that is tiled to fill the browser window. These files are very small and load quickly.

4.6 Do not depend fully on Image

Search engines such as Alta Vista and Excite can not index the images. Thus if someone depends heavily on images, those pages cannot be retrieved by these search engines. Sometimes we need to resize the images, reduce color depths, adjust contrast levels, etc. in the image. The following are the popular graphics tools available for the purpose.

5. GRAPHICS TOOLS

To create and edit an image there are many graphics tools. One can choose one that meets his/her needs. These are are as follows

5.1 Paint Shop Pro 5.01

Paint Shop Pro is a good shareware program It is one of the easiest and most powerful image viewing, editing and converting programs. With support for over 30 image formats, and several drawing and painting tools this has become a powerful graphics program.

The new enhancements and features include tool bars, enhanced selection options, built in special effect filters, RGB colour separation, support for new image formats (-JPEG, PNG), enhanced resampling, enhanced masking options, etc.

The following features are available in paint Shop pro: Painting, Photo retouching, World Wide Web graphics support, Built in special effect, screen capture, Image enhancement and editing, Colour enhancement, Image viewing and printing etc,.[6]

5.2 Adobe Photo Shop 5.0

Adobe Photo Shop software is the most popular program for creating and modifying the images for the Web. Versions 5.0 include support for transparent, interlaced GIF files and add support for the graphics format like P-JPEG, PNG.

The key features include:

Layers, Painting Tools, Selection Tools, Text Handling, User Interface, Extensive Filter Collection, Powerful colour correction Tools, Professional

Colour Separations, Colour support, Digital Water Marking etc.[7]

5.3 Microsoft Image Composer 1.5

This software program uses traditional image editing concepts such as layers, channels and masks. It is easy to use. In Microsoft Image Composer there is possibility to drag and drop images, to arrange them together in compositions. It makes a photo alive with high quality, impressive looki, etc. It allows to

- produce professional-looking results easily
- customize images the way people wanat
- quickely make images ready for the Web.

Image Composer breaks new ground in developing graphics for Web documents by introducing sprite technology. Sprite can posess the shape of the objects they represent. Sprite can make perfect additions to a Web site. [8]

5.4 GIF Construction Set

It is a program that will help to build animated GIF. It was introduced by Alchemy Mindworks. The animated GIF always begins with a header block and can be followed with images, text, comments, controls and looping instructions. Each of these can be placed by pressing the insert button. By choosing File, Animation Wizard, one can get a series of dialog boxes that ask whether the animation is, for the Web or not,whether it should loop once or indefinitely, etc. The GIF Construction Set uses these informations and creates animated GIF file automatically. [9]

6 CONCLUSION

One the whole we can say that graphics are not just for decoration. They can make an otherwise awkward document appear readable and inviting. By giving a question mark like icon one can demand help or frequently ask questions. A magnifying glass can demand a search engine. One good graphic can prove that only textual materials are boring to the human mind and eye.

Information professionals who work under the cutting edge of technology would require a fairly good knowledge on handling these graphics format will contribute towards providing a better and value added services. Certainly it calls for proper care and attention while using graphics. For instance JPEG compression works best on images with lots of colour gradation. Application that support graphics require a powerful CPU and a large amount of memory. The quality of most graphics is determined by their resolution, how many points per square inch they can represent and their color capabilities.

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IMPACT OF CD-ROM ON INFORMATION STORAGE DEVICES

B. S. Biradar*
B. U. Kannappanavar**
M. Vijayakumar***

ABSTRACT

Paper describes the architecture and main feature of CD-ROM and its impacts on print medium, technical documentation, publishers, library/Information centres and others. It also covers the general statistics, types of database like language wise, its frequency of updation and price range. Comparison is also made with other storage devices.

1 INTRODUCTION

Information is power , generated through communication technology and information technology, which play a dominent role in national development, which is , . This information is stored and displayed for various innovation/purposes. The media for storing/accessing the information has crossed many milestones like cave walls, ancient papyrus, clay tablets, palm leaves, print media, film media, magnetic media, electronic media, optical media, magneto optic media and so on.

CD-ROM technology has created revolution in the library/information centres. CD-ROM is one of the optical device which is used to store and disseminate the information. CD-ROM is cutname for compact disc read only memory. Which is a optical disc with 4.72" diameter having thickness 1.2 mm with spiral track made up of polycarbonate. The information is recorded and read through laser beam. The information stored is permanent and user can't over write. But today's technology has discovered the erasable disc also. The CD-ROM was first introduced in 1987 by China. This system is based on the consumer compact audio disc systems. The data is stored in digital form. It can be used in a stand-alone disc drive or a disc drive that is about the same size as floppy disc drive with a single computer interface. It

* Reader & Chairman, Dept. of Library & Information Science, Kuvempu University, Shankaragtta-577451, Shimoga.(Karnataka)
** Librarian, Sahyadri Arts College, Shimoga, (Karnataka)
*** Lecturer, Dept. of Library & Information Science, Kuvempu University, Shankaragatta-577451, (Karnataka)

puts multi mega byte permanently stored databases at user front end of a personal computer for information professionals like librarians, information scientists, publisher, journalists etc.

2 NEED OF CD-ROM

In has a large storage capacity, the data is recorded on one side which is permanent. The data is stored in digital form. CD-ROM has the storage capacity of 680 MB which equal to

* 3,00,000 A4 size papers of text
* 1,500 floppy discs (5. 25")
* 800 floppy discs (8")
* 10 reels of 1600 bpi magnetic tapes
* 18,000 pages of computer graphics
* 4500 hours of digitized voice
* 3000 microfische

3 NEW DEVELOPMENTS IN CD-ROM

In recent days the DVD-ROM (Digital Video disc Read only memory) is coming up fastly to replace CD-ROM . Fast drives, bigger jukeboxes, increased transfer rates and DVD are all helping keep CD-ROM technology at the forefront of information provision. Ronbin Fitton from CD-ROM systems (Europe) looked at where we are now, there we are going in the future and what is possible in this area.

DVD is the disc of the future. It will replace and make obsolete CD-ROM, floppy and optical discs, VHS video and CD audio at a stroke . It's getting there now with 4.7 GB per disc an increase of sevenfold over the traditional CD-ROM and even a twelve-fold increase for data-only CD-ROM's. DVD with fast eight spin CD-ROM drives are available now. It is forward compatible with DVD-R (Recordable) and DVD-RAM (to be used as mass storage like hard discs now).

DVD will hold over two hours of movie video and, according to Fitton, "a host of other goddies". It will be the new software delivery medium and integrate with online and the Internet and provide video on demand. What more could anyone ask?

4 IMPACT OF CD-ROM TECHNOLOGY

CD-ROM technology plays a dominent role in coming days among information professionals. This technology incorporates Full text, Images Directory, Bibliography, Audio, Reference, Graphics, Numeric/Statistics, program, Video and manual etc. The following are the future trends:

4 .1 Print Medium

The reference category publications like dictionary, encyclopaedias,

guides, hand books, directories, and others which don't require very frequent updating are promising candidates for migration.e.g.: Ethics - Ramayana & Mahabharatha; Dictionary - American heritage dictionary; Encyclopaedia - mammals Encyclopaedia

4.2 Technical Documentation

Yellow pages, telephone directory, airline schedules, customer data and signature records for banking companies and other commercial and technical documentation of massive volume will find CD-ROM a convenient medium.

4.3 Publisher

This new technology is easier, cheaper production alternative to publishing the reference works like primary secondary and tertiary sources. The cost for physical distribution is not more when compared to that of microform. There is no serious threat of a revenue loss to publishers, because CD-ROM emerge as publisher tool can have higher profits by developing direct communications with their customers by selling directly to them and eliminating the on-line, middleman etc.

4.4 Library/Information Centre

Use of CD-ROM will save the space in the library. This technology will helps to physically control access to information. CD-ROM will enhance the library material usage, CD0-ROM technology will not become strange to access the information by the user as he know how to access the inormation from computer. The user will be happy as there is free availability/ accessing to the information.

4.5 Tourist

CD-ROM can act as a good guide to the tourist people. Through this they can know the different places like historical places, places of beauty spot etc. It also shows the air ways trains, buses to the different places and their arrival and departure timings. In many airport and railway stations installed a computer to assist the user in various aspect.

4.6 Demonstration

CD-ROM is used in many industries for their product demonstration, training the workers and training the sports men like wrestlers and others. It is replacing the printed materials and personal staff.

4.7 Microform

Microform will witness almost cent percent migration, most back issues of journals and such other archival materials will find CD-ROM a better

and cheaper substitute.

4.8 CD-ROM Database

Many people and organization are considering CD-ROM as a new media for the dissemination and accessing the information.

4.9 Database Types

There are leleven types of CD-ROM database according to the 14th edition of the TFLP directory. But there will be a overlap between themselves. Any how they are as follows:

TABLE-1

DATA TYPE	DATABASE	SHARE %
Full text	3416	19.31
Images	3057	17.28
Multimedia	2672	15.10
Bibliographic	1179	06.66
Audio	1689	09.54
Reference	1506	18.43
Graphics	2023	11.43
Programs	0793	04.48
Numeric/Statistic	0623	03.52
Video	0560	03.16
Manuals	0171	00.96

Source: CD-ROM Directory : Database on CD-ROM. Ed. 14. London: TFPL 1995

4.10 DATABASE LANGUAGE

CD-ROM database are being published in different languages. From English language 6638 (69.50) to African languages 13 (0.13%) and study also identify that CD published documents are available in more than one language (16 database).

TABLE 2

LANGUAGE	DATABASE NO.
English	6638
German	1279
French	0729
Spanish	0582
Italian	0434
Japanese	0275
Dutch	0170
Swedish	0042
Portuguese	0041
Chinese	0036
Danish	0030
Latin	0020
Greek	0019
Hebrew	0017
Norwegian	0017
Finnish	0016
Russia	0014
Hungarian	0013
Czech	0011
Multi lingual	0016
others	0051

Source: CD-ROM Directory: Database on CD-ROM, Ed. 14 London : TFPL, 1995.

4.11 Update Frequency

The update frequency of CD-ROM titles depends upon the nature of database, obsolescence of the value of information affordability both by publishers and users and others. The table-3 reveals the frequency of updating the CD-ROM databases.

TABLE-3
FREQUENCY OF UPDATES OF CD-ROM DATABASE

FREQUENCY	DATABASE	SHARE %
Weekly	37	00.91
Fortninghtly	21	00.51
Monthly	531	13.15
Quarterly	898	22.22
Twice per year	442	10.93
Annual	877	21.70
Irregular	1235	30.56

Source: CD-ROM Directory : Database on CD-ROM, Ed. 14 London : TFPL 1995.

4.12 Prices of the Databases

Selling price of CD-ROM databases varies from $1 to $10,000. Let us have a view of the price list through the Table 4.

TABLE-4
PRICE RANGE OF CD-ROM DATABASE

PRICE RANGE	DATABASE NO.	SHARE %
Free	38	00.39
US $ 1-100	4022	41.83
US $ 101-500	1303	13.53
US $ 501-1000	607	06.31
US $ 1001-5000	767	07.97
US $ 4000 +	198	02.05
No price given	2679	27.86

Source: CD-ROM Directory : Database on CD-ROM, Ed. 14 London : TFPL, 1995.

CONCLUSION

It was a day full of food for thought. Perhaps what came through clearest was that the CD-ROM industry will indeed survive into the 21st century. However, the information side of it ought to be looking at DVD which is coming up apace, making a strong challenge and mustn't regarded as another consumer toy for the domestic market.

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ACCESS TO OPAC'S THROUGH INTERNET

P. Ganesan*
B. Ravi**
E. Rama Reddy**

ABSTRACT

Internet allows millions of people, all over the world to communicate and to share their ideas and information. Internet is the first global forum and the first global library, where lot of information resources and services are available, which is growing day by day. It offers tremendous information on various topics and provides online services to the user. This includes electronic discussion forums, data archives, electronic journals, library catalogues, databases, and reference sources like directories, yearbooks, encyclopaedia and so on. Identifying these sources and services on the Internet can lead the library and information professionals to provide better in-house services to the users, otherwise the information today may be retrospective tomorrow. An intermediary to information transfer, library and information professional may serve researchers by providing these services to the maximum extent. Online catalogue is one of the most important services available on the net that can be accessed through telnet. Many of them are free of cost and it allows the user to find out whether the material, which he is looking for, is available or not. It is also possible to request the photocopies through online ordering. This paper mainly discusses about online access to OPAC's of several libraries, and also how effectively one can provide in-house services to the user, at the maximum level and also discusses some of the important sites and their special features.

1 INTRODUCTION

The emergence of the Internet is radically changing the generation, flow and utilization of scholarly information globally. The world of computers and information processing is growing rapidly. At present, the amazing growth is the World Wide Web, also known as the Web. Web is the medium for sharing documents among people and computers via the Internet. Today, it is fast becoming a distributed development environment capable of providing information and other application resources to millions of people around the world. It is also known as Net, provide many standards, services and protocols that allow individuals to access the huge number of resources available on

*Indira Gandhi Memorial Library, University of Hyderabad, Hyderabad-500 046

the Internet. Also, corporations are implementing internal Webs and Web-based applications, known as Intranets, to facilitate communications and sharing information among employees.

Many of the tools of the Internet are used to search and access the information, it provides many of the services like bibliographic databases, online catalogues, books, dictionaries and much more and some of the services can be used in libraries to provide information services to the users.

2 INTERNET AND WWW

Internet in its broadest sense can be defined as a collection or interconnection of many different networks of computer hosts, clients, and servers that collectively provide and use information and connection services. Internet has its roots in the ARPANET project of Department of Defence, USA in the late 1960s. Today it interconnects thousands of computer networks and millions of individual computers across the world using TCP/IP as the computer communication protocol. Starting with basic network services like e-mail, FTP (File Transfer Protocol) and Telnet (Remote Login), the Internet has made quick progress with the development of tools.

Web is the most popular and rapidly growing service on the Internet today. We should be perfectly clear that the World Wide Web is not the Internet, and vice versa. They are, however closely related. The Internet is a network in every sense of the word, whereas the web is not simply a network, but rather a distributed set of communications applications and systems software with the following characteristics.

- Typically resides on Internet hosts and clients
- Typically employs the TCP/IP network protocols
- Understands HTML
- Follows the client/server model of bi-directional data communications, information collection, resource serving
- Allows client program to access servers using a variety of protocols including HTTP, FTP, Telnet and Gopher
- Employs document and resource addressing via Uniform Resource Locators (URLs)
- Allows client program to access information composed of a variety of media types such as text, audio and video.

2.1 Internet Resources

Today there is lot of scholarly information available on the Net. The Net provides an open global networked environment for seamless publishing and access to information. The key features of networked information include easy publication and access. The place for exploitation of Internet by L & ICs are unlimited and endless. It provides access to variety of information sources such as—bibliographic and full text databases; table of contents of

primary journals; electronic and online journals, books and newsletters, directories, encyclopaedias, library catalogues and so on. Indeed, the Internet provides a wealth of information for the L & ICs. A number of web sites are available that are quite advantageous to the technical services required by a librarian including acquisitions, cataloguing, technical and reference services, serials, and so on. An innumerable database of research papers, preprints, and technical reports are made available on the Internet , via Web servers or for direct access and downloading.

3. ONLINE PUBLIC ACCESS CATALOGUE

Catalogue is the first point of entry to the library's collection of books, journals, maps, manuscripts, pictures, music, films, videos, and so on. OPAC is one of the important services available on the Internet, which is made available by many of the Universities, Institutions, and commercial organization to the Internet users. Access to the OPAC's means that one can browse the other library catalogue by sitting in his terminal, it allows to do keyword search so that he can see the contents page of current periodicals, books and so on. Many of the publishers like Elsevier (http:/ www.elsevier.nl/locate/eee), Institute of physics publishing (http:// www.jop.org), Institute for scientific information (http://www.isinet.com), Blackwell scientific (http://blacksci.co.uk/online/), Institute for electrical and electronics engineers (http://www.ieee.org), maintain the contents page of journals, abstract and full text on web. Contents page and abstracts of the journals available on the Internet can be accessed free of cost by e-mail, some of the sites even provide on-line ordering facility for getting the articles from that particular library called document delivery service.

3.1 How to Access the OPAC

There are many ways to access the OPAC, but most of the catalogues can be accessed through Internet tools like telnet, www and gopher. These tools can help to accelerate the process of locating the desired topic in the vast sea of the knowledge distributed geographically among thousands of servers around the globe. Many of the Universities, book traders, publishers have put their database on the Internet can be accessed via these Internet tools using guest login and there is no password for it.

3.1.1 Through Telnet

Telnet is the Internet standard protocol for remote terminal connection by providing terminal emulation via TCP/IP network. It allows a user of one host to login to a remote host and interacts as a normal user there.

A user can access the OPAC server over the TCP/IP network, once he connects to the server it opens vt100 terminals and asks login and password. The telnet capability comes with most of the WWW browsers like Netscape navigator and Internet explorer, but must be configured.

3.1.2 Through WWW

The catalogue can be accessed using the Web browser interface. It is possible to access the OPAC and similar catalogues using standardized HTML tags. Using facilities available in HTML, applications program on the Web server can be accessed through a server side CGI program. It is possible to access the catalogues using HTML based query forms, obtained by selecting an appropriate link in the library home page. After the user fills the query form and submits it, the web server initiates a search program that carries out a search on the catalogue database and returns the results in HTML form to the user browser screen via the Web server. Most of the present day library automation packages have extended their functionality to support Web access.

3.2 Features of OPAC

- Satisfies the information demand of the users by merging the resources both print an, electronic into one virtual library
- To find a book or journal locally not available and also for identifying and selecting books for local acquisition
- Time and efforts of library staff can be saved for classification and cataloguing of books, etc. by accessing and developing one's own online catalogues of some of the larger University libraries all over the globe by accessing through e-mail
- The libraries can comfortably provide reference and information services by accessing and searching on-line catalogues of other libraries, even download lot of information available in electronic media like CD-ROMS, multimedia sources, and get it transferred through FTP.
- Books and allied materials available on the OPAC of any library can be downloaded and used, thus duplicate efforts of technically processing the same can avoided
- Many of the Universities/Institutions put their contents pages of the journal, which facilitate to get the journal article through on-line ordering
- It helps to provide effective and efficient service to the user by providing links to many of the important catalog sits.
- By accessing the OPAC, one can provide Selective Information Services (SDI) to the users.
- It increases the value of the library by providing gateway not only to one's own collection but also to the global information network.

3.3 OPAC at I.G.M. Library

The University of Hyderabad library has started its automation activities in the year 1989. This library has the distinction of being the first University library in India to have fully automated its house keeping operations. The library database consists of books, back volumes of periodicals, current

journals, and thesis and dissertations. This database is connected on to the campus wide Local Area Network (LAN) for the benefit of network users in all the schools/departments. The users can search the database by title, author, classification number, subject, KWIC, and balloon to know whether the book/document is there in the library or not, its status with reservation facility if the book is issued out. Users can see the new arrivals of the books and journals. Library has replaced its card catalogues with six Online Public Access Catalogue (OPAC) terminals for users in the central lobby of the library and two terminals near to the stack areas. Continuous training and guidance is provided to the users at the OPAC terminals apart from the instructions (search strategies) placed near all the OPAC terminals for reference. Most of the users are continuously using this facility. It is possible to access our database through telnet over TCP/IP network. Since our database is sitting on the Unix server, we have loaded the NetTerm or Powerterm emulation software wherever possible (like departments/schools) to access the database through PCs running on the windows platform.

4. IMPORTANT OPAC WEBSITES

Many of the Universities offer a wide variety of online databases and Internet resources and provide link to search other Institutions online catalogs and extensive resources on the Internet. It is difficult task to explain the all catalogues of Universities/Institutions . So, here are some of the important catalog sites and its coverage, feature.

4.1 Library of Congress Catalogs

Library of congress is the worlds largest library, which can be accessed through Net. It acquires materials in all formats-books, periodicals, maps, music's, prints, photographs, recorded sound, videos etc.—and in all subjects except technical agriculture and clinical medicine from all over the world for its universal collection of human knowledge. The library catalogs materials in 470 languages and in all formats in order to make its collections maximum accessible to congress, researchers, and public to share its cataloguing data with other library worldwide. In addition, the library provides leadership to the library and information communities in the development of cataloguing theory and practice. Its collections include over 10 million items in a variety of formats and languages, much of the information about the catalogs can be searched over the Internet. The catalog page describes and links to four different methods for searching the catalogs like word search, browse search, command search and experimental search systems. It provides access its catalogs using both fill-in forms and commands. Each method provides different search and help features. Using Z39.50 information retrieval protocol, it provides facility to search access over 220 library online catalogs, both inside and outside the United States. URL:http://lcweb.loć.ov/catalog/

4.2 National Library of Australia

The National Library of Australia catalog contains over 2.2 million records for Australian and overseas material held by the library. This includes books, serials, printed music, maps, oral histories, manuscripts, paintings and photograph, microforms and Asian language material. The catalog does not include journal articles, chapters in books, commercially recorded music or newspaper clippings. There are two ways of accessing the Library's catalog, via telnet and via the World Wide Web.URL: http://www.nla.gov.au/webpac/

4.3 Online Computer Library Centre (OCLC)

OCLC is a non-profit organization that provides a set of online services and software to built and manages an integrated electronic library.

OCLC First Search is an online reference service for end users It offers a comprehensive collection of over 70 databases that link to online full text articles, document ordering by fax, or mail, library holdings, inter-library loan and web resources.

World Cat is the OCLC online Union catalog, the world's great library collections in a single database with library holdings.

OCLC First Search electronic collections online provides access to hundreds full-image academic and professional journals through OCLC First Search.

OCLC Inter library loan, which handles end-users ILL requests and reference transactions, provides librarians with a complete management tool for inter library loan and document request activity.URL:http://www.oclc.org

4.4 OPAC 97

OPAC 97 is a new service launched in may 1997, which provides free access via WWW, to the catalogs of the major British library collections in London and Boston. It will allow finding out what material is held in the major reference and document supply collections of British library. It offers article title records from 20,000 journals and 16,000 conferences. In many cases, it will also be possible to request copies of material from the Library's document supply centre (BLDSC) at Boston.URL: http://www.opac97.bl.uk/

4.5 National Information Services and Systems (NISS)

This site provides access to get the catalogs of UK by region-wise, alphabetical lists-wise and OPAC's in Britain and Ireland. The first two provide simple lists of links to catalogs at UK sites, whereas the OBI information covers UK and the Republic of Ireland, and offers links with additional about each catalog and site. OPAC's are grouped region wise under headings of England, Scotland, Wales and Northern Ireland.URL: http://www.niss.ac.uk/reference/opacs.html

4.6 Harvard University Library

Harvard Library system is the oldest in the United States and the largest academic library in the world. Books, manuscripts, microforms, maps, slides, photographs, and other materials are housed in more than 90 individual collections. Harvard's online catalog includes holdings of all Harvard University libraries, a course reserve database, a guide to the library system, and nine citation indexes covering a variety of subject areas. Hollis plus is a database, extensive collection of electronic research resources including online journals, databases, and dictionaries. Baker library at Harvard Business school maintains its own online library catalog of business and management publications in addition to the listings in HOLLIS. Some items are restricted to members only. It requires use of telnet client. It provides link to access other library catalogs inside and outside USA.
URL:http:///www.harvard.edu/museums/

5 CONCLUSIONS

As discussed earlier, information on the Net is growing vigorously , since many of them maintain their information and provide variety of services to the public through Net. Today many of the libraries offer a variety of services to the users through Net. It is the duty of the library and Information professional to find out, which of the sources or service are useful to their users. It will help to integrate their resources and provide better services to the users.

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EVALUATION OF LIBRARY WEBSITES: A CASE STUDY OF THE CHARTERED INSTITUTE OF BANKERS LIBRARY, LONDON

Sachin V. Vaidya*

ABSTRACT

Nowadays, many libraries and information centres are going on the internet. Many of these have an exclusive website independent of their parent body. Detailed criteria for the evaluation of reference sources are already available. Now, due to proliferation of library websites/ websites containing library aspects, there is a need to evolve criteria for evaluation of these websites. The paper enumerates the required criteria and applied them to the CIBL, London as a case study.

1 INTRODUCTION

The number of institutions, corporations, governments, voluntary organisations, etc. putting themselves on the internet has increased tremendously. Many libraries and information centres are also putting their resources and services on the internet e.g., Library of Congress. In some cases, resources and services of libraries and information centres form part and parcel of the website of their parent organisation. For example, the library of the Institute of Chartered Accountants in Ireland does not have a separate website of its own but its Online Public Access Catalogue (OPAC) and other services are available in the parent body's website. Elaborate criteria are available for evaluating reference sources and there is pressing need to evolve detailed criteria for library websites or websites containing library aspect.

2 CHARTERED INSTITUTE OF BANKERS (CIB), LONDON

If any library and information centre is a part of an institution, corporation, government, or voluntary organisation, etc. (parent organisation), it is necessary to know about the parent organisation first before studying the library and information centre in detail. Hence, before evaluating CIBL, it is necessary to know about CIB.

The aim of CIB is "to be the leading educational body in the financial services sector, providing both vocational and professional qualifications,

training and continuing professional development both in the UK and worldwide".

Founded in London in 1879, CIB is one of the world's leading organisations in training and educating banks and other financial services professionals. Membership is open to anybody with an interest in the financial services industry and sitting for CIB examinations is not compulsory.

The CIB provides members with a range of opportunities for education, training and professional development. CIB qualifications include a degree programme as well as certificates and diplomas for anyone from clerical to executive grades. The institute's professional development programme provides members with a forum for learning new skills as well as updating old ones. Local centres help members keep in touch and there are other benefits.

3 EVALUATION CRITERIA FOR LIBRARY WEBSITES

The dates are not available either for the establishment of CIBL or for the launching of library website. The remaining part of the paper is devoted to the listing of various evaluation criteria and their application to CIBL as a case study.

3.1 How Often is the Website Updated?

The CIBL website states neither the frequency of updation nor the date of latest updation.

3.2 Is the Website User-Friendly?

After visiting the CIBL website, various icons appear on the screen and by clicking on them, the library member can go to other menus. Certain words are highlighted in the text by using different colours. If the cursor is placed on them by using the mouse, the cursor looks like a human hand. By clicking on those highlighted words, the member can go to other menus.

The special feature of this website is that it links the member to other useful or related websites without the member knowing about the addresses of the other websites. The member has just to click on the highlighted word or icon and the required website automatically appears on the screen! Sometimes it so happens that the member navigates from CIBL website to another website and from the other to yet another website without making any extra efforts!! In the same but the reverse sequence, the member can come back to the original website just by clicking an icon in the window each time. Thus, the CIBL website is user-friendly.

3. 3 Does the Library Website Provides Rules and Regulations Governing Library Operations?

The CIBL website lists rules for library membership and use. It also gives library address, timings, and other details.

3. 4 Whether all the Library's Collections are Listed on the Website?

The CIBL has in its collection following forms of documents:
(i) Books (ii) Journals (iii) CD-ROMs (iv) Newspaper cuttings
The CIBL website lists only (i) and (ii) of the above in toto. It lists only one of (iii). (iv) is only for in-house use and hence, not listed on website.

3. 5 What is the Structure of OPAC? Is it User-Friendly?

OPAC is a database of books in the CIBL. It is not searchable by keyword; but it can be navigated by title, author, or subject.
The OPAC is divided into four modules:
(i) Authors (ii) Titles (iii) Subjects (iv) Information
Each OPAC entry has the following fields one below the other:
(i) Author
(ii) Title
(iii) Publisher (place of publication, publisher's name, year of publication)
(iv) Description (number of pages, illustrations, etc.)
(v) Notes (bibliography, etc.)
(vi) Subjects (subject in words)
(vii) Added entries (co-authors, etc.)
(viii) Call number (classification number according to Dewey Decimal classification)

If a library member wants to query about an author, title, or subject, he has to click on the respective module's icon on the screen. Then all alphabets from A to Z and all numerals from 0 to 1 (in case of title) appear on the screen. The member has to click again on the first alphabet or numeral (in case a title begins with a numeral) of the author, title, or subject. After clicking, a list of author, titles, or subjects under the alphabet or numeral appears on the screen and the number of books available under each heading (author, title, or subject) is displayed in brackets. In case of availability of a single book under a heading, number of books is not displayed in brackets. In case of subjects, classification number is also given before the number of books. For any book, if its title, author, or subject is present in other book(s), the particular title, author, or subject is highlighted using different colour. The member can query for the other book(s) just by clicking on the highlighted title, author, or subject.

The fourth module of OPAC Information gives details of the OPAC software and help. The software has been developed by WorldPAC. USA. Help for use of OPAC is given under the following headings:
(i) Selecting from the browse lists
(ii) Viewing selections from the browse lists
(iii) Displaying a title list
(iv) Displaying a complete bibliographic record

Thus, it may be concluded that the OPAC of CIBL is user-friendly despite the fact that searching by keywords is not possible.

3. 6 Whether a Library Member can Borrow Library Documents Through the Website?

A CIBL member can borrow library books through the website by using the in-built e-mail facility. If a member does not have his/her own e-mail address, the facility for the same is also provided in the website. A member can borrow maximum six books at a time. At present, the borrowing facility is restricted to the residents of U. K. and Ireland.

3. 7 Whether library's in-house documentation services are available on the website?

The CIBL's only in-house documentation service is newspaper cuttings which is not available through the website.

In case of an academic library, whether the website helps students to enrol, study, and prepare for their examinations?

The website gives an in-depth information about CIB's various certificate, diploma, and degree courses, and also its professional development programmes. Members can fill up various forms through e-mail. The website provides a lot of information to the members through its Supersite (discussed later) for their study and research.

3. 9 Whether the library website guides/navigates the member to other library websites?

The CIBL website links the library members to other useful and related library websites without the member knowing about the addresses of the other library websites. For this, the member has to click on CIB Supersite! from the main menu and then click on Research. In Research, the member will have to go to Libraries. After clicking on the following headings, the website automatically navigates the member to other respective library websites.

(i) British Library Catalogue: It contains OPAC 97, with support services from British Library's Document Supply Centre.
(ii) Hong Kong Institute of Bankers Library: It is a full-fledged library website.
(iii) Institute of Chartered Accountants in Ireland: It gives information about the Institute including its library.
(iv) Library of Congress (USA): It is a full-fledged library website.
(v) World Bank Digital Library: Some World Bank publications are available full-text and for others, publication summaries are given.

Thus, CIBL fulfills this criterion very well.

3.10 Whether any Reference Source(s) is (are) Available Full-text Through the Website?

A variety of reference sources are available full-text on CIBL website, a few are listed below. They are various websites available through CIBL website (The process of navigation has been already discussed earlier.)

(i) International Financial Encyclopaedia
(ii) Dictionary of Management and Technology
(iii) Business Information Sources on the Internet: It is a guide to some internet sites which contain business information.
(iv) Directory of World Web Sites categorized by profession: It divides and subdivides each profession and each subdivided profession lists related websites. A member can directly access the variety of websites just by clicking on them.
(v) Libraries: It is Swedish Union Catalogue.
(vi) Wilson's Business Abstracts: It is a database of articles indexed and abstracted from several hundred business magazines.

3.11 Whether Any Non-Reference Book(s) is (are) Available Full-text Through the Website?

Many non-reference books are available full-text on CIBL website, a few are listed below. They are various websites available through CIBL website, by using the usual navigation process.

(i) All publications of the Bank for International Settlements
(ii) All publications of the Institute for Fiscal Studies
(iii) A few publications of the World Bank

3.12 Whether any Newspaper(s)/magazine(s) is (are) available through the website?

Fifteen magazines (with their back issues) are available, out of which six magazines have the facility of searchable index.

Seventeen newspapers are available, out of which thirteen newspapers have the facility of searchable index. Navigation process is the same as described earlier.

3. 13. Whether the Website Offers Information About the Subject of Interest to the Library Members and/or Guides them to the Sources from Where they can Get the Required Information?

A wealth of information is available to the member through CIB Supersite!. The supersite constitutes a library in its own right. It includes links to other websites offering financial newspapers, journals, dictionaries, regulations, working papers, banks, central banking, statistics, law, etc. A member can use these links for further research. Many of these sites carry full-text documents. This supersite is classified into 17 subject headings–the one being Research. Almost all of the other library websites, reference

sources, non-reference books, newspapers, and magazines discussed earlier are available under the subject heading Research, which contains much more information. Thus, CIBL website satisfies this criterion very well.

3.14 Optional criteria

(i) Whether the library website gives information regarding current affairs or guides members to the sources giving current affairs? Apart from a host of newspapers (discussed earlier) the CIBL website has arranged online news provided by ABC NEWS U.S. which is updated daily. It has also arranged the following television corporations online-BBC, CNN, Teletext.

(ii) Whether the library website has arranged services of other online information providers? CIBL website has arranged the services of eight corporations, e.g. Dialog, IMRG, Mintel, etc.

5 CONCLUSIONS

Thus, it may be concluded that CIBL website is a good library website. It is an ideal website to be studied by academic libraries in India before launching their own websites. In India, with the exception of American Centre Libraries, have not come forward to launch their own websites.

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ww.cib.org.uk/v-lib

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REPACKAGING OF INFORMATION: A SOLUTION OF INFORMATION OVERLOAD

Tamal Kumar Guha*
Gitasri Bordoloi**

ABSTRACT

In the era of electronic information and fast growing communication media, the rapid influx of information through different sources has become a problem of knowledge workers as its abundant availability often leads to the problems of unused, intentional as well as unintentional nonuse and inconclusiveness. Proper packaging of information, therefore, is required according to the need of its users. The existing tools of Library and Information Science shall be proved as handy as we are already involved into such processing activities. We, however, need to expand our horizon and venture into new technologies like hypertext and multimedia/hypermedia to provide a more efficient customizing and repackaging of information to reduce the Information Overload.

1 INTRODUCTION

Keeping oneself abreast about the latest developments in his/her area of interest, is the greatest challenge for the knowledge workers of the present day competitive world. The post second World War history of mankind is marked with the rapid increase of research and development in almost all domains of human activities coupled with the availability of communication gadgets. The phenomenal growth in the use of information and communication technologies has resulted in a dramatic increase in the volume of information availability to the knowledge workers.

Davis and Cetron describe a variety of trends shaping the world including the fact that "Communication and information are the lifeblood of a world economy. The world's communication networks will grow ever more rapidly in the next decade", and "all the technological knowledge we work with today will represent only 1% of the knowledge that will be available in 2050" [1] Information has already started coming into the knowledge workers community as and when asked for and even when unasked for, made it strenuous for them to sort, analyse, process and reproduce knowledge.

* Assistant Librarian, Indian Institute of Technology, Guwahati, Assam, India - 781 001
** Technical Assistant (Library), Indian Institute of Technology, Guwahati, Assam, India - 781 001

The early warning by Griffiths in the mid-eighties that "Regardless of whether one considers that ... 'Information Age' will be a positive or negative force in our lives it is almost impossible to ignore that substantial changes are taking place in our society.... The very structure of society is shifting as we become increasingly dependent on information and the workforce must mobilize to meet these information needs,"[2] has however, seems to come out not only with its positive but equally negative impact. Modernied organiations have become well equipped with all kinds of information and communication gadgets. In many cases the information needs though has been fulfilled, the excess flow of it has created the demand of customizing, processing and even filtering the information flow. As we move further into the information age, it is becoming ever more apparent that society as a whole will have to confront the general problem of 'Information Overload'. "Vast amounts of information may arrive at the workstation via electronic mail and pointers of further information may arrive in the form of URL's and ftp address, while, paradoxically, paper based information continues to arrive in undiminished flow. Time constraints dictate that only the most important items in the ever broader stream of information will receive the attention they deserve; the rest will merely be scanned to determine whether they may be useful at some later time."[3] This abundant availability often leads to the problem of unused. intentional as well as unintentional nonuse of information and delusiveness and inconclusiveness - a sheer impact of Information Overload.

2 INFORMATION OVERLOAD - WHAT IT MEANS

Information is the most fundamental commodity in our interactions with other humans and production of knowledge. It always conveys a message and as human, we are surrounded by information continually impinging our senses. Although we do not or cannot respond to all this information, we are usually, in most cases, able to utilise what we need to meet the demands of the situation. However on occasions we become overloaded and unable to handle the information being directed at us in order to select what we require. Consequently, anomalous and incomplete processing creates a complete lack of output or inadequate and insufficient actions to achieve the intended goal.

Information overload can mean very different things, " It might mean being presented with more information than one could absorb; it might mean being burdened by a large supply of relevant information, that is, forced to spend more time and energy on assimilating new information than one would like to do ... The 'serious' kind of overload is the possession or knowledge of the existence, of information one thinks to be probably relevant but does not use because of lack of time."[4] The outcome in all cases, however, will be a breakdown in communications as human cease to remember, become

unable to retrieve and respond with the appropriate actions and necessary information. This will manifest itself in errors and frustration on the part of the individual. In fact, all working scholars of today's world live in a world of information overload and its attendant frustration. There can never be enough time to read all the things one should read or enough time to discuss with others all the things about which discussion would be beneficial. Overload is more than the existence of very large amounts of information. Rather it is a gap between what one can do and what he wants to do, a gap between what one can do and thinks should do with existing information.

Information overload can have impact not only on macro-level but also micro-level of society. Researchers on information overload in Management and Business have tried to understand that "how information overload affects a manager's ability to manage. Workers in this area are particularly interested in whether the ability to solve problems, and make decisions is impaired. Individual managers from many disciplines are also prolific contributors to the debate on how to manage personal information overload. Their writings focus on the huge increase in faxes, e-mail, computer generated reports etc...."[5]

This small review helps us to realize the omnipresent impact of information overload in the knowledge workers community. It has impact not only in research and development, in organisations but also in personal level.

3 REPACKAGING OF INFORMATION - A SOLUTION

The resultant imbecility and discomfiture of information overload certainly call into play a much vital role for the information scientists. It has become their ouns probandi not only to develop efficient retrieval systems but also to filter, customize and repackage information according to the specific need of its users.

3.1 Information Customization

Before elaborating the information repackaging, it is necessary to explain what is information customization as both may sound alike except an exignous difference in its coverage. Information customization, unlike repackaging, takes into as input a single document. A document contains a mixture of information of greater or lesser value, depending on the information user's point of view, and manually locating the most valuable information within a document is tedious and error prone.

Information is customized when transformed into an extract or other form that gives an user what is needed at a given moment. Information can be customized by hand but the evolution of information technology calls for partial or even total automation. When information is customized,

the document has to be transformed into a new form that is more useful to the user. The goal of information customization is to tailor a document to a user's specific needs at a given moment.

3.2 Information Repackaging :

'Pack', *etymologically speaking*, has derived from the German work pak or packe, means a quantity of anything wrapped or tied up, as for carrying and 'package' has been defined by New Webster's Dictionary of the English Language as "an article composed of several parts assembled into a unit ready for use." In information science context we, therefore, use 'package' as a quantity or bundle of information about any particular potential query or response to a query, composed of several parts and assembled into a unit ready for its use.

The task of information repackaging is to make the message or content appealing to the user. It is part of a complex and involved process to deliver the right information in the right format to the right user at the right time.In repackaging of information, there are some basic steps to follow :

(a) Know the contents and unique features of the document
(b) Identify the target users;
(c) Isolate the salient points of the document which appeal to the target users in terms of meeting their needs;
(d) Select the language and the style understood best by the target users.
(e) Decide on the format that could deliver well the information.

Repackaging of information is, however, has been used in information science since long. It has used different formats - Current Awareness Service which includes Accession List, New Addition List, Content Page Service; Bibliogrphies; Bibliography of Bibliographies; Selective Dissemination of Information; Clippings Service; Condensation Services like Abstracting Service, Extracts, Digests; Consolidation Services like State-of-the-Art-Report, Handbooks/Manuals, Data Compilations; etc.

Though one of this service has lost its significance with the growing pressure of technology and networking activities and its resultant information overload, it has, however, increasingly become necessary for information scientists to innovate newer methods of repackaging, especially for electronically available documents, information and sources of information. Following are the two of those which not only help to repackage information

but also provide amicable solutions for information overload problem.

3.2 Hypertext - It is a technology by which the intelligent database helps the frustrated seeker of knowledge by automatically cross-referencing various topics until the user has satisfied his or her informational needs, can be used to repackage information very conveniently. "The word Hyptertext(HT) means the combination of natural language text with embedded links enabling non-linear information access and navigation. A large number of information fragments, chunks such as text, graphics and images linked together electronically forming a multifaceted indefinite shaped database in which one can write and read the information non-linearly."[6]

When Vannevar Bush envisioned his hypertext 'memex' in 1945 , he dreamed of a personal system that would help him tackle the problem of information overload at that time.[7] Perhaps hypertext technology, structuring traditional text into non-sequential text, is a viable solution to help us cope with the problem of information overload. In hypertext systems, we are provided with a powerful, flexible mechanism to browse non-sequentially via a network of richly connected nodes and links, and extract only that part of the information that is relevant.

This technology helps the information scientists to collect and repack all the electronic publications and information artefacts on any specific area of interest and put into one place. Browser of such information, therefore, will be able to search and locate his or her information, specifically. This repacking can include texts, graphics, images. It can also contain information about other related publications, abstracts as well as full texts, hypertexted bibliographies, forthcomings, etc. This one-step multi-store approach shall help the users to get all relevant information at one go. This kind of personalised service saves a lot of time on the part of its users and therefore, reduces the information overload.The *raison d'etre* of this kind of digital media is its flexibility in combining, manipulating, customizing and transmitting the information fragments according to the needs of the users.

The new method of repackaging has the potential for putting all the relevant information about any particular query or event in one place. A successful experiment in this direction has been conducted by the School of Library and Information Management of Emporia State University, Kansas. To disseminate the contents of the Fifth Conference of Librarians in International Development, they repackaged the whole program in a multimedia format.

Though traditionally knowledge created at a conference is captured at best through the publication of proceedings a wide variety of activities take place, like discussions among presenters, questions and answers sessions, as well as selected interviews with presenters. All these were video-taped and evaluated through the students and faculty members. In the next stage

a CD ROM based product was made on the original video of the conference activities. "The repackaging will draw on theory of the visualization of information and on information engineering to make a new product available that is not bounded by linear constraints as is a video."[10] The video product was linked with texts in a hypertext format, in its CD ROMs version.

Such type of repackaging of information about any event or artefact shall help the users to get the relevant information in multimedia format and also helps to reduce information overload as specific query can be made instead of going through the whole text of the conference proceedings

4. CONCLUSION

The major effect of information explosion on individual is that it is no longer possible to remember all the sources of information or even to go through all the relevant documents or information artefacts. Along with the traditional repackaging services, time has come for the information scientist to venture into the new methods and technologies which can help to customize and repack all locally and remotely located electronic documents and information artefacts. In the era of information overload such efforts on the part of information scientist may only help the knowledge workers to get a respite from ever increasing unwanted and irrelevant information, and to get specific and relevant information.

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INFORMATION RESOURCE DEVELOPMENT IN PUBLISHING INDUSTRY: A CASE STUDY

Kalyani Accanoor*
Shobha Kulkarni**

ABSTRACT

Libraries/ information centres in the publishing Industry are not well known for their holdings or for their services. However, holdings are unique which may not be available in other libraries. The holdings comprise clippings, photographs, transparencies, microfilms and electronic sources, which are described in the paper. The manual methods of resource development, their storage, and retrieval are mentioned. The paper is based on a case study and experience at M/s BCCL (Times of India Group) and M/s Chitralekha.

1 INTRODUCTION

Libraries and information centres that exist in the publishing industry are not much heard of. But, they do exist and form the backbone of the institutions they serve. These fall under thecatagory of special libraries and have their own importance in the dissemination of Information.

Newspapers are one of the ancient forms of communication existing right from the Roman Empire. As printing technology came into existence enormous progress has been made in printing and publishing of newspapers and magazines. This print media has now diversified into the audio, video and multimedia spheres.

The publishing industry themselves comprise of dailies, tabloids and magazines in almost all languages. The information that goes into the making of these publications generates from day-to-day events from writers, composers, photographers, artists etc. editors, sub-editors, TV producers, filmmakers etc. The raw information is processed into different formats such as News item, Article, Interview, Advertisement, Photo-session, etc.

The processed information is published and distributed in appropriate sizes and formats and sold to consumers. The information thus generated becomes the intellectual property, as most newspapers and magazines bring out nascent information. For e.g., Biographies of eminent personalities.

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2 PURPOSE

The present article is a case study based upon the experience of the authors at two leading publishing nstitutions M/s Bennett Coleman & Company Limited, publishers of the Times group of publications (BCCL), and M/S Chitralekha. The purpose of this article is to examine the existing Libraries/information centres and suggest ways and means to improve the content and quality of services provided by them. M/s BCCL are owning a group of newspapers such as *Times of India, Economic Times, Maharashtra Times*, and Magazines such as *Filmfare, Femina* and having branches all over India. M/s Chitralekha has *Chitralekha* magazine in Gujarathi & Marathi and 'g' a Film based magazine, in English/ Hindi/ Marathi/ Gujarathi.

These libraries are very old and rich in their collection. The types of users are the in house editorial staff, freelance journalists, journalism students, ad agencies, TV channels, AIR staff.

The task of the Librarian here is to select, classify and make available the relevant information within the minimal time. One has to consider the time frame, which is most crucial here, as the material, has to reach the editorials within the specified time, otherwise it will lose its value. This relevant information has to be culled out from an enormous mass, which is processed and distributed by the mass media of communication at regular intervals.

3 INFORMATION ACQUISITION AND MANAGEMENT

Information acquisition in such libraries is by way of news items captured at national and international level. This information acquisition is not restricted to any specific topic, or period. This becomes a challenging task to the information Managers for identifying such news items, culling them out from various papers and magazines, classifying them for retention and retrieval. In M/s Chitralekha, however as its name suggests utmost importance is given to "Chitra" i.e., picture and then the "Lekha" i.e., to matter.

3 PHYSICAL SOURCES

The range of sources forming the Collection in such libraries is different from the traditional sources available in typical libraries. They are clippings, photographs, transparencies, microfilms, reference tools such as directories, yearbooks, acts, statutes, budget related publications, audio-cassettes, video-cassettes, CD-ROM's, annual reports of various ministries and government Departments etc., These information sources are usually not available in other libraries belonging to various universities and colleges, public libraries or private corporate libraries etc.

3.1.Clippings

In both the libraries there is an enormous collection of clippings. They are stored in separate sequences broadly as subjects, personalities, and backgrounders. Newpapers and magazines are distributed daily to the staff who classify the articles, news items, stories etc., by marking on the items. After the markings are done they are cut appropriately and mounted on white paper. These mounted clippings are then given to the filers who file them in their respective boxes, which again are arranged, in their proper sequences. In case of an interdisciplinary topics or subjects an extra copy of the clipping is taken, and classified under the other topic and filed accordingly.

Thus one can find clippings under different sequences such as subjects, countries, states, sports, personalities, backgrounders and so on. Information collected here is current with no backlogs.

While a lot of description can be given about the different sequences. mention is made of the personalities and Backgrounders, which are unique. by themselves.

3.1.1 Personality Files

This is an active collection. Adding or closing a particular personality file is an ongoing process. In Times this also carries the name of Obit files though, how it evolved, is not known. This includes information on those persons who are no more. An alphabetical card catalogue is maintained for this collection in which the person's name and serial no. is written . As clippings get marked under class the Personality they are filed together in these files. When a person is no more the date of his/her expiry is written on the card and the file is shifted to the Obit's collection.

3.1.2 Backgrounder's Files

This sequence comprises files built over the years and arranged in the classified order. This collection gets built when a particular issue or topic becomes important, thus gaining currency day by day. However, the first occurrence on such topics is only put in this file. Current, news-itemS get filed in the regular current files. For example. information about all earthquakes will be found here but subsequent day's news and the follow-up about a specific incident will be filed in the regular classified sequence. The backgrounder's files thus contain all background information about specific issues for the editors to work upon. Similarly separate sequences are maintained for sport, subjects, and countries.

3.1.4 Photocollection

The libraries are a depositary for black and white photographs and colour transparencies. All the in-house publications send their photos and

negatives for retention and reuse. M/S Chitralekha however gives more importance to publish coloured photographs ,and black and whites are seldom used. While the published photographs are arranged in the classified manner similar to clippings, the unpublished ones are kept in a separate sequence. As the company subscribes to Associated Press, PTI and UNI photographs are regularly received them from with the captions. The usage of this collection is quite high, as not all libraries will have a photo-collection. A number of ad. agencies, publishers, TV channels etc send requests for this photo-collection.

3.1.4 Books and Reports

Books, reference tools and related publications are procured with great justification. The books here are referred to as secondary sources and not as basic fundamental books as seen in Academic libraries. Importance is also given to procuring biographies.

3.1.5 Microfilms

A newspaper library grows very fast especially where a number of dailies and magazines are published. A copy has to be maintained for posterity and referene purposes. Maintaining a copy, from time of its inception (TOI - 3rd November 1838 and Chitralekha - 1975) is rather difficult due to climatic changes and properties of the paper. Paper being easily perishable one cannot guarantee its life. As an alternative to the physical maintenance the in-house publications are all microfilmed. Microfilms though an old form of storage media is still a preferred media by many of the clients. Production of microfilms is cover to cover of the original publication. With the advent of the CD-ROM technology, the day is not far off when these publications will be converted into optical form. As a storage media it is almost indestructible .The data stored will not get corrupted as it happens in the case of other media such as floppy disks, microfilm etc.

4 PRESENT TRENDS

4.1. Technological Advances

At Times, however, the index to the Times of India was the starting point of computerization. The index was being brought out as a separate product. Some of the indexes are handwritten, some are printed and published. With the introduction of modernization, the index is generated by the computers through the TAS (Times Archival System) printouts of the indexes are microfilmed with the particular issue. This system, started in January 1992 .It carried the synopsis of the items till going on-line. With the introduction of on-line system their respective home pages the need for TAS has greatly reduced and is not being used much.

In M/s Chitralekha a user-friendly program has been developed with

separate files for photographs, Chitralekha-index, and clippings. The textual database of the photo-collection includes the specific serial number, situation, and / or names of prominent personalities. The text file of Chitralekha index contains information about the name of the article and its author, if any, the key words and the respective source. While the clippings file needs some development the other two are still in use:. The system is menu driven and user friendly. Again here also the magazines are available Online.

Clippings files grow day by day as the information generated is on a daily basis. These files occupy immense storage space. Maintaining the clippings chronologically is not possible as they are filed loose. This causes concern as (1) clippings may get lost (2), torn and may be (3) misfiled at times.

Scanning the clippings is one solution. Plans are afoot for scanning, thereby saving space, easy retrieval and also creating new services in specific topics. One of the software program provides for tailor made indexing to suit our requirements.The classification schedule prevalent in our department is fed into the computer and while scanning only these terms are used thereby avoiding global usage of terms and chaos. With this indexing, uniformity and standardization is also achieved. Adding a new subject or a class number is done only by the person who is given the rights to do so. This database thus becomes unique and with a LAN connection can be accessed at various nodes at the editorial.

The old files i.e. the backgrounders and personality files which have grown over the years ,are in the process of being converted into the electronic media.

The collection of photographs has been prolific and photo-digitizers have been introduced in M/s BCCL. In this the photographs are digitized with an option for making a subject heading and a brief description, because photos are to be seen for their moods and actions and only the description will depict what they are. These photographs are magnified at the editorial and copies taken when selected. Plans are being worked out to digitize the whole collection. Similarly the clippings are scanned with assigning subject headings.

While, M/s Chitralekha is using a scanner for scanning the photographs and clippings, a tailor made Adobe package has been installed for creating an image database of over 10,000 images, incorporating all the relevant data concerning the image such as a unique serial number and meta-data about the respective photograph.

5. FUTURE PLANS

As photo digitizers and image scanners are an are going to be used on ongoing basis, a plan was designed to engulf the whole collection for its digitisation . The ultimate enario perceived is one in which at the touch of a key -one should be able to retrieve all the documents .

INFORMATION RETRIEVAL & ELECTRONIC RESOURCES

I N Kumar*

ABSTRACT

Defines the concept of information retrieival, its working and the various kinds of information retrieval systems such as reference retrieval, documents retrieval and text processing systems. The paper further elaborates on electronic resources, the advent of multimedia, internet and their implications for information storage and retrieval systems.

1 INTRODUCTION

Over the last two millennia of human history, the society has evolved continuously from its pre-industrial to industrial and finally to post-industrial manifestation. Another way of looking at the evolving society is to decide it among the following sectors:

— Primary sector with a focus on nature.
— secondary Sector with a focus on material.
— service Sector with a focus on ommunity.
— Leisure Sector with a focus on Individual.

Thus we can broadly classify different state, i.e. shift of labour as well as capital from the primary society to the service society and now the leisure society. It is interesting to note that technology has provided continually the underpinning in this social evoluation. Along side the technology of information has been increasingly predominant one from the primary society to the leisure society so much so that evolution towards information society.

2 INFORMATION RETRIEVAL

Information revtrieval is a system for locating facts in a central information storage area. Simple forms of information retrieval include finding factual material in an encyclopaedia and looking upword in a dictionary. Many complex information storage and retrieval systems use computers and other machines.

Every year, so much new information is published in different fields that individuals could not possibly maintain their own complete collections of reference materials. Increasing numbers of collections of reference materials. Increasing numbers of business, educational institutions, and

*Selection Grade Librarian, S. K. Arts College & H. S. K. Sc., Inst., Hubli 500 031

government agencies use information retrieval systems to find information quickly and easily.

2.1 How Retrieval Systems Work

Many companies use computerised retrieval systems to answer various questions about their operations. For example, the charge account records of a store can be stored on a computer's magnetic tape or hard disc. When a question arises about an account, the computer quickly searches the tape or the hard disc. for the appropriate records and prints a copy of the records.

Some information cannot be stored easily. For example, it would be impractical for a library to store all the facts in a book on a computer tape. Retrieval systems provide ways both to store and to find such information. As each new source is added to the library, an indexer assigns it a set of descriptive words. These words, called descriptors, index terms, or key words, indicate the main information in the source. A complete tape entry for each source lists the descriptive words, the storage location, and information identifying the source.

When a person wants list of all documents that deal with a particular subject, he or she makes a list of words that describe the subject area. The computer searches its types for all sources the include the information described in the person's list. Then it prints a list showing the title of each source and its location in the library.

2.2 Kinds of Retrieval

The various kinds of retrieval systems include, (i)reference retrieval systems, (ii)2. document retrieval systems, (iii). fact for data base systems, (iv). text processing systems.

Reference retrieval systems provide a reference-such as author, title, and location-to all documents in the file on a certain topic. The card catalogue in a library is a simple reference retrieval system.

Document retrieval systems provide a complete copy of a document. These systems use microphotographic methods, such as microfilm and microfiche to reproduce miniature copies of documents.

Fact or data base systems answer specific questions such matters as inventory and payroll. A fact retrieval system could quickly provide the total earnings of a certain employee for any year.

Text processing systems are the most complex type, and are still experimental. For example engineers are trying to design systems that can translate documents from one language to another.

The importance of information as a vital resource in today's society can not be overemphasized. When we consider the increasing number of information generators and users, we can visualise to a certain extent the magnitude of the problems of collection. However, with the growth of information, there are very often delays in providing service to the end

users. The cost of providing service is also rising, mainly because of adoption of manual methods and duplication of investments in library holding.

The above had made it imperative to share library resources and adopt methods offered by modern information technology for the provision of services. This is all the more important for developing countries with severe constraints in financial resources.

With this view, the library and information science turned towards Information technology. The twenty first century will be in the grip of technological changes, particularly in the field of information and communications. Broadly speaking IT deals with information systems, data storage, access, retrieval, analysis and intelligent decision making for enhancing organisational effectiveness.

3 ELECTRONIC RESOURCES

Computer is a machine that performs calculations and processes information with astonishing speed and precision. A computer can handle vast amount of information and solve complicated problems. It can take thousands of individual pieces of data and turn them into more usable information-with building speed and almost unfailing accuracy. The most powerful computers can perform billions of calculation per second.

The most common type of computer, by far, is the digital computer. Digital means having to do with numbers. Digital computer perform the task by changing one set of numbers into another set. All data-numerals, pictures, sounds, symbols, and words are translated into numbers inside the computer. Everything a digital computers can do is based on its ability to perform simple procedures on number-such as adding, subtracting, or comparing two number to see which is larger. Digital computer are so widespread that the word computer alone almost always refers to a digital computer. The largest digital computer are part of computer systems that fill a large room. The smallest digital computer are so tiny that they can pass through the eye of a needle. These are found inside wristwatches, pocket calculators, and other devices.

People can think about problems and figure out how to solve them. But computer cannot think. A person must tell the computer in very simple terms exactly what to do with the data it receives. A list of instructions for a computer to follow is a program.

4 MULTIMEDIA

Multimedia is a computer-controlled combination of text, graphics, sound, photographs, film, and other types of media. Multimedia programs have applications in education, entertainment, job training, and other areas.

The hardware needed to run multimedia programs usually includes a personal computer with a larger-capacity memory, high-quality video and audio systems, and a CD-ROM drive. CD-ROM's resemble audio compact

discs, and they can store the enormous amount of data required for a multimedia program. Some systems enable user to record video and audio on a computer's hard disk drive to create their own multimedia programs. Personal computer enable users to interact with multimedia programs-that is, users become active participants rather than passive observers.

For example, a multimedia program could employ an interactive story to improve a user's Italian language skills. The story might involve a search for apartment in Rome. The program could begin with a film clip showing a couple walking past several apartment buildings. The user would select a building and listen to the conversation between the landlord and the couple. At the end of the conversation, the user could decide to continue searching or to choose an apartment in that program's dictionary or request a transaction of that dialogue. Thus, the program incorporates film, sound, and text into an interactive story that enables the user to practice Italian.

Many computer programs combine several type of media, such as text, graphics, animation, and sound. But most programs do not offer television and film clips or digital stereo sound. Such high quality video and audio distinguish multimedia from other programs.

5 COMPACT DISC

Compact dise, often called CD is a round, flat platter on which information is stored in the form of digital (numerical) code. The main use of CDs is to store recorded stereophonic sound. Discs used for this purpose, called audio CD's, are played on a CD player. The other major type of CD is called CD-ROM (Compct Disc-Read Only Memory). CD-ROMs can store files of data, pictures, and sound as well as video game programs and other software. These discs are played on a computer's CD-ROM drive or on a CD-ROM player.

CDs are made of a hard plastic that is coated ith a metal, usually aluminium. A protective plastic cover the metal. CDs have only one playing side. Most CDs measure about 12 centimetres across.

Audio CD's were the fist commercially successful CD's. These were introduced in Japan and Europe in 1982, and in the United states in 1983.

Audio CD's have two major advantages over audio tapes and phonograph records (1) they last longer, and (2) they enable the user to select any part of the recording quickly. To enable a given audio CD to be played on any CD player, manufacturers have established an industry standard known as the RedBook. One rule is that the CD be able to hold 74 minutes of sound.

5.1 Recording and Audio CD

During recording, a microphone translate sound waves into electric signals. A device called an encoder divides these signals into 44,100 segments for each second of sound and then converts each segment into digital code. During disc manufacturing, a laser user uses code to out a spiral track of

microscopic pits into the surface of the disc. The pits represent the digital code. A disc may contain 3 billion pits.

5.2 Playing and audio CD

As the disc spins in a CD player, laser beam shines on the pit spiral and is reflected by the metal coating. The intensity of the reflected light changes as the beam enters and leaves the pits, difference in this intensity thus represent the digital code. the light strikes a device that translates these differences into an electric signal. Decoding circuits use this signal to reproduce the original sound in loudspeakers or headphones.

CD-ROMs are created and used in much the same way as CD. The CD-ROM drive produces a digital electric signal. Special circuits process this signal and send it to a computer. The yellow book standard regulates CD-ROM. A standard CD-ROM can hold about 850 megabytes (million bytes) of data. One byte equals a letter or some other character.

Many CD-ROMs store mainly textual information. Other types of CD-ROM include multimedia CDs and Photo CDs. Multimedia CDs hold text, sound, still pictures and moving pictures. Some multimedia systems, such as Compact Disc Interactive (CD-I), work with a television set and stereo speakers.

A photo CD can store 100 photographs taken with an ordinary 35-milimeter camera. Many photo shops can arrange for photographs to be transferred from negative or slides to a CD. The consumer can use certain CD-ROM drives and multimedia drives to view the pictures on a television screen or computer monitor.

Minidiscs measure only 6.4 centimeters across. The consumer can record sound on some minidiscs, then later erase the sound. A minidisc requires a special player.

6 INTERNET

Internet is a vast network of computers that connects many of the world's businesses institutions, and individuals. The internet, which means interconnected networks, links tens of thousands of smaller computer networks. These networks transmit huge amounts of information in the form of words, images, and sounds.

The Internet has information on virtually every topic. Network users search sources from vast databases to small electronic bulletin boards, where users form discussion groups around common interests. Much of the Internet's traffic consists of messages sent form one computer user to another. These messages are called electronic mail or e-mail. Internet users have electronic addresses that allow them to send and receive e-mail.

Other uses of the network include obtaining, news, joining electronic debates, and playing electronic games. One feature of the Internet, known as the World Wide Web, provides graphics, audio, and video to enhance the information in its documents. These documents cover a vast number of

topics.

People usually access the internet with a device called a modem. Modems connect computers to the network through telephone lines. Much of the internet operates through worldwide telephone networks of fibre-optic cables. These cables contain hair-thin strands of glass that carry data as pulses of light. They can transmit thousands of times more data than local phone lines, most of which consist of copper wires.

The history of the Internet began in the 1960's. At that time; the Advanced Research Project Agency (ARPA) of the United States Department of Defence Developed a network of computer called ARPAnet. Originally, ARPnet connected only military and government computer systems. Its purpose was to make these systems secure information in the event of a disaster or war. Soon after the creation of ARPnet, Universities and other Institutions developed their own computer networks. These networks eventually were merged with ARPnet to form the Internet. By the 1990's anyone with a computer, modem, and internet software could link up to the internet.

In the future, the internet will probably grow more sophisticated as computer technology becomes more powerful. Many experts believe that internet may become part of a larger network called the Information Superhighway. This net work, still under development, would link computer with telephone companies, cable television stations, and other communication systems. People would able to transact with bank, shop, watch factories, TV, and perform many other activities through the network.

5 CONCLUSION

With a silicon chip in this body, British scientist Kevin Warwick demenstrated that we can be,

Part-human.

Part-machine

5. 1 World's First CYBORG

A chip implanted in the body making us man-machine-throws up immense possibilities for humankind. The man who did it first, Professor Kevin Warwick, was recently in New Delhi to deliver the keynote address at the Institution of Electrical and Electronics Engineers' annual conference, Tencon-98. An exclusive narration of Prof. Kevin about what the word of cyborg is all about.

Dr George Boulos, a surgeon in Reading, put it on top of the muscle underneath the skin, says Kevin,. We put it in the arm because it is a convenient place to see how the body reacts to a foreign object. Moreover, the signal strength of the transponder depends upon the angle it is held at, and the arm is easy to manoeuvre.

Boulos conducted the operation without seeking permission from the

British Medical Council, perhaps anticipating a negative reply. It was a routine surgery, the doctor says. Later, he got two messages from the Council, one chastising him and the other congratulating him! In any case, Boulos appeared on the front page of the British Medical Journal for his efforts.

Immediately after the implant, Kevin did a BBC radio and television show. Despite all the media coverage Irena would not go anywhere near his arm. We did not really know what was likely to happen. says Kevin. The first night I did not sleep very well, in case I rolled over.

But the 3mm-thin, inch-long transponder, which consisted of an electromagnetic coil and three silicon chips costing Rs. 160, did not cause any problems. It was in Kevin's body for nine days. Whenever a radio signal from sensors outside the body was transmitted to the chip, the coil generated an electric current activating the chip circuitry to produce a 64-bit signal.

This, in turn, switched on his computer, made his office welcome him in the morning, switched on the light in the corridor, opened doors and helped his secretary Liz Lucas trace him on the campus. With the implant I always knew where he was, says Irena. Would not any wife like that.

More important for the rest of humanity, the experiment opened up immenses possibilities. The chip in your arm can contain a lot of information your medical history, your neighbourhood's geography, and every your entire biigraphy-which of use in a emergency. It can even carry your will and testament.

In Atlanta, they have implanted a chip in a guy's brain; says Kevin. Signals from his brain go into the computers which interpret and obey them. It has helped him fight Parkinson's disease. The implant stimulated his brain and he is now able to walk and even drive his car.

The technology can go a long way in tackling diseases. There's a person in Augusta in the US who has multiple sclerosis and does not have any control below his diaphragm, says Kevin. He has an implant connected up to see how he urinates. Remotely they can control when he urinates and when he dosen't. Ross Davis, the neurosurgeon in Augusta, thinks it is possible to control an erection just as easily. An electronic Vigra, in the offing? Kevin believes that in five years chip inside humans will carry diverse data money transfers, medical records, passport details and criminal convictions. They could even act as internal alarm clocka you could be programmed to sleep for the requisite eight hours! Moreover, since they are inside the body, it is almost impossible to steal them. To global market for implant technology in 20 years is said to touch $ 20,00 billion.

Kevin gets e-mails from people with desperate medical problems who have read about his implant and feel this could save them. There is a doctor who was convinced that somebody had put an implant in her without her knowledge he says. She thought somebody was tracking her because every time she put her keys down, She could not find them again. She posted

letters that people did not receive. She was old and perhaps suffering from dementia. If I were doctor I would tell her to go for an implant.

There have been cheeky e-mails too. One from the US asked; would the experiment have worked so well if Kevin had the implant in his posterior. The language was't as refined.

Oh, what the electronic resources play an important role in retrieving the information.

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ECIRM : A MODEL FOR DEVELOPING INFORMATION RESOURCES AMONG PUBLIC LIBRARIES IN KARNATAKA

B S Maheswarappa*
P G Tadasad**
N Vijyalaxmi***

ABSTRACT

Public library is an essential agent for promoting education, fostering culture, dissemination of information and providing recreation. Its role as educational, cultural, informational and recreational centre depends much on the nature, size, type and quality of information resources–print, non-print and electronic—it has. The paper proposes and explains the model consisting of the following components viz., Community Analysis and User Studies, Development of Information Resources Development Policy (IRDP), Selection, Acquisition, and Information Resources Management with a proposal for five levels of collecting known as ECIRM viz., Educational Level [EL], Cultural Level [CL], Informational Level [IL], Recreational Level [RL] and Minimum Level [ML] that fulfills the key missions of UNESCO Public Library Manifesto, 1994 for developing information resources in Public Libraries of Karnataka.

1 INTRODUCTION

The public library is considered as the local gateway to knowledge, making all kinds of knowledge and information readily available to serve the entire population of a local community. Public libraries are those which serve the population of community or region, free of charge or for a nominal fee. Everyone in the community, regardless of nationality, race, colour, creed, age, sex, status, educational attainments, language or any other considerations has a claim to its services as a matter of right. The UNESCO Public Library Manifesto, 1994[9] proclaims its belief in the public library as a living force for education, culture, and information, and as an essential agent for the fostering of peace and spiritual welfare through the minds of men and women. Therefore, the key missions of public library are: promoting education, fostering culture, dissemination of information and providing recreation. It needs to play the role of an educational, cultural, informational and recreational centre. Its role as an educational, cultural, informational

Department of P G Studies and Research in Lib & Inf Sc, Gulbarga University, Gulbarga-585 106

and recreational centre depends much on the nature, size and the quality of information resources - print, non-print and electronic - it has. The information resources of public libraries should be client entered, need based, relevant, balanced and tailor made to the user community and the aim should be to develop adequate and balanced information resources - in terms quantity and quality to fulfill its role.

2 LOOKING BACK

The study on the development of public libraries in Karnataka, by Nagappa, Maheswarappa and Khan [5] have found that the book collection of public libraries in Karnataka State has increased from just 1,79,735 in 1968 to 3,12,810 in 1981, while the number of books added per year increased from 23,525 in 1968-69 to 3,26,037 in 1980-81 with an average of 2,33,313 titles per anum over a period of time. The State Central Library (SCL), Bangalore has acquired 8,611 books annually during the period 1968-1980. The total number of books acquired by all the City Central Libraries (CCL's) including their branches put together has been varying and similar is the story of District Central Libraries (DCL's) and their branches. The additions made by the 10 CCL's is almost equal to the total additions of 19 DCL's. It was found by Nagappa, Maheswarappa and Khan [6] "that the nine out of 19 DCL's and four out of 10 CCL's are satisfied with existing collections. Even giving due credit to this expressed opinion which is open to question, it is found that nearly 50 per cent of DCL's and CCL's are unable to meet the local needs. When these librarians were further asked as to how they meet the local needs, none of them have expressed any opinion. Perhaps, they thought, silence is golden. Perhaps, they have silenced the demands themselves".

In another study by Nagappa, Maheswarappa and Khan [7], on opinion of users on public library resources and services, indicated that "only 36.55% of user population studied were satisfied with what is available in our public library collections" and majority (55.87%) opined that the collections were not up-to-date. Further, according to Khan [8], each one of the districts of Karnataka State has certain unique socio-economic and cultural features. Hence, the stereotyped collections will not meet the different needs of users of public libraries in Karnataka. The rapid growth of computers, networks and the proliferation of electronic publications - a new media, providing new modes of storing and communicating information have both challenges and opportunities for public libraries in Karnataka. The information in electronic format has increased steadily over the years as many of the major reference materials are available in the electronic media and can be used to provide the library services . The silent and close observation of one of the authors (BSM) since the one and-a-half decade of practices and procedures followed, reflected a lack of planned and systematic approach to the information resources development among public

libraries in Karnataka State. Therefore, there is a need for a model for the intelligent and effective development of information resources, to meet the educational, informational, cultural and recreational needs of the present and future needs of users of public libraries in Karnataka State.

3 LOOKING AHEAD

The information resources development process in a public library set up should follow a model consisting of the following steps viz., community analysis and user studies, development of information resources development policy (IRDP), selection, acquisition, and information resources management with five levels of collecting known as ECIRM viz., Educational Level [EL], Cultural Level [CL], Informational Level [IL], Recreational Level [RL] and Minimum Level [ML] to fulfill the key missions of UNESCO Public Library Manifesto, 1994. The process is continuous and requires SWOT (strength, weakness, opportunities and threats) analysis [3] to provide an objective assessment as to whether the public library environment is able to deal with its environment. This is essential to meet the present and future educational, cultural, informational, and recreational needs of the local community. The whole process is constantly affected by several factors such as economic conditions of the state/region, availability of financial resources, geographical situations, technological innovation, past trends, user community, demographic characteristics, availability of manpower resources, nature of publishing industry - print, non-print, and electronic, availability of information resources, social, political and cultural changes, organizational structure of public library system and the administration, government and its policies.vide fig.-1

4 COMMUNITY ANALYSIS AND USER STUDIES

The information resources development in libraries is to serve the users. Therefore, it is necessary for those responsible for development and management to be aware of and responsive to the needs of the users. It is not easy to understand and define the needs of users in a public library environment. Attempts have to be made to assess and identify the educational, cultural, informational, and recreational needs of the local community by conducting community analysis and user studies. The results of such studies conducted at the institutional level should form the basis for rationale development of information resources. It is an important activity, which is concerned with learning and understanding the needs and requirements of users and finding answers to the following questions: Who are the users? What are their educational, cultural, informational and recreational needs. The indepth knowledge of users and their needs and requirements is useful in bridging the gap between the kind and type of information resources that exists now and the kind and type of information resources required to serve. It is also useful for the formulation and

development of information resources development policy [IRDP]. The information about the needs, requirements and interests have to be identified by employing well established research methods and techniques. It is believed that the past use is the better indicator of future use. Hence, the in-house use data generated within the library may also be collected systematically and used for identifying the needs and requirements of users. A detailed and comprehensive document on community analysis and use studies for each one of the CCLs, DCLs and their branches including State Central Library, Bangalore should be prepared. It should be used for the formulation and development of information resources development policy document. There have been no indepth studies so far on users of public libraries in Karnataka. Therefore, there is a need for regular and periodic in-depth investigations on users of public libraries at the institutional level. Such type of studies should form an integral part of the regular programme of the public library system in Karnataka.

5 INFORMATION RESOURCES DEVELOPMENT POLICY [IRDP]

The need and the importance of IRDP document and its implications for the systematic development of information resources is well documented. Each one of the units of public library system in Karnataka needs to develop and have a written statement of information resources development policy keeping in view the socio - economic, cultural, educational, recreational, political, and demographic features of the region. Each unit of public library system in determining its information resources development and management policies should seek to recognize its unique position. Each unit should have a responsibility for collecting and maintaining the annual output of information resources of the region. Such a document will be useful for communication of its mission to selectors and users. It also guides the selectors in taking decisions in information resources development. The IRDP document should consists of two parts, viz., Part-I should give an overall introductory statement, giving precisely the statement of the mission of the public library, programmes and patrons, definitions of different kinds of information needs, implications of resource sharing programme if any, and the levels of collecting, language/s, forms of materials, geographical areas and chronological periods to be covered, etc. Part-II should provide a detailed analysis of the subject interests of users arranged according to a classification scheme that the library follows for organizing its information resources. For each class, three levels of collecting viz., the Present Level [PL], Current Collecting Intensity [CCI] and the Total Collecting Intensity [TCI] deemed appropriate to meet the mission of the library should be indicated.

In this regard, we propose five levels of collecting for public libraries, keeping in view the UNESCO Public Library Manifesto, 1994:

(a) Educational Level [EL]
(b) Cultural Level [CL]
(c) Informational Level [IL]
(d) Recreational Level [RL]
(e) Minimum Level [ML]

(a) Educational Level [EL] : To have information resources in which the library endeavours to foster and provide means for self development of the individual/ group at whatever stage of education
(b) Cultural Level [CL] : To have information resources to act as one of the principal centres of cultural life and promote a keener participation, enjoyment and appreciation of all arts.
(c) Information Level [IL]: To have information resources to bring to the individual/group, accurate information quickly and in depth, particularly on topics of current information.
(d) Recreational Level [RL] : To have information resources to play a part in encouraging the positive use of leisure and to provide material for change and relaxation.
(e) Minimum Level [ML] : To have a minimum amount information resources in those subjects which are out of scope of pubic libraries.

Further for each class, the following aspects needs to be recorded: Forms of materials - Print, Non-Printand Electronic, language/s, geographical areas and chronological periods and the resource sharing obligations for each class if any, should be recorded. The IRDP document should be used as the basis for the selection of information materials for information resources development in public libraries.

6 SELECTION

The selection is the process of selecting the information materials which satisfy the IRDP of the library. In what subjects, types and formats of information resources that the users require with regard to their educational, cultural, informational, and recreational needs are mapped in the IRDP. Therefore, the selection of information resources for the library, basically consists of knowing the information about what is available in the publishing world, for which all the important selection aids are to be identified, procured and scanned systematically and regularly by the library staff and deciding what is available against the IRDP. The staff needs to select the documents which meet the policy and check against the library catalogue, on order trays to find whether the library already has, or has already ordered for collection, receiving it on standing order, approval or blanket order basis. The selection of information materials should be a continuous process and needs to be undertaken all through the year and not just at the beginning or end of the year.

7 ACQUISITION

It is the process of actually acquiring the selected information materials for information resources development. It involves finding all the necessary ordering information, selecting the source/s from which the documents have to be acquired, placing the order, follow up, receiving the documents when they arrive, paying the bill and accounting for funds. The vendors or book sellers from whom the information materials have to be acquired should be decided purely on the basis of their performance and not on any other considerations.

8 INFORMATION RESOURCES MANAGEMENT

The information materials when they are processed and actually added to the library collection and when they form part of the existing resources, there are other aspects such as weeding, storage, preservation and evaluation, which needs to be undertaken on regular basis in order to make the information resources collection, an active and potentially useful one to meet the objective of the library. The evaluation of the information resources of public libraries will be helpful in determining, whether the present information resources, is meeting the objectives or not? How well it is serving the users? What are the areas in which it is deficient? What remains to be done to develop it. The authors are of the opinion that these aspects have been overlooked by the public libraries in Karnataka. Hence, proper steps needs to be taken for the systematic management of the information resources.

9 CONCLUSION

The public libraries have to play the role of an educational, cultural, informational, and recreational centre. Therefore, the information resources needs to be developed by identifying the educational, cultural, informational, and recreational needs of the community it is expected to serve in the context of electronic information, implying that the library staff of public libraries have to conduct regularly and periodically the community analysis and user studies. The results and findings of such studies should form the input for formulation and development of information resources development policy document. This in turn should form the basis for the selection of information materials. This necessarily requires on the part of each one of the units of the public libraries to have a good and up-to-date collection of all the relevant selection tools. The library staff should scan regularly all the selection tools and the information materials which satisfy the IRDP of the library with minimum delay. The proper steps needs to be taken for the management of information resources, thereby making it possible for the public libraries of Karnataka, to meet the present and the future educational, cultural, informational and recreational needs of the community in the state.

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USER PERCEPTION ON OPAC SERVICE: A CASE STUDY OF REC LIBRARY, TIRUCHIRAPALLI

K. Kaliyaperumal*
B. Ramesh Babu**

ABSTRACT

This paper attempts to give an overview of the OPAC in the Regional Engineering College Library, tiruchirapalli (REC). It surveys the user perception on OPAC service being provided by the RECT with a sample of 2000 respondents. The analysis of the survey cover aspects like background information of users and their perceived level of experience with OPAC features. User experience has been analysed through SYSTAT Software and Cluster Analysis has been employed to gauge their level of experience with the OPAC features in RECT Library.

1 INTRODUCTION

The application of information Technology (IT) is gaining sufficient momentum in the various fatcs of library and information services. The field of cataloguing is not an exception to this. Information Technology has forced the librarians in the direction of adopting new physical form of catalogue, one such being the Online Public Access Catalogue (OPAC), which is accessible by any user with in the library, as well as outside it through terminals linked to regional, national and even international telecommunication networks. The emergence of OPAC has improved access to bibliographic data and is slowly replacing the card form of catalogue. While OPAC has been accepted widely in the West, it has not gained the same degree of acceptance in India. The introduction of OPACs in libraries in India in general and in Tamilnadu in particular is slow and is only in late 80s and early 90s libraries slowly moved towards automation of their operations.

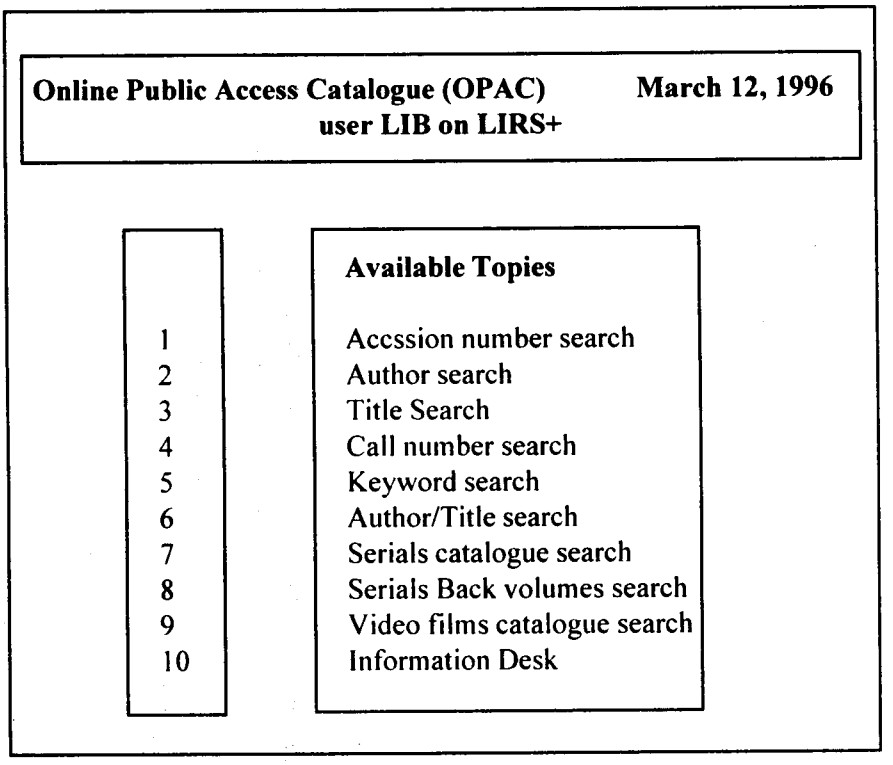
2 CONCEPT OF OPAC

Gorman has characterized an on-line catalogues as an "integrationist" and defined it as, "a bibliographic control system that allows access by means of a number of access points (conventional and unconventional,

* Assistant Librarian, Central Library, Anna University, Chennai-600 025
** Reader, Dept. of Library & Inf. Science University of Madras, Chepauk, Chennai-600 025

FIGURE NO. 1

RECT OPACT MAIN MENU



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single and in combination) to bibliographic data stored in machine-readable form. The data retrieved is displayed on terminal screen or printed out on demand. Terminals are housed in the library or elsewhere. The user retrieves information about items held by library and by other libraries."
3 Scope of this paper

3 OPAC IN REGIONAL ENGINEERING COLLEGE LIBRARY, TIRUCHIRAPALLI

The Regional Engineering College, Tiruchirapalli (RECT) was established in the year 1965. Its library collection comprises of more than one lakh documents and subscribes to about 350 periodicals. It has CD-ROM work station and audio-visual section. OPAC in this library was designed and developed in the year 1994. The library information and retrieval system (LIR+) consists of two separate file servers known as PRITHVI, covering library automation activities, and AGNI, covering OPAC, LIRS+ consists of three modules to automate the basic operations of the library, namely book acquisition, cataloguing and circulation, which was developed on Relational Database Management System (RDBMS) in the clipper software package. The OPAC can be retrieved in all the nodes kept in various departments and linked with RECTLAN.

4 ANALYSIS AND DISCUSSION

4.1 General Information about OPAC Users in RECT

Appendix 1 provides data on the academic status, and age group of the OPAC users. Three fourths of the users are students and are male. It shows technical education is largely undertaken by the male. Since the sample consists of students, a majority (i.e. 75%) of them fall in the age group of 15-25 years.

4.2 User Experience with the OPAC

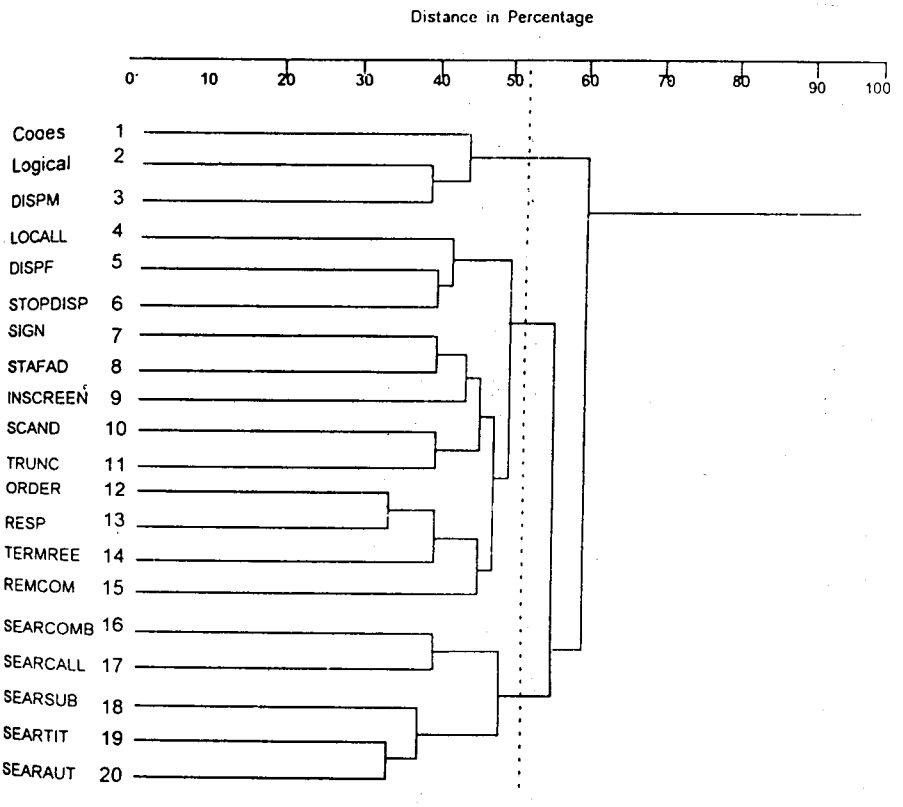
Figure, 2 parents the dendrogram, which explains the number of clusters formed based on complete linkage method for the variables (see Appendix 2) representating the user experience with OPAC.

APPENDIX 1

DATA ON THE GENERAL INFORMATION OF THE OPAC USERS IN THE RECT

1	**Academic status of the users**	**No.**	**Percentage**
	a. Students	154	76.5
	b. Faculty	46	23.5
2	**Sex**		
	a. Male	172	86
	b. Female	28	14
3	**Age group**		
	a. Between 15-20 years	80	40
	b. Between 21-25 years	70	35
	c. Between 26-30 years	20	10
	d. Between 31-35 years	12	6
	e. Between 35 years	18	9

Figure 2
Dendrogram for User Experience (RECT)
Complete Linkage Method (Farthest Neighbor)



It is seen from Figure 2, the at 52% distance level, 3 interpretable Clusters can be identified, as mentioned below:

Cluster-I Difficulties in Search (O Table 1)
Cluster-II Ease of search aids and display modes (Table 2)
Cluster-III Easy search modes Table 3)

Table 1, 2 and 3 present data concerning the clusters with 'agree' and 'disagree ratio'.

Table 1, reveals that three variables concerning user experience, namely CODES, LOGICAL and DISPM are grouped, which are related to difficulty in search. The agree and disagree ratio is 1:2, which indicates that "search through short form of name (by acronym) and Boolean Search" and difficult. Hence this cluster has been named as "Difficult in Search".

CLUSTER ANALYSIS FOR USER EXPERIENCE WITH OPAC (RECT)

TABLE 1
Cluster Analysis for User Experience with OPAC (RECT): Cluster-I-Difficulties in Logical Search

S. No.	Variable Codes	Variables	Scored	
			Agree	Disagree
1	CODES	Search through short form of name is easy	42	71
2	LOGICAL	Boolean search is easy	39	88
3	DISPM	Displays messages are too long	36	114
		TOTAL	**117**	**273**

AGREE = A

A = 117

$$A = \frac{117}{3} = 39$$

DISAGREE = B

B = 273

$$B = \frac{273}{3} = 91$$

CLUSTER CENTER = (39, 91)
AGREE AND DISAGREE RATIO = 1:1 (approx.)

Table 2 reveals that twelve variables concerning user experience are grouped. These variables relate to "display modes and search aids". The 'agree' and 'disagree ratio' for this cluster id 3:1. This cluster may be interpreted that the display format, locating the call number on the screen, scanning the long display, stopping display and order of the item displayed are easily understandable features for the users. It is further interpreted

that searching aids and staff advice while searching OPAC are highly helpful to the users. Hence this cluster has been need as "Ease of search aids and display modes".

TABLE 2

Cluster Analysis for User Experience with OPAC (RECT): Cluster-I-Difficulties in Logical Search

S. No.	Variable Codes	Variables	Scored Agree	Scored Disagree
1	LOCAL	Locating call no. in the screen is easy	101	43
2	DISPF	Understanding display format is easy	115	31
3	STOPDISP	Stopping or interrupting display is easy	100	42
4	SIGN	Instructions, signs & brochures is easy	93	48
5	STAFAD	Staff advice is helpful	76	69
6	INSCREEN	Understanding instructions on the screen is easy	155	16
7	SCAND	Scanning the long display is easy	97	48
8	TRUNC	Truncation search is easy	93	53
9	ORDER	Order of the items displayed is easy to understand	128	18
10	RESP	Rate of the computer response is high	105	50
11	TERMFREE	Terminal is freely available		129 33
12	REMCOM	Remembering commands in the middle of the search is easy	104	43
		TOTAL	**1,296**	**494**

AGREE = A

A = 1,296

$$A = \frac{1,296}{2} \quad 108$$

DISAGREE = B

B = 494

$$\frac{494}{12} \quad B \quad =$$

41

CLUSTER CENTER = (39, 91)
AGREE AND DISAGREE RATIO = 1:1 (approx.)

Table 3, reveals that five variables namely SEAR COMB, SEAR CALL, SEARSUB, SEARTIT, and SEARAUT concerning user experience are grouped. These variables related to search modes. The agree and disagree ratio is 4:1. This ratio indicates that users find no difficulty in using access points like author, title, subject, and call number while searching OPAC. Hence this cluster has been named as "Easy search mode".

TABLE 3

Cluster Analysis for User Experience with OPAC (RECT): Cluster-I-Difficulties in Logical Search

S. No.	Variable Codes	Variables	Scored	
			Agree	Disagree
1	SEARCOMB	Search through combination of author, title, subject is easy	105	39
2	SEARCALL	Search through call no is easy	97	51
3	SEARSUB	Search through subject heading is easy	114	47
4	SEARTIT	Search through title is easy	160	19
5	SEARAUT	Search through author is easy	168	9
		TOTAL	**664**	**165**

AGREE = A

A = 664

$$A = \frac{664}{5} \quad 133$$

DISAGREE = B

B = 165

$$B = \frac{165}{5} \quad 33$$

CLUSTER CENTER = (39, 91)

AGREE AND DISAGREE RATIO = 1:1 (approx.)

From the above analysis and discussion it was found that almost all the variables (17 variables) concerning user experience with OPAC, with an exception to 3 variables (Cluster-I) were perceived easily by the users in the survey. However, there is a slight variation with regard to the 'agree' and 'disagree ratio' for those variables. In other words, the ratio for the cluster-II is 3:1 where as the ratio for the cluster-III is 4:1.

CONCLUSION

Online catalogue is not only and instrument of change in today's libraries, it is also ever changeable. It has been changing drastically due to the impact of information technology. Any changes or improvement in an OPAC system are to be based on practical experiences with the system both by the users and library staff. On the eve of entering 21st century, our challenge is to use the fascinating tool namely OPAC and refine it in the light of new dimensions in library and information services so that our services rise to a new and higher level.

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DEVELOPING AN EFFECTIVE COMPUTERIZED INFORMATION SYSTEM FOR LIBRARY SERVICES IN MEDIUM SIZE LIBRARIES:

Jitendar Sharma*

ABSTRACT

Introduction of information technology has devised new methods of disseminating the information services to the users locally or globally through electronic media. In developing countries like India, however, use of latest technology in libraries is restricted only to big libraries. Small and medium size libraries are not developed and funded enough to keep pace with this fast media of information dissemination. It is apprehended that a large number of library professionals working in small and medium size libraries will lose their jobs being unable to cope with the advancement in information technology. This paper discusses how libraries and IT professionals of medium size organizations can join hands for mutual co-operation. The expertise of both in their respective field can result into development of a computerized information system that will cater to not only the need of the organization but if time and resources permit can also result into the development of a good library and information system of commercial viability. This will also force the authorities to perceive the existence and importance of library professionals.

1 INTRODUCTION

"The invention of printing from movable type by Gutenberg (1397-1468) made it possible for the human knowledge to reach millions of people who were earlier deprived of access to it. With developments in the techniques of printing and reproduction, books became the major medium for the dissemination of recorded knowledge, which became common property of mankind. However, for centuries libraries remained passive storehouses of books accessible only to the elite", [1] whereas, library and information needs are felt at all levels of society, regardless of an individual's location, social condition or level of intellectual achievement.

The real breakthrough came with the invention of the microcomputers, optical disks, and other mass storage media, worldwide computer and library

*Librarian, Northern Institute for Integrated Learning in Management, Badarpur, Delhi.

networks and communication technologies through satellites, E-mail, computer graphics, and other multimedia technologies. Technological innovations have given rise to new ideas relating to collection, processing and dissemination of information. All these innovations and ideas share a common technology revolving round electronics, computers, telecommunication, printing and reprography, popularly known as Information Technology. This has made possible contemporary roles of libraries as more dynamic information providers over a period of time.

Libraries are at the threshold of electronic age in which electronic media will play a crucial role in providing library and information services. "Library profession today has arrived at the information age where the role of information is increasingly emphasized as an economic resource, a marketable commodity and as a social wealth. In such an environment, librarians will have to act as facilitators, advisors, consultants, instructors, navigators, searchers, researchers, evaluators, organizers, preservers, promoters, communicators, technical experts as well as a managers, leaders, entrepreneurs and visionary".[2] He must, therefore, possess adequate skills and expertise to interact confidently with IT specialists, evaluate what is recommended by them and fulfil their requirements.

As mentioned earlier, introduction of computers, telecommunications, and optical technologies in libraries have resulted in vast changes in methods of disseminating the services to the users and these services are being now made available locally or globally through electronic media. However in developing countries like India, the situation is not so encouraging. Although during the past decade information technology has spread its root in almost all the service sectors of the country and libraries are also not the exception, however, this development is still restricted to bigger libraries and institutions. The small and middle level libraries could not keep pace with the advancement of information technology. The small libraries are either not computerized at all or making use of the CDS/ISIS software at the most to provide merely bibliographical details of library collection, rendering librarians inadequate to make any advancement.

Under the category of medium size libraries comes those that are subdivision of a bigger parent organization, having a collection running in thousands and with a budget which at the most is able to cater the user books and periodical requirements. A PC may be available in the library for official routine work but there are certainly little chances of procuring library software marketed by the commercial organizations from the library budget. However there is a desire and demand from the authorities and users for having better and quick library services. Merely providing the bibliographical information like small libraries, using cheaply available packages like CDS/ ISIS which are less, user-friendly and being marketed by Government supported organizations, there are little chances of after sale service. These neither serve the purpose of user nor of the library. Librarian has little or no

knowledge of complex programming languages to develop or amend the software like CDS/ISIS for catering to the user requirements.

This problem occurs in most of the medium size libraries the and librarian usually is not able to find a solution. However there is a solution to the above problem. In most such cases the parent organization normally has a separate computer division also, headed by a software professional with expertise in his field, having access to modern information technology and latest hardware and software. This division is fully capable of handling a project of computerized library information system development if necessary inputs and information could be provided from the library. However it is observed that there is a lack of coordination between these two important divisions. There may be various reasons for this including ignorance, indifference towards each others needs, ego clash, the psychological barrier of taking initiative and so on.

This paper goes into the details of how these two divisions of any organization can join hands for mutual co-operation. The expertise of both in their respective field can result into development of a computerized information system that will cater not only the need of the organization but if time and resources permit can result into the development of a good Library and Information System of commercial viability. It will further help in forcing the authorities to perceive the existence and importance of libraries. Library as a team will gain the confidence and support from authorities and in turn will be benefited by getting more and more information technology, equipment and training for further advancement of their services.

2 NEED FOR A COMPUTERIZED INFORMATION SYSTEMS

The library and information science profession is drastically affected by challenges of the computer technology, information in electronic form, digital information, the net, and also by the growth of sister information fields such as data processing, management information system, computer science, information science, artificial intelligence, multimedia and so on. Shift from collection management to information management, from ownership to access, change in nature, boundaries and structure of information hence call for a change in information work and services. There is a need of visionary plans and making services available within minimum response time, development of knowledge and conceptual ability proportionate to technology development, to cater the user needs effectively. This is possible only through a computerized information retrieval system.

Now most of the popular information sources like encyclopaedias, dictionaries, bibliographies, multimedia presentations, abstracting and indexing journals and their back volumes are coming on the CD-ROMs, available much cheaper than the hard copy of the same. The storage capacity is so high that a single CD-ROM can store millions of pages besides sound

and graphics that will be able to save lot of space of library.

With more and more documents getting published electronically and Internet resources growing at 18% a month, libraries of the 21st century will have to shift towards electronic means of acquiring, processing and disseminating information. To have a proper bibliographical control of such a vast sea of information and to provide a quick and reliable access to the electronic documents, libraries irrespective of their size and category will have to opt for a computerized information system to sustain themselves in the race. Even the medium size libraries, which have presently almost negligible collection of electronic documents, will be forced to shift toward this new media of information storage and dissemination in near future.

3 THREATS TO THE PROFESSION

"Library professionals would certainly lag behind or even be thrown out if they would not accept the challenge of the changing scenario of information services, wherein their role as "information providers" or "information brokers" would be most vital in the rapidly emerging information society".[3]

Library professionals are facing a threat of being eliminated today because of lesser awareness of the value of information, disinterestedness in developing cooperation and coordination in resource building and sharing of information. Financial constraints, poor communication linkages, lack of the required dedication, motivation and even knowledge in the available manpower, and lack of standardization in methods and procedures of providing information constitute some other threats before the library professionals. It is apprehended that a large number of library professionals will lose their jobs as their traditional services will not be required and will be replaced by persons equipped with knowledge. of modern information technology knowledge.

Authorities unwillingness and lack of recognition about the library staff information technology capabilities in handling a computerized information system, giving priorities to computer division instead for such works are also posing threats before the library staff in most of the medium size organizations.

4 ROLE OF THE LIBRARY PROFESSIONAL

`The technology is progressively replacing the old methods of information collection, storage and retrieval. Library is getting shaped on the Internet and the different networks around the world. In the 21st century most of the documents will begin to publish in electronic full text form and will be available online. Advances in multimedia applications will add new dimension to a librarian's job. Library professionals have to face the challenge of this changing scene. Time has come to understand that information technology is going to stay forever. The existing libraries will slowly become archival

in nature. Library professionals need to change their attitudes now. They should develop the capacity to evaluate the precise requirements of the users besides having knowledge of how to access the world resources available online. In other words, "they should be ready for coping with technology advancement and be able to integrate new information technological methods and devices into the mainstream of library and information systems and services".[4]

In this changing environment the librarian should be a highly skilled professional as processor and disseminator of the information, understanding precisely the user requirements. The main job is to serve the users with appropriate information without loss of valuable time. "The maintenance of librarian-user relationship will be the major challenges before the library and information professionals. Common bibliographic standards, protocols etc. will be regularly used by the library professionals to create standard databases for universal acceptance".[5]

5 HISTORY OF INFORMATION SYSTEM DEVELOPMENT IN INDIA

In India software development activities in the field of library and information field was started from 1964 with INSDOC pioneering in the field with development of an alphabetization program for Union Catalogue of Scientific Serials. Since then many efforts have been put in by various organizations for library information systems development but mostly limited to cater the in-house need of parent organization. Until the mid-seventies the major responsibilities for building of information resources were with the public funded institutions such as INSDOC, CSIR, DRDO, ICMR and many scientific institutions/organizations under the Govt. of India. These agencies were playing quite an active role in developing representative document collections and extending services to their users, but the concept of library and information systems and services as is understood today was hardly in existence. The scenario however began to change from mid-seventies with the establishment of National Information System in Science & Technology (NISSAT).

With the introduction of Microcomputers in Indian libraries in 1990's serious efforts were made in this direction for automating libraries and their networking. During this period some of the internationally tested software like CDS/ISIS, MINISIS etc. were also introduced to libraries and information centres in India. Use of these software gave comprehensive and clear ideas to the software developer regarding functions, facilities, integration, and structure of library and information retrieval systems and many libraries and information centres in India started making efforts for developing microcomputer based information retrieval system. Software for automation and networking of libraries were considerably improved in terms of functions, user-friendliness, efficiency, etc. during this phase.

Presently many good information retrieval packages are available for library automation and their networking with standard input format like CCF and MARC, and are being used by many big libraries in the country.

Till now about 35 library software packages for library automation have been introduced in India, either by Government supported organizations like Granthalaya, Suchika, Sanjay, Basisplus and Techlibplus, Catman, DELMS and Trishna or by commercial organizations like Archives, Librarian, Libra, Libris, Libsoft, Libsys, Nirmals and so on. A comprehensive list of library software introduced in India and comparative evaluation of them is given in a paper by Saxena and Srivastava paper [6]

The introduction and development of such advances in information retrieval systems resulted into the introduction of many data networks (such as NICNET, ERNET, SIRNET and INDONET) and library networks (such as CALIBNET, DELNET and INFLIBNET) in India and many of them are running successfully. INTERNET has changed completely the scenario of information dissemination. Now even daily newspapers such as the Times of India, Hindustan Times, Hindu, Business Standard, Financial Express etc. can be read at their web sites of the Internet.

6 STEPS FOR DEVELOPMENT OF NEW COMPUTERIZED INFORMATION SYSTEM (CIS)

6.1 Determining library expectations from CIS

The computerized information system should be able to take care of following aspects of library automation.

1. Manage all types of documents like books, periodicals, newspapers, maps, microfilm/microfiche, floppy disks, CD-ROM, audio/video tape and so on.
2. Creation of different databases like books database, members database, suppliers database, periodical database, purchase order database, acquisition database, budgetary control and circulation database, etc.
3. Minimize typing during data entry through predefined lists capable of amendment at any stage.
4. Backup and indexing module should be there.
5. Capable of working in multi-user network environment to enable users to perform online searches.
6. The software should be developed with modular approach, each module able to work independently.
7. Compliance with international and national standards for bibliographical entries such as CCF/MARC format, AACR2, & DDC etc.
8. Must have flexibility of customization to a certain degree.
9. Search engine must support Boolean functions like AND, NOT, OR that can help the user narrow down his/her search.
10. Serials control mechanism especially should be able to keep track of

the date when periodicals are expected & generate reminders if they were late in arriving or for missing issues.

11. Provision for built- in on-line calculator for performing numerical functions like currency conversion, etc.
12. The system should be able to generate reports like list of daily activities, borrowers list, lists of transactions on periodic basis, list of defaulters, fine collected, new books entered during a specific period, catalogue cards & mailing/spine labels generation as per the library requirements with flexibility of making any modifications.
13. Maintain a list of public and weekly holidays to decide the date of return accordingly. There should be flexibility to make any changes to this list.
14. The utility module should be able to export/import data from/to other data sources through the ISO 2709 format using CCF/MARC tags.
15. Must have facility for compiling a subject term dictionary (STD) for retrieving the documents based on keywords.
16. Online public access catalogue (OPAC) facility must be there and should be most user friendly.
17. Provision for automatic data protection due to sudden power failure and password to avoid unauthorized use of the master data file.
18. Must be able to take care of SDI/CAS services through generation of weekly/monthly list of new arrivals, contents of periodicals, etc.
19. It should make use of Relative Database Management System (RDBMS) to avoid duplication in data entry.
20. Provision for copying one record to another location partially or fully in case of duplication of documents should be built- in.
21. Database management facility of appending, editing, browsing, removing, searching and printing of record(s) of different databases must be present.
22. It should be Compatible to Y2K problem and with other Database Management packages like dBase, FoxPro, etc.

6.2 Feasibility Study

Feasibility study will be done jointly by the librarian and IT professional with the permission of authorities to study the requirements from CIS, problems or deficiencies in the existing system, associated cost with the development of new system and the associated benefits. A cost-benefit analysis will be carried out and a feasibility report will be prepared. This report will be submitted to the authorities for their final consent.

6.3 System Analysis and Design

After getting consent from the authorities, IT professional will analyze the system in terms of hardware/software availability. He will prepare a data flow diagram based upon the information and requirements given by the library professional. He will study the inter- linking of different components

of the system and will accordingly design a logical diagram to decide the flow of work in the computerized information system.

Choosing the necessary platform and language to develop the system is one aspect that IT professional will have to decide very carefully. He has to understand the library staff and end-user knowledge and ability towards the chosen platform and language. These exercises will be carried out by IT professional with active support from the librarian. Once the phase of developing logical flow diagram is over, it will be only a matter of time to convert into the artificial language of computer, i.e. to develop the program. IT professional will take his time in developing the system that is able to cater the requirements of library. He may require any sort of library staff help and library professionals, from his side must be ready for any clarity, input or help required from time to time without any irritation. All these exercises will finally result into development of a computerized information system.

6.4 Trial Phase

Development of the new information system is incomplete unless it is exposed to the practical environment. This is the most important phase and the role of library staff will be crucial at this stage. They will have to check the system in actual practical environment on a trial basis running parallel along with their manual system. It will be a time consuming exercise and library staff will have to show patience and determination towards the extra burden of work. A proper record of observations during actual running of the system will have to be maintained. Any problem, deficiency of any kind will have to be noted down and reported to the IT professional who in turn will study and redesign the system to overcome the discrepancies. The redesigned system will again be tested in library. This process will continue until a complete error-free system is not achieved.

6.5 Benchmarking

"The dictionary meaning of benchmark is a standard or point of reference. Benchmarking is the process of identifying, understanding and adopting outstanding practices from an established source of repute to help improve performance. It helps in attaining the target, improving process, increasing efficiency, customer care, customer satisfaction, continuous improvement and generating and promoting world class performance". [7]

Librarians and IT professional must jointly benchmark the newly developed information system with the one already existing and running successfully in the market to understand the gaps or weakness in the software and implement the action plan to improve the system. They should carry out a SWOT (Strength, Weakness, Opportunity and Threat) analysis of the project. At this level some senior library professional who is pioneer in automation work of libraries can be consulted for review or check the

new developed system to get an error free, user friendly computerized Information system of own.

7 FUTURE PLANS

The newly developed information system now can be implemented in library and the library operations can be automated using the systems at this stage. However, the library and IT professional must not stop their efforts after achieving this goal but continue their work for further refinement in the system and to make provision for following additions in near future.

1. They should plan to introduce the bar code technology to the system. Bar code technology can reduce operational costs and time to nearly 50% apart from giving time to counter staff to pay more attention to the patron's needs. It saves money as well as manpower. It minimizes the maintenance efforts and improves speed, accuracy and efficiency with highest degree of reliability resulting in improved relationship between the borrowers and the staff.
2. Efforts should be made to make the system available on different platforms, i.e. operating systems like DOS/LAN/WINDOWS/UNIX/ XENIX, NOVELL/ORACLE, etc.
3. System should be prepared for multilingual support using the ZIST card.
4. They should plan to convert library into a complete digital library.
5. Efforts for library networking can be initiated.

8 CONCLUSION

Librarians must need to overhaul themselves drastically if they want to retain their identity in a rapidly developing information society. Otherwise, the day is not far off when IT professionals will catch hold of the jobs available for library professionals as on date. One can notice that in big establishments IT professionals have already replaced library professionals for the post of information manager/officer. We must not only try to retain our present status but also progress ahead for catching again our lost positions.

Although many library automation systems are already in existence , efforts must be made to develop an information system of our own with our own resources. This will not only be as per the actual requirements of the institution and help to automate the library but also give lot of job satisfaction to the library and IT professional. It will further help in forcing the authorities to perceive the existence and importance of libraries. Library as a team will gain the confidence and support from authorities and in turn will be benefitted by getting more and more information technology equipment and training for further advancement of their services.

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RETROSPECTIVE CONVERSION: SOME METHODS

R. G. Dharampurikar*

1 INTRODUCTION

In 1960s computers are introduced in India,. and efforts of computerisation started during the period. In 1980s, many of the libraries and information centres started using computers for their work. Due to some reasons library automation did not progress well. However introduction of microcomputers in 1980s brought speed in library automation.

Purchasing of computer in any institute whether an academic or Government is not difficult since funds are being made available by Government agencies, and other Institutions underUGC. Introducing different schemes. The difficulty lies in how to go for library automation. What actually has to be done to automate the library? Out of so many problems one problem is retrospective conversion. After making available everything for library automation what else remain i.e. retroconversion. Librarian in isolation may dream that a magic should take place and entire data should convert in computerised form. But how it is possible.

One of the basic requirement of library automation is to create database of entire collection. This is must for Online Public Access Catalogue (OPAC) as well for circulation systems also. (Some of the librarians think that why circulation system requires database of library collection. Only Accession numbers and users database is enough for the same. This is the separate topic of discussion).

Converting entire collection of older libraries with big collection into machine readable form is a difficult job. But for new libraries this will not be the problem.

2 DEFINITION

According to ALA Glossary of Libary and Information Science "the Process of converting to machine-readable form the records in a manual or non-machine readable file that are not converted through day-to-day

* Assistant Librarian, SGGS College of Engg. & Tech., Vishnupuri, Nanded-431 606

processing".

According to Harrolds Librarians' Glossary, "the partial or complete conversion of an existing catalogue into machine-readable form, as opposed to converting records created currently".

This term is introduced in 1960 by Library of Congress with a Pilot Project. And now this term has captured different names like retrocon, data conversion etc. Retroconversion relates to the creation of bibliographic databases.

3 TYPES OF RETROSPECTIVE CONVERSION

1. Full Conversion : In this type all available collection of library is converted in computerised form. Some libraries are appointing outside agencies for this work. Some libraries are sparing one or two staff full time for this job.
2. Partial Conversion : This method suggests to complete the job of retroconversion by selecting specific library collection. For example:
   1. Document that are in circulation (Active collection).
   2. Documents of a specific subject.
   3. Documents of a specific type i.e. reference books, rare books, text books, bound periodicals etc. A/V materials etc.

4 METHODS OF RETROCONVERSION

1. Feeding the data from existing catalogue: Many libraries are using the techniques of keying the data from existing catalogue. Generally colleges and university libraries keep up to date card catalogue. But the disadvantage of this system is that card catalogue do not provide all the information that is needed to fill in the machine readable records. Its advantage is that it takes very less time compared to collecting information from physical documents.
2. Feeding the data from documents: By picking up each document in the hand and after extracting the required information from it the data are entered. This method is very time consuming but the database created with this method will be very correct. But it disturbs the shelves, increases the work of documents movement from stack room to computer labs and again from labs to shelves. This cannot be possible with limited staff.
3. Retrospective conversion from networks: With the help of networking one can download the information about documents which are present in our library. The libraries which are connected to network must have followed the rules of same cataloguing codes as that of ours. This is normally ensured by following the same MARC format or record structures etc. in a particular library.

4. Retroconversion from OPACs: Now a days few libraries are coming together and they are designing their databases they are forming their networks. Some databases offer bibliographic records for retroconversion for participant libraries. The example of such service is Online Computer Library Centre (OCLC).
5. Retroconversion from CD-ROMs databases: One step ahead to OPACs is that the databases are transferred to CD-ROM media. One can use this media several times and can download the data because it is quite easy to carry and use.
6. Retroconversion using OCR: Optical Character Recognition (OCR) technology has become very famous in libraries. This methods have bypassed all above methods. This method is some what costly method. This method recognise types or printed data only. Firstly the data to be entered is scanned to produce an image of the input page. Secondly, a OCR software is used to convert the scanned image into ASCII code, i.e. There code in which the computer process textual information. OCR technology can be used either to scan the existing catalogue cards and the title page of a documents. However, the crux of the problem is to develop intelligent solftware to recognise the various bibliographic data elements and assign tags codes and generate ISO 2709 record. Much of the work in this area is at research level and no completely dependable commercial software is available.

4 PROBLEMS IN RETROCONVERSION

1. Human involvement in this process is highly timer consuming, costly, and disturbs the routines of library.
2. Networks, OPACs or CD-ROMs is also not an easy or efficient solution.
   a. Information available on such media should be dependable
   b. Restriction of Cataloguing Code.
   c. Restriction of MARC Format
   d. Even after matching everything with above slection rate (hit) should be high to justify the cost and effort.

There is no escape to retroconvestion for making library automated. The methods which are suggested above are not hundred percent useful. Continuous research is essential to bring hundred percent satisfaction.

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DESIGN AND DEVELOPMENT OF COMPUTERISED CIRCULATION DATABASE

K Somasekhara Rao*
G.A.Prasad Rao*

ABSTRACT

Out of all library house-keeping activities the circulation section is closely connected to users and the nature of work is heavily repetitive. DBase III plus package is choosen to develop a Library Software package for circulation activities. The package is divided into three modules.namely, Book management menu, Member management menu and Circulation menu. Each module is further sub-divided to attend specific functions. The document management menu comprises of new document entry, document details browsing, list of document records, document details reports, document details query and document summary report. In query menu various access points are included to satisfy the approaches to books by author, title, publisher, call number, etc.. In new document entry the current date and next available accession number appear by default. The member management menu includes teachers, research scholars, students, non-teachers and others. To execute all these menus, help facilities are provided. At the time of issue the system display only the books that are available for issue in database. To know the particulars of the issued book, a separate provision is developed. So, to whom a book is issued, when it is issued and the due date of the book. At the time of discharge of books the system will calculate the fine for overdue books to be collected from the borrowers automatically. The database is designed keeping in view the circulation activities of college and university libraries.

1 INTRODUCTION

The application of computers attained importance because the circulation section operations are most repetitive in nature. An attempt has been made to develop a software package for circulation activities in libraries. Out of the available software packages dBase III plus is properly applied and known to many library professionals who have computer knowledge. dBase III plus package is simple and menu driven so, it is selected to develop this package of circulation activities.

This package is aimed to shoot the needs of college libraries but it can be equally applied to big libraries, where the collection runs in lakhs,

* Associate Professor, Department. of Library and Information Science. Andhra University.
**Research Scholar, Department. of Library & Information Science., Andhra University. Visakhapatnam-530 003.

provided the system has sufficient memory capacity required. Therefore, this package can be used to all libraries irrespective of their size and type. To develop software package for circulation system , dBase III plus is selected as it suits for various house-keeping activities such as database creation, database design and development etc..

A centralised collection of data is called as database. Collection of related data items of entities having the same attributes may be referred to as a database. Database system is a general software which is mainly used for data storage and retrieval. This software servers IS a base for application development.

A database management system or DBMS is a group or collection of programs that gives the user access to a collection of information stored as data. This collection or pool of information is called the database. A database is an organised collection of data. In the case of a computer, it is stored electronically. The office file cabinet is an example of database. It holds information in the form of files arranged topic wise. If you open a drawer and look up the file of Mrs. Bharathi's account, you are searching in a database.

This database is designed into three modules - Book management module (Fig 1) Member management module (Fig 2)and Circulation module, each module is further sub-divided as shown in tables:

The document management menu comprises of (i). New document entry,(ii).Document details browsing, (iii).List of document records, (iv).Document details reports, (v).Document details query, (vi).Document summary report. The new document entry comprises 22 fields. The information in these fields is fit and suitable to answer various queries from user as well as library professionals.

The Member management module is divided into six sub-menus as (i).new member entry, (ii) membership browsing, (iii).membership listing, (iv)membership query, (v)membership report, (vi).summary report. In the new member entry sub-menu, the details of borrower such as status, name, father's name, Address, books entitled to borrow, date of borrow and ceased date of borrowship are entered. These details of borrowers are proved sufficient to attend the routines in circulation system.

The last module of this database, the Circulation module comprises of seven sub-menu's as (i)charging, (ii)discharging, (iii)Listing (iv) circulation report, (v).circulation query, (vii).reminders, (vii).summary report. The report sub-menu of this module is divided into two—today's report and Particular period report. This facility helps the library staff to appraise the library authorities in many ways.

Once a database is designed ,one can manage it by giving precise instructions. The paragraph of the designed database is given in Appendix

I Managing a database primarily involves the following tasks:

2 Add new record to a database

3 Rearrange or sort database into some meaningful order
4 Search the database for various types of information
5 Print data from our database on to formatted reports
6 Edit a record in a database
7 Delete data from the database.

To open the package, type "DO LMENU". Since it is developed as user friendly the mode of operation and instructions are given on the screen itself.

2 IMPORTANT FEATURES OF DATABASE

1 The acquired books are to be added to new document entry sub-menu, in this menu the accession number and date of acquisition appears by default, so also the nature of book field which is a logical field, unless it is filled in either with O or R (Others or Reference) the cursor hangs over there.
2 The document details browsing sub-menu and list of document records sub-menu appears same, but in earlier menu the records can be viewed and edited and in later sub-menu the records can be viewed according to the accending order of accession number.
3 Reports can be generated in four ways to suit different administrative purposes. These comprise of entire document report, where the entire database is printed. In the same way reports can be generated by particular subject, publisher and author.
4 In document details query sub-menu, a facility is available to know the document of database by call number., title, subject, author and publisher. In all these sub-menus "help" facility is provided for the convenience of the user.
5 The document summary sub-menu is the last menu of the Book Management Menu, whereas particulars of the documents acquired, available, lost, etc. are provided, including the amount spent so far to acquire the books and the space available in the hard disc for documents to be acquired in future.
6 To enter a new member to Member Management Menu, the member status should be entered first. By default the system gives next available code number, current date for registration and number of books can be issued. It includes all necessary particulars to attend administrative queries. The field "sex" is a logical field, unless it is filled in, the system hangs over there.
7 In membership browsing menu, the records can be edited, such as change of address, telephone number, etc..
8 In members listing menu the details of the borrower are given in a tabular form and also the addresses of members.

9 To know the members in our database, a facility is made available to know the members either by member code wise, department wise and status wise. In all these menus help facility is provided.

10 In member reports, the reports can be generated either total or particular. In total reports the reports can be generated member code wise, department wise and status wise. This procedure is more or less same in particular reports also. In all these reports help facility is provided.

11 The member summary report is in a tabular form, depicts particulars according to the status of the members and also their totals. It also provides the number of members that can be added to the database.

12. In charging menu, the code number of the member should be entered, here a special feature is provided in help menu where the details of member code, name and books already issued and entitled for issue. Therefore, by looking at this help menu one can easily come to know the number of books issued to a particular borrower, etc.. To issue a book for a borrower help facility is provided, where a list of books available is displayed for issue.

13 To discharge a book, the member code should be entered and the system displays all the books that are borrowed by a member in a tabular form. The circulation number of the book should be entered. The system will take care of the rest of the operations and calculates fine to be collected from the borrower.

14 The total particulars of the circulation are given in listing of circulation menu. It gives member code, call number. of the books issued and issued date of issuing the boks

15 The circulation reports can be generated for current date and particular period. These reports gives code number,., member, name, department, status, date of joining, date of borrowship expiry and sex of the member.

16. To know particulars of the questioned documents and members, a separate menu is provided. In book query menu the call number of the book is to be entered. Here, help facility is provided and call number. should be entered. Then the system gives necessary particulars of the book and its availability. If a book is not available, the system provides to whom the book is issued and his particulars along with date of return. In member query menu the details of books issued to members are given in a tabular form and a warning message appears for ceased borrowship.

17 To send reminders for overdue books the necessary details are given in a tabular form in reminders menu.

18 In circulation summary report the details are provided by current date, current week and current month. It also displays the number of circulation records those can be added further.

CONCLUSION

The prospects for computerised circulation systems are, therefore, bright in college and university libraries in the years to come. Out of all library house keeping activities, the circulation system closely connected with library users. The introduction of computers in circulation activity is not expensive and relatively cheap in comparision with facilities that are available. It is one time investment and the running cost is marginal. Therefore it is suggested that computerised circulation systems would prove useful for college and university library systems.

APPENDIX 1

PROGRAM OF THE DESIGNED DATABASE

```
**LMENU.PRG
   *MAIN MENU FOR LIBRARY MANAGEMENT SYSTEM
   SET TALK OF
    .....
   @  3, 16  SAY "DEPARTMENT OF LIBRARAY AND
INFORMATION SCIENCE"
    .....
   @ 12, 24 SAY "ENTER PASSWORD..." GET PASSWORD
   READ
   .....
   @ 16,27 SAY "SORRY..., WORNG PASSWORD."
   @ 20, 2 SAY " "
   .....

   DO WHILE LCHOICE#4
        .....
   TEXT
                1. BOOKS MANAGEMENT MENU
                2. MEMBERS MANAGEMENT MENU
                3. CIRCULATION MENU
                4. QUIT
   ENDTEXT
   *.....WAIT FOR ANSWER
   @23,1 SAY "ENTER YOUR CHOICE (1-4) :" GET LCHOICE PICT
"9" RANGE 1,4
    .....
   CASE LCHOICE=3
      DO LCIR.PRG
   ENDCASE
    .....
   CANCEL

**LBENT.PRG
   *ADD NEW BOOKS
   USE BOOK.DBF
   INDEX ON BCODE TO BOOK
    .....
   @ 11, 46 SAY "SUBJECT-1 :"
```

```
    @ 11, 58  GET  BOOK->SUBJECT1
     ..............
    REPLACE NBOOK WITH UPPER(NBOOK)
    ENDDO
    NB=" "
    IF NBOOK= "R"
    NB="REFERENCE"
    ELSE
     ..............

**LMEM.PRG
    *MENU FOR MASTERING MEMBER MANAGEMENT MENU.
     ..............
    MCHOICE=0
    DO WHILE MCHOICE # 7
     ..............
    @ 4,0  SAY ULINE
       TEXT
                    1. NEW MEMBER'S ENTRY.

                    2. MEMBERSHIP BROWSING.

                    3. MEMBERSHIP LISTING.

                    4. MEMBERSHIP QUERY.

                    5. MEMBERSHIP REPORTS.

                    6. SUMMARY REPPORT.

                    7. RETURN TO MAIN MENU.
    ENDTEXT
    @ 23,1 SAY "ENTER YOUR CHOICE (1-7) :" GET MCHOICE
PICT "9" RANGE 1,7
    READ
    .....
      CASE MCHOICE=6
         DO LMSUM.PRG
          .....
      ENDCASE
    ENDDO(WHILE MCHOICE # 7)
    *———WHEN DONE, RETURN TO MAIN MENU.
    CLEAR
```

```
    RETURN

    **LCREP.PRG
            *MENU FOR MASTERING CIRCULATION DETAILS
REPORTS.
    *CALLED FROM CIRCULATION MANAGEMENT MENU.
    *————————SET UP LOOP FOR PRESENTING REPORTS SUB-
MENU.
    USE MASTER.DBF
    INDEX ON MCODE TO MASTER
     .....
    @ 4,0  SAY ULINE
    TEXT
                1. TODAY'S CIRCULATION REPORT.
                2. PARTICULAR PERIOD REPORT.
                3. RETURN TO SUB-MENU.
    ENDTEXT
    @ 23,1 SAY "ENTER YOUR CHOICE (1-3) :" GET CRCHOICE
PICT "9" RANGE 1,3
    READ
     .....
    .....
    **LCQUE.PRG
    *MENU FOR MASTERING CIRCULATION QUERY.
     .....
                    1. QUERY ON BOOK .
                    2. QUERY ON MEMBER
                    3. RETURN TO SUB-MENU.
    ENDTEXT
     .....
    .....
    ENDDO (WHILE LQCHOICE#3)
    CLEAR
    RETURN

    **LCQBOOK.PRG
    SET SCOR OFF
     .....
    DO WHILE CODE#" "
     .....
    @ 12,10 SAY "ENTER CALL NO WHOSE BOOK QUERY IS
REQUIRED.." GET  CODE
    .....
```

```
SEEK CODE
.....
SET COLO TO W+*
@ 19, 21 SAY "   THIS DOCUMENT IS LOST..."
@ 21, 21 SAY "END OF QUERY FOR THIS DOCUMENT.."
SET COLO TO
WAIT" "
.....
IF .NOT. BYN
@ 18, 25  SAY "DO YOU WANT ANY MORE DETIALS"
@ 19, 25  SAY "REGARDING THIS BOOK...."
REPLAY=" "
.....
.....
USE MEMBER
.....
@ 17, 18 SAY "INFORMATION REGARDING MEMBER HAVING
THIS BOOK"
.....
@ 21, 42  SAY "DATE OF RETURN :"
@ 21, 60  GET RET
CLEAR GETS
ELSE
SET COLO TO W+*
@ 19,23 SAY "THIS IS END OF QUERY OF THIS RECORD.."
SET COLO TO
      .....
CLEAR
.....
```

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INFORMATION PRODUCTS AND SERVICES RESOURCE GENERATION

K. Somasekhara Rao,*
C. Nageswara Rao**

ABSTRACT

Communication network and information is mentioned in the introduction . Information is considered as goods and services and explained in relation with the laws of demand and supply. Impact of information Technology in the development of information services and products is explained. The relation between the information technology and Library and Information Centres is explained in detail. Introduction of Electronic media and its influence on Libraries and Information centres is realised. At this stage traditional methods of information availability and Electronic media are discussed. Changing trend of library and information centres and the sources of finance is discussed. The funding agencies are expressed their limitations in providing finance to the libraries and information centres. and suggested self developed/generated finances. To generate resources. main emphasis is given to pricing of Library and Information Science products and Services. Meaning and Characteristics of LIS Products are discussed thoroughly. Various types of products are explained. Pricing of IS Products, Methods of Pricing, Factors of Pricing , Objectives of Pricing are discussed in detail. Various patterns of Pricing LIS products are explained to generate resources.

1 INTRODUCTION

To understand industrial and economic potential, a country's telecommunication system will be used as a parameter. In other words, density of communication network or the amount of information transmitted is taken into consideration to understand a country's development. Information is considered as a resource like goods and energy. So, the laws of supply and demand will equally apply to information. Information can not be consumed like in normal products but the use of information generates new information. So, the use/usage of information will increase its value everytime.

2 IMPACT OF IT IN DEVELOPMENT OF INFORMATION SERVICES AND PRODUCTS

Information is available in abundance but its value depends upon its relevant use. The gathered information attains value only when huge amount of

* Associate Professor, Dept. of Library & Information Science, Andhra University. Visakhapatnam-530003
**Research Scholar, Dept. of Library & Information Science, Andhra University. Visakhapatnam-530003

money is spent in terms of its production, processing, storage, transporting and arranging . For all these activities a lot of manpower, and equipment are required. To communicate the information, these things can not be avoided. Information is useful only if it is properly structured. Information is being continually consumed or changed. The continual process can appear in different ways: raw material, an Auxiliary material, semi-manufactured products or an end product. In the process of recycling of information, information technology is playing a vital role. By applying computer software and communication software, the information can be processed the way in which a user requires it. Therefore, the libraries and information centres have to invest reasonable amount of infrastructure to develop information products and services. Though most of the libraries fall under non-profit organisations, still these libraries have to fix price for their services and products for sustenance at least.

3 ELECTRONIC MEDIA AND ITS INFLUENCE

The developments in science and technology have paved the way for various changes in libraries, particularly availability of information in different media. With the advent of information technology, the shape of traditional librarianship is rapidly changing in many respects. In traditional librarianship book form print form is considered as an important media to store information. Therefore, this phenomena solved many problems of traditional librarianship, particularly provision of exact information. To make use of this situation totally, suitable marketing techniques should be employed.

4 LIBRARY AND INFORMATION CENTRES THEIR RESOURCES

Library and Information Centres are coming under increasing pressure to continue their information products and services. A stage has come to retrospect whether the entire information storage retrieval, dissemination process is fulfilling its objectives of satisfying the information needs of the users. Besides this problem, funding agencies to Library and Information Centres have expressed their limitations in providing funds and further suggested to self development of resources. Therefore, the library and information centres have to develop products and services that are highly useful to the users. So reasonable pricing of information services and products is one of the methods of generating financial resources.

A product is a combination of physical characteristics as well as the people think and feel of it. It is understod as a bundle of potential utility. The success of the library depends upon the quality and the excellence of its products and services. There is simply no substitute for top notch product what inferior or inadequate design will scuttle the most meritorious planning of the marketing strategies. Market audit helps to understand the present and future prospects of a product.

According to Kotler a product is anything that can be offered to a market to satisfy a need. It includes physical objects, services, persons, places, organisations and ideas. The activity which is being attended to support the users' interest can be marked as library product. The library products can be grouped as mentioned below:

1. Library services
2. Library Programs
3. Library Materials (Library Collection)

5 CHARACTERISTICS OF LIBRARY PRODUCTS

5.1 Quality

Defining quality of a product is difficult but understanding the products quality is somewhat easier. For library products, high quality is essential to satisfy the potential users. To achieve this, understanding the user's requirement, changes in the society, developments in communication and technology (Electronic Media), etc. are very important.

5.2 Feature

It refers to contents of the product. What sort of information is included in the LIS products. Besides the core information, the product carries other information and it definitely attracts user's attention.

5.3 Style

Almost all the LIS products and services are designed and developed to suit individual interest as well as interests by groups. Style is more important where the products are developed for groups, since they are intended to be used by many users. A standard/accepted format should be followed. For example, the use of the ISBD/CCF for preparation of abstracts/ bibliographies can be understod well by the users.

5.4 Publicity

This is very important for LIS products, especially in Indian context. Most of the materials acquired in libraries are never receiving required publicity to enable the users to make use of those materials. So, modern techniques particularly information technology may be employed for giving popularity to the products and services available in libraries.

5.5 Package

To attract the users, attention, proper packing and get-up to the information product is essential.

6 TYPES OF LIBRARY PRODUCTS

6.1 Core Products

It is a product that the individual consumer wants. It is often tangible such

as entertainment, wisdom, self-knowledge or spiritual fulfilment but librarians do not fulfil these needs directly. These tangible articles are provided in the form of services and materials.The core product is the basic good or service purchased, aside from its packaging or accompanying services. Usually, we purchase a product because of its core benefits.

6.2 Tangible Products

Beside core benefits of a product, it provides other benefits. For example, the core benefit of a newspaper is current information and the tangible benefits of this product are use newspaper for packing, recycling of paper, etc.

6.3 Augmented Products

The augmented product is a good or service or idea by its accompanying benefits. In these products, the consumer receives total benefits and costs.

7 PRICING LIS PRODUCTS

Once the product is ready, it should reach the user through proper distribution channel. Then the products gets the real value from users. In exchanged economy, the value of the product is expressed in terms of price. The product price is nothing but what the user give up in order to get the product. Pricing is one of the important decision areas of marketing. Price and sales quantity together decide the revenue of any business. In competitive market, pricing area is very crucial in marketing management. Even the slightest mistakes or wrong decisions may cause damage to the business. This concept is still important in non- profit organisations like libraries.

6.4 Meaning of Price

Price is the exchange value of a product. Normally price is expressed at two levels, i.e. utility and value. Utility is the generic property of a product to satisfy a needs of a user/consumer. Value is the quantitative worth that the library user/consumer attached to the library product, when the user buy an augmented product (the core product and its accompanying benefits). The user give up something express to basic price. The concept of price to consumer and markets is not same. For consumers, the price of a product is for money paid towards its utilities and benefits. Based on the utilities, the consumer fixes priority among the available products and services. For example, an active researcher would not mind to make use of E-Mail, Internet, facilities to accomplish the research work despite the availability of other important products. The normal user of a library would prefer to use conventional service like cataloguing, bibliography, abstracting, indexing services, etc. which are available either free of cost or low cost.

6.5 Cost Vs. Price

There is difference between cost and price of information products. Cost is

defined as "The cost to produce a product" whereas price included - Direct Cost, Indirect Cost, Personnel Cost, Profits and intangibles. In non-profit organisations like academic libraries, the price of a product is the cost of the product.

7 METHODS OF PRICING/PRICING ELEMENTS

In market economy the price is viewed in different methods and can be divided into two lements:

1. The Basic price or commodity price
2. The premium price

The basic price is estimation made by marketers to a core product. The premium price is what user will pay for additional benefits of augmented product.

The difference between the basic price and premium price is vary between products. For essential commodities both the prices are same but for commoties like refrigerators, computers, T. V.'s etc., a considerable variation in prices exists. Markets has to spend money on research and product development, on establishing and managing channels of distribution, and on advertisement, promotion, personnel, selling and publicity to stimulate or increase in the quantity of products demanded by users.

8 FACTORS INFLUENCING PRICING OF LIS PRODUCTS\SERVICES

Two categories of factors are identified which influence the price of products. Factors within the organisation are termed as internal factors and outside the organisation are known as external factors. In both these factors, both economic and psychological factors are identified.

8.1 Internal Factors

1. Utilities of the library/Information Service Centre.
2. The features of library products.
3. The Library is profit or Non-profit organisation.
4. Price elasticity of demand of product.
5. The stage of product on product life cycle.
6. expenses included to develop library products/services.
7. User status and their interaction with price.

8.2 External Factors

1. Characteristics of library and Information product markets.
2. Library user attitude and behaviour to a given product.
3. Bargaining power of user.
4. Bargaining power of supplier.
5. Library pricing policy.
6. Influence of parent organisation to which the library or information centre is attached.

7. Related legal aspects.
8. Other aspects to fix the price.

8. OBJECTIVES OF LIS PRODUCTS-PRICING

1. Profit is one of the main objectives in pricing. In case of LIS products, profit is not always the main issue in fixing price but products are need to be charged at least to meet the minimum cost price. In LIS field the supporting institutions agencies are not providing full budgetary requirements and advises to explore the ways to develop own resources. Therefore, charging for library services is attaining importance.
2. The library should meet the community interests through its price policy. Before going to price a library product or service, a commendable thought should be given to whom it is intended, particularly their nature, acceptance to price, interest to product, etc.
3. Pricing policy depends on the policy of library. So price variations for same products can not be avoided. In public library all most all the offered services are available at free of cost. But some of those services in academic libraries and special libraries are priced.
4. Entering new markets or development of new product. To design and develop LIS products-besides the existing products, a systematic pricing policy directs us whether we go for a new product or not.
5. Competition among other library agencies. The price of the product which is being produced by more than a library should be same or should not have more variations. The user should not feel adversely to the price variations. For certain reasons the price variations for the same products exists.

9 METHODS OF ASSESSING PRICE OF PRODUCT

Based on the product\service the library has to assess the cost for it. To find out cost of a LIS product or service the following methods are used:

1. The foundation : A programme budget.
2. Cost finding.
3. Pricing and Demand.
4. A three dimensional look at pricing.
5. Impact of Technology.

According to Kotler, the costs to be added to production cost, they are effort costs, psychic costs and waiting costs.

a. Efforts costs e.g. cost of book, material, cost for processing books, operational costs, etc.
b. Psychic costs e.g. personal, customers anxiety, etc.
c. Waiting costs e.g. user wait till the material is available.

10 PRICING PATTERNS OF LIS PRODUCTS

In Library and Information centres, the following are fee based services.

Document delivery, on line database searches, traditional research, specialised training and consultation, translations, verification, reservation of books, etc. The following are various patterns to charge the said services, thereby the centres may generate resources.

10.1 A Token Fee

A charge that prevents abuse of the service and fix a kind of responsibility on user. Charging the user, the postal expenses to provide the service, but not for services and products.

10.2 An Uniform Fee

Established charge for each service on the basis of unit cost of service, example preparation of Abstracting and Indexing services, etc.

10.3 Standard Fee

In appearance, it is like uniform fee but in this case the user agreement is also taken.

10.4 Variable or Incremental Fee

In this mode charges levied on basis of each transaction but varying with the volume or production of services provided or with the costs incurred, when an additional unit of service is provided. While the most rational, this method of cost analysis is difficult and time consuming to apply to information service settings.

10.5 Total Cost Recover

This include profit besides the cost of the product.

But of all, the total cost recovery method is not suitable to fix the fee for services and products atleast in Indian context.

11 CONCLUSION

Though there is significant difference between a commercial product and a library product, still the economic principles are useful to understand various concepts of information marketing. In ordinary marketing the producer gets revenue for the product from consumer. In a way the producer gives away the product so also the consumer gives away money. In information market, in many cases the same information is being used, supplied to users. Inspite of this phenomenon the economic principles, pricing techniques, pricing patterns are equally applicable to LIS products and services. The existence of LIS centres is questionable in future, if their services and products are not well received.

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ROLE AND IMPORTANCE OF DATABASE CREATION IN THE TRANSITION TO EMERGING ELECTRONIC INFORMATION ERA: A CASE STUDY

D K Tewari*
Rajpal Walke*
S M Dhawan*

ABSTRACT

This paper gives an account of retroconversion activities undertaken in the NPL Library. It describes the approaches undertaken for the purpose and discusses their usefulness. This case study highlights the role of library databases in the transition of traditional library to electronic era.

1. INTRODUCTION

Now a days, libraries world over are increasingly using computers and related information technologies to improve efficiency and effectiveness in providing their information services. These technologies have come to catalyse information scenario and have led to development of library networking for resource sharing. Libraries are seeking cooperation at local, regional, national, and international levels for implementing resource sharing programmes. Databases form the basis for sharing library resources in the distributed information environment. In this context, creation of databases, particularly of cataloguing records, is perceived as a pre-requisite in the transition to electronic era. At the National Physical Laboratory Library, an attempt has been made for creating a database of cataloguing records of its monographs. This paper gives a detailed account of retro-conversion activities undertaken for the purpose. It also debates various approaches undertaken for the purpose and discusses their usefulness.

2 NPL LIBRARY

The National Physical Laboratory (NPL) is the earliest the chain of laboratories set up under the Council of Scientific and Industrial Research (CSIR). It was established in 1950 with the objective of strengthening and

* NPL Library. National Physical Laboratory, Dr K. S Krishnan Marg, New Delhi 110012

advancing physics based research as well as physics based technologies in the country. It has since emerged as a leading research organization in the country.

In organisational infrastructure of the Laboratory, NPL Library constitutes as its important component. The Library was created in 1950 with the express purpose of providing information support to scientific community in the Laboratory for research and development work. It has since developed a rich collection in physical sciences with particular emphasis on physics literature. Monographs and periodicals constitute the bulk of its collection.

3 METHODOLOGY

3.1 Software Selection

CDS\ISIS has been used for database creation. It is a versatile software. It comprises a set of programs which offer functionality and performance in database creation. The specific reasons which influenced its choice for the purpose are stated as follows;

1 CDS/ISIS allows for efficient use of the memory space on disc since it provides for variable field length fields in database creation. Comparatively, other database management systems do not offer such a feature.

2 It offers powerful search features for precision and recall.

3 It is able to create and manipulate an unlimited number of databases simultaneously.

4 It offers integrated programming facility using Pascal language. It helps in developing specialized applications.

3.2 Data Capturing

Retrospective conversion of library holdings in machine readable form started in 1996. NPL Library did not have the sufficient manpower to carry out this project in-house. It was, therefore, decided to engage an external agency for the purpose. For reasons of performance and quality, we decided that the external agency would be engaged for inputting data in respect of descriptive portion of cataloguing records only. The remaining portion of cataloguing record pertains to subject headings. Since it requires certain amount of professional skill and expertise to verify subject heading data for accuracy and comprehensiveness, it was decided to input this data in-house only.

For capturing data for the purpose of retro-conversion, three options were considered. These include:

1 Capturing data straight from the document

2 Capturing data from accession register

3 Capturing data from catalogue cards

Capturing data straight from the document is indeed a very useful option. It permits capturing data for the purpose as accurately and comprehensively

as possible. However, such an approach was not considered feasible since it would amount to withdrawing documents for circulation, thereby leading to disruption in the library service to users. Capturing data from the accession register was also not found feasible since it does not offer complete data for the purpose. Data such as class number, complete details of authors, and series title are usually missing or incomplete in the accession register record. Given these circumstances, it was decided to adopt the last option for data capturing. The cataloguing data was, therefore, captured from the cataloguing record. Wherever it was found that the data was incomplete or inaccurate, it was supplemented by going to the document.

Data capturing was undertaken by subject. The priority was given to the most used publications in the library. Therefore, publications under class 53 were taken up first for data entry, followed by publications under class 54, 61, 62, and so on. Once publications under all classes are over, the left over publications, if any, would be identified by using accession number key and data undertaken for completeness of the database.

3.3 Hardware Used

The NPL Library is equipped with five personal computers. For the purpose of database creation, two computers were used: PC486 system and PC386 system.

3.4 Standards Used

Common Communication Format (CCF) provides a common method for structuring a bibliographic record so that records could be freely exchanged among different information systems. Data entry worksheet has been designed following the CCF tags. The bibliographic contents in the record were described by using the Anglo American Cataloging Rules(AACR-2). The subject headings were created by using *Thesauras of scientific technical and Engineering Terms*, 1988 and the abridged edition of UDC.

4 DATABASE STRUCTURE AND DESIGN

The database structure has been worked out by defining the following worksheets and tables for the field definition table (FDT), data entry worksheet, display format, field select table (FST)

4.1 Field Definition Table

The FDT basically defines the fields and their characteristics like TAG - a unique numeric value identifying the numeric value, field name, field length, field type i.e. alphanumeric, numeric, alphabetic pattern etc.- repeatability and subfields. The fields created for our database were in conformity with the CCF . The FDT hasben described in Table 1.

Table 1: Field Definition Table for Library Database

TAG	NAME	LENGTH	TYPE	REP	DELIMITER/PATTERN
1	REC.I.D.	15	X		
15	BIB.LEV	5	X		
20	SOURCE OF REC	25	X		ABCDL
21	COMPLETENESS	5	X		A
22	DATA ENTERED ON	15	X		A
30	CHARACTER SET	5	X		ABCDEFG
31	LANG/SCRIPT	20	X		AB
40	PHYSICAL MEDIUM	20	X		AB
80	LINK TO MONOGRA	10	X		AB
100	ISBN	50	X		ABC
200	TITLE	300	X		ABLS
210	PTITLE	200	X		ABLS
240	UNIFORM TITLE	150	X		ABLS
260	EDN.RES.	80	X		ABL
300	100	100	X		ABCDEFZ
310	CORPORATE AUTH	150	X		ABCDEFGLSZ
320	NAME OF MEET	150	X		ABCEGHIJLSZ
330	AUTHOR AFFILIA	100	X		ABCDEL
400	PLACE & PUB.	150	X		ABCD
440	DATE	20	X		AB
460	COLLATION	100	X		ABCD
465	PRICE & BINDING	25	X		ABC
480	SERIES STATEMENT	125	X		ABCDLS
490	PART STATEMENT	50	X		ABC
500	NOTE	200	X		A
510	NOTE BIB.LEVEL	50	X		A
530	CONTENT NOTE	500	X		A
600	ABSTRACT	55	X		A
610	CALL NO.	30	X		AL
620	KEYWORDS	400	X	R	AB
900	HOLDING DETAIL	125	X	R	AB
980	SUBJECT	35	X	R	A
990	COLLABORATORS	50	X	A	
991	ENTERED BY	2	X	A	
992	SORT CODE	10	X		

4.2 Data Entry Worksheet

An input data entry worksheet has been created. The data entry was done by our approved vendor. First, the vendor was asked to fill data under various fields. After verification of the filled in worksheets the data were entered into the machine by using ISISENT menu. The descriptors were entered later in-house by using *Thesaurus of Scientific, Technical, & Engineering Terms*. The worksheet included the necessary fields for data inputting. The keys for sorting and searching were also defined in designing the worksheet. Complete details of the data entry worksheet have been given in Table 2.

Table 2: Data Entry Worksheet

REC.ID.———— BIB.LEVE————
SOURCE OF RECORD————DATA ENTERED ON———
COMPLETENESS————
LANGUAGE/SCRIPT OF RECORD————CHARACTER SET————LINK TO MONOGRAPH————
PHYSICAL MEDIUM————
ISBN———— YEAR————
TITLES/RES————
UNIFORM TITLE————
————
EDN. RES.————
AUTHOR————
CORPORATE AUTHOR————
NAME OF MEETING————
AUTHOR AFFILIATION————
PLACE AND PUBLISHER————
DATE————COLLATION————
PRICE AND BINDING————
———— SERIES STATEMENT————
PART STATEMENT————
NOTE————
NOTE ON BIB.LEVEL————
ABSTRACT————
CALL NO.————
KEYWORDS————
HOLDING DETAILS————
SUBJECT————
COLLABORATOR(S)————
ENTERED BY————SORT CODE————

4.3 Subject Descriptors & Keywords

Descriptors were selected from *Thesaurus of Scientific, Technical and Engineering Terms* published by Science Information Resource Center, 1988. For adding keywords we used the abridged 3rd revised English edition of the UDC. Both the subject and keywords are searchable fields.

4.4 Display Format

Display format has also been defined by using the print formatting language of CDS/ISIS. It consists of field selection parameter, horizontal and vertical

parameters, constant and display mode parameters.

With the help of Display format the records in the database are displayed on the screen. Display format determines the pattern of data extraction. The display format is a string of specification in the form of a formula using letters, numbers and symbols. Each fields is indicted in the format by specifying the field tag preceded by the letter V indicating the variable field.

4.5 Field Select Table

Field select table has been created. The fields which have been made searchable are as shown in Table 3. Inverted files have been created on these fields. CDS/ISIS allows for using five indexing techniques for inverted file. The technique number (1) and (4) were used for searching data at the field level, and technique number (0) for searching data at the subfield level.

Table 4: Data Extraction Format

ID	IT	Data extraction format
6	4	V200^B
2	0	V200^A
3	0	V300^A
5	0	V610^A
1	1	V620+|%|
7	1	V900+|%|
8	0	V300^B

4.6 Printing Database

Records from the database can be printed by using ISISPRT programme. An example of the output of a database record is given in Table 4.

Table 4: Database Output in ASCII Format

0001

TWO LECTURERS; 1. THE PRESENT SITUATION IN THEORY OF ELEMENTARY PARTICLES ELECTRON THEORY OF SUPERCONDUCTIVITY / .- CAMBRIDGE: CAMBRIDGE UNIVERSITY PRESS, 1949.
51P.

537.312.62
87263
SUPERCONDUCTIVITY.ELEMENTARY PARTICLES.ELECTRON THEORY.

5 CONCLUSION

Resource sharing succeeds on the availability of cataloguing databases for document identification and location. Obviously, the role of databases is indeed very important in the transition to electronic era. Database creation activity should, therefore, be encouraged at all levels of professional activity.

CDS/ISIS has been found to be a useful software in creating cataloguing database at a low cost. Whenever a library is running short of hands, employing external agency for handling retro-conversion work in part has been found to be a useful strategy. The descriptive portion of the cataloguing records may be handled by the external agency. The subject heading portion of the record may be handled by in-house staff. Such a strategy ensures both quality and performance in database creation, and in information retrieval by subject.

In libraries, CDS/ISIS software is currently employed both for database creation as well as for information retrieval. Whenever a CDS database is opened to public for searching and retrieval, it runs the risk of accidental modifications at hands of unsuspecting users, or even from someone who is well versed in handling CDS/ISIS software system. Taking adequate safeguards in advance is the key to protect the library database. Therefore, the database should be opened to public for access and retrieval only after its file attributes have been changed to read only.

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UPGRADATION AND MODERNISATION OF LIBRARIES IN COLLEGIATE EDUCATION

G. Narasimha Murthy*

ABSTRACT

Educational administration has progressively grown complex through establishment of institutions as well as regulating and administrative bodies. The existing system of education and the kind of emphases are not conducive to the integration of library into academic process. Library in collegiate system is reduced to a mere decorative piece and is not properly conceived and given appropriate academic role. There is need to upgrade the library and modernise, its functions. In the changing contexts of higher education (i.e. shifts of emphases : from public sector to private sector, form formal to informal systems. from traditional programmes to socially relevant-vocational-productive-skill-oriented-value added, etc) appropriate systems modelling, development of functional policies, reorientation of library service, equipping the library with IT gadgets to upgradation and modernisation to suit educational needs cover norms \ guidelines \ procedures; library personnel policies (staffing, career growth; etc); physical and other infrastructural facilities; standards; for various aspects of library operations and management (i.e., acquisition and collection development, finance, space and building, technical work, etc.) including IT components.

1 INTRODUCTION

Irrespective of the levels (primary, secondary, etc.), education in general, forms one organic whole. However, it does not operate as one continuous process so that entry, exit and the duration of study are the same for every one. Individual capacities and capabilities, man power needs and such other factors have segmented the system of education. Higher education coming at the tertial level marks the culminating stage. In terms of skills and knowledge imparted in this phase, it is superior and is aimed at better accomplishments. As an intellectual process of higher order it has specific academic and social goals.

2 FUNCTIONS OF HIGHER EDUCATION

* Lecturer in Library Science, Govt. City College, Hyderabad 5002

A college is an institution of higher learning. The education imparted in colleges forms part of higher learning and therefore, all the ideals of higher education, e.g., humanism, tolerance, reason, adventure of ideas, truth, etc. apply to collegiate education also. Higher learning/education broadly has been following functions:

* Seeking and cultivating new knowlwdge
* Inculcation of leadership qualities and development of mental powers
* Training in all usefull faculties and profession
* Promotion of equality and social justice
* Fostering a sense of nationalism and internationalism
* Greater socialisation and participation
* Develop the capacity of the individua! for interpretation, critical evalulation.

Therefore, collegiate education is not just a matter of (text-oriented) teaching-learning alone involving teachers and the taught. The system has many other inputs to strengthen and make wholesome the teaching-learning activity. More than on teaching the emphasis being on learning, the process aims at helping the student acquire the capacity for self-independent learning.

Despite the enormous growth and expansion, there has been practically no qualitative development in higher education. Excellence and relevance have become rare things. In every respect the system of higher education has proved ineffective and less relevant to the changing needs of the present day. It has been greatly unproductive.

3 EDUCATIONAL FUNCTIONS OF THE LIBRARY

The objectives of training the students for self-learning and acquisition of knowledge and making education productive and socially relevant require a shift from teacher and text-centred education to Student and Library-centred and need-based system of education. In other words, among other things, the library must be given the utmost importance, so as to make it a part of the system of teaching-learning. From this point of view the age-old, passive or reactive attitude or approach in the provision of library services must change. A proactive and fully intergrated system of library services should form the core of the education process. the library as the resource centre or the tool for learning has to support the following educational objectives:

* To participate in instruct planning
* To regularly acquire, manage and develop library collections
* To attempt proper interpretation of knowledge, human needs and values, etc.
* To provide bibliographic and information services and also bibliographic instruction
* To collaborate with the faculty in developing suitable teaching techniques and application of education technology by preparing necessary kits

and packages

* To help students supplement and complement their class room learning through guidance.

4 UPGRATION

While the existing system of education needs innovation and development, the library too requires transformation into an effective teaching-learning instrument as well as a research tool. Then only objectives like excellence, relevance, productivity, etc., can be completely realised. So far as the library is concerned , augmentation of modern means and methods of management and exploitation of communication and information technologies are indispensable.

Supplimenting and complementing of instruction can be ensured only if students use books and other materials and learn on their own. The advice often rendered by the authorities these days, that the existing library facilities have to be put to the optimum use through has some merit, the existing collections in many instances are unsuitable and irrelevant. This is one major reason why libraries in collegiate education are less used or unused. Poor physical facilities, lack of minimum professional staff to manage professional and educational activities, prejudices and biases on the part of the teachers/ educators are other reasons. The inability of the academic authorities to ascribe any academic role to the library profession instead to burdening with the custodial responsibility and penalising for losses is a major barrier for non-use and non-integration of the library.

As in the universities the emphasis here too must be on wide reading, discovery of facts, creative thinking and communication ability. Library must be made the next important place after the class room. It must command a large collection that can meet the acadmic demands. As such upgrading the libraries by enhancing and developing the inputs (financial resources, human resources, collections, physical facilities, gadgets and equipage) are necessary. Standards of finances, building and physical facilities, staffing, technical operations, collections, services, etc., are the imperative needs. It is also imperative that the professional staff is givin some amount of autonomy to plan and work out necessary strategies to ensure effective participation of the library in academic process.

5 MODERNISATION

However large, comprehensive and useful may be the collection, the use gets restricted if proper means of easy access is not ensured. Traditional and conventional methods of bibliographic control are no more appreciated. Visit to the library cannot be any more a necessary precondition for accessing information and material. Likewise searching through the manual apparatuses where the result may be not always certain, will not also help the cause of library use. Access must be easy and the search must be instant, yielding

positive results. No library can be shaped to be self-sufficient, so that whatever is needed can be had. The needs and requirements are increasing at a galloping rate owing to the information revolution.

6 CONCLUSION

All this point out to the imperatives of modernisation through automation. Along with the conventional card catalogue, OPACs have to be brought into use depending upon the size of academic communities served, a minimum of three terminals have to be installed in the library. Each faculty too must have one terminal for accessing the library/bibliographic information. There must be facilities for accessing information available on public data networks. Accessing world-wide information through Internet must also be ensured. As envisaged all major college libraries must be brought into the INFLIBNET.

Photocopying facilities generally do not exist in the college libraries. Such facilities are important and indispensable. The facilities and the funds meant for libraries are not properly being utilised. Such facilities are located in the college offices and are put to abuse. The authorities of collegiate education have to be impressed and convinced of the need for bettering the library facilities, so as to make them effective components of educational processes.

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CUSTOMER CARE IN LIBRARIES: NEED OF THE MODERN ERA

V M Vinod
K P Muraleedharan

ABSTRACTS

The work intends to highlights the significance of customer care as a marketing tool for the information managers in the rapidly changing technological environment. Customer care is visualised as a triangle, mode of service strategy, library staff and the library system around the user. Discusses the need for customer care in libraries and its role in meeting material as well as psychological needs of the user community. Suggests the creation of a separate customer care section in libraries consisting of marketing professionals, system analysts, psychologists and experienced information managers. Recognises the problems in the implementation of customer care in libraries and stress the need for marketing professionalism along with technical professionalism.

1 THE BACKGROUND

For most of the libraries, entering information superhighway simply means getting an internet connection and providing Online Public Access Catalogue service without understanding the exact needs and wants of its clientele group. Such libraries wish to visualise their services as inherently desirable, blame the customer ignorance or lack of motivation when their services are not used, relegate research about user to minor role, tend to define marketing as promotion and assumes that they have no generic competition. These factors can be attributed to the growing dissatisfaction of user community over the performance of libraries even they use information technology for information dissemination. If the libraries let their users dissatisfied for long, the will gradually desert the libraries and future of such libraries will be in jeopardy. Hence library management have to apply something new to regain their past glorry and the relevance of customer care starts from here.

* V M Vinod University Library, University of Calicut, Kerala 673635 e-mail vvm@unical.ac.in
Dr K. P. Muraleedharan, Reader, Deptt. of Commerce & Management Studies University of Calicut, Kerala-673635

2 THE CONCEPT

Till recently customer care was considered as a synonym to after sale service. But in the recent past it has grown in dimension and today got the status of a marketing tool to assure operational efficiency and customer satisfaction by ensuring that the products and services reach the customer on the right time in right quantities and sepcifications.

Customer care can be defined as "meeting agreed customer requirements fully". It not just aim to meet the material needs of customers but goes beyond it to satisfy his psychological needs as well. Hence, it include all activities involved in making it easy for customer to reach the right parties within an organization to obtain services, answers and re-solution of problems. In other words it is process of taking care of customers in a qualitative way.

As a marketing tool customer care programme should aim at customer maintenance, customer retention and new customer development. It helps an organization to develop reputation that induces users to be more committed towards the institution. The committed users may recommend such organizations to the prospective or potential users. So using the satisfied customer as a media, the organization can reduce the material and human resources needed for promotional activities.

3 NEED AND IMPORTANCE

User satisfaction remain far from the expected levels in most libraries due to the system oriented approach of the administrators. In the long run, by neglecting user satisfaction, no libraries can withstand the challenges paused by the information industry. Since a good customer care programme aims at achieving better user satisfaction, such a package is needed for every library due to the following reasons.

(i) To ensure better user satisfaction.
(ii) To give credence to the library policy to be a cent percent user oriented institution.
(iii) To develop good rapport with the users and thus ensuring a long and harmonious relationship.
(iv) To accelerate libraries market penetarion and development
(v) To give a competitive edge in competition
(vi) To use satisfied as a media for promotion of library services
(vii) To create customer loyalty
(viii) To improve employes morale and productivity
(ix) To reduce employee grievances, absenteeism, turn over and tardiness
(x) To retain a human touch in an era of high' teah.

4 CUSTOMER CARE AND LIBRARIES

Customer care can be offered in libraries in the following forms

4.1 *Technical assistance:* Today the general trend in libraries is to go high-tech., As a result more and more operations are getting automised. Management consultant John Tschohl (1997)says that the more often we are forced to interact with machines, the greater will be our yearing for human contact. Through customer care libraries can provide human assistance in technical matters like using internet, e-mail, opac, compilation of bibliographies, formulating search strategies, using compact discs etc.

4.2 Promotion and Communication:" As a media, customer care can be used to create awareness about the products and services offered by a library. To achieve this libraries can conduct personal orientation sessions to the new members at the time of admission or to the whole members when the library intends to introduce a new service. The personal contact thus made can install confidence in library professionals and may initiate interaction between staff and users in future. From such interactions library administrators can extract essential feed back data to assess the specific requirements of user groups to reorganise their product/services. The frequent interactions can create a cordial and healthy working atmosphere.

5 THE MODEL

Karl Alberecht's model of the service triangle can be used to design customer care programme in libraries. According to his model, the triangle is formed with service strategy, staff and the system around the customer. Customer is the core of the model and everything— the strategy, people policies and support systems must be planned and implemented with customer satisfaction in mind. So, service strategy, user friendly system and customer friendly employees are the basic elements of the model.

Strategies are general programmes of action and development of resources to attain comprehensive objectives. In case of service institutions it is the service strategy which directs the organisation whom to serve, what to serve and how to serve. To prepare a strategy for libraries, the management have to go through several steps. The process starts with the identification of target groups by determining the proportion of individuals already demanding the services and the proportion that will never be interested. For example students, teachers and research scholar forms the target group of a university library system. Once the target groups are identified, the next step is to identify their information needs. Most often users are offered the services which the management perceives best for their clientele. This is a subjective approach. To make it objective, library management have to conduct a well planned user analysis to bring out the exact information strategic information a user friendly and adaptable system can be designed to perform the operations. The last but surely not the least

is to develop a customer-oriented front line staff capable of connecting the user and the system in an efficient and effective manner.

6 TIPS

It is always better to constitute a separate section under a senior professional for providing customer care in libraries. Since the programme incorporates makreting as well as psychological aspects it is always advisable to seek the help of marketing professionals, psychologists and system analysts while designing the service strategy, system and human resources development. The performance of the section should be evaluated periodically and necessary adjustments are to be made, so that the system will remain competitive.

Tom Peters has deviced folloing guidelines for service institutions to succeed in their operations. Libraries too can adopt these guidelines to design their customer care programme.

6.1 Specialisation

Libraries can create their own market by introducing new products and services constantly or continually improving the existing ones. This will help to create a unique position for the institution among the competitors.

6.2 Provide quality as Perceived by the Customer

So libraries have to take steps to assure quality control, product assurance and on-time delivery of its products/services.

6.3 Emphasise the Intangibles

Customers will consciously or unconsciously look for these service added values which in turn breeds their loyalty. So library management have to take into consideration elements like the interior decoration, loyout etc. while designing the system.

6.4 Link up

Create and maintain a healthy relation with users, employees, suppliers (of reading as well as equipments) and administrators.

6.5 Be an Internationalist

Try to make collaboration with foreign libraries and information dealing agencies like Unesco, Medlars etc to get lates technologies and to give an international dimension to the services.

6.6 Try to become customer obsessed

Live for the customers. Every action, no matter how small, must be processed through the customer eyes.

6.7 Turn your sales force into heroes

It is the implementing staff which ultimately decides success or failure

of an institution. So they should be given due consideration, training and tools to serve the customers.

7 PROBLEMS

The problems for introducing a customer care programme can come mainly from two quarters, viz. management and staff. The management may not like to admit the reality that their services doesn't match with the expectations of the users. They think they know the things better and may not like visualise it as their inability in administration. Further, it is difficult to get the sanction for the additional resources required to run the programme. The staff may object the programme on the two grounds. First, it can put additional burden on their work and since they are the one dealing directly with the customers, management may develop a tendency to held them responsible for the failure of the system. But, the management and the staff have to give up these negative attitudes for the well being of their institutions.

8. CONCLUSION

Customer care is the new standard by which consumers judge an organization. To many organizations it can be more important than their products, services and promotional methods. Since it is a tool to assure user satisfaction, in the competitive environment, libraries can use customer care as an effective media for establishing caring, dependable and speedy services to bring the user again and again to the library. For this, library management needs to amalgamate technical professionalism with marketing professionalism.

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LIBRARY SERVICES TO CAREER SEEKERS IN THE ELECTRONIC ERA

V. Jalaja*
Dineshan Koovakkai**

ABSTRACT

This paper highlights the significance of providing information services to career seekers. It discusses the important information services which can be provided to the job/career seekers using electronic media and suggests the use of existing information services such as CAS, SDI etc. to provide career related information with the help of computer and communication facilities. The importance of providing internet services to career seekersis also highlighted. The various applications of internet in the field of providing career information and job searching are discussed. The paper attempts to identify the possibilities of the electronic media for the provision of proper information services to career seekers.

1 INTRODUCTION

Unemployment is a vital social as well as economic problem in any country today, though the intensity varies from country to country. In a country like India where population pressure is greater, the problem of unemployment will naturally be presumed to be searching for some kind of job. However, most of the unemployed who search for some job do not have adequate information as to the availability of opportunities befitting their qualifications and taste (Sharma, 1997).

Though there is a plethora of career opportunities, only a selection of jobs will be suitable to the qualifications and aptitude of the persons concerned. Hence, appropriate knowledge about the job market and judicious selection of jobs are necessary for every job seeker.

In making career decision, one needs right information at the right time. Libraries are one of the logical service providers for this role. Libraries with their strong core collection, knowledgeable librarians and modern technology can enhance the delivery of needed career information (Anderson, 1992).

* Sr. Lecturer, Department of Library and Information Science, University of Calicut, Kerala 673635
**University Library, University of Calicut, Kerala 673635

2. Methods of Providing Career Information

Career related information appear in a variety of media. Collecting, organizing and disseminating such scattered information need appropriate planning and the use of modern technology. In the era of electronic information, librarians have to play different roles as a maintainer, interpreter, trainer, enabler, liaison and advisor (Lynch, 1994). For providing career information, librarians can resort to the existing information service techniques such as Current Awareness Service (CAS), Selective Dissemination of Information (SDI) etc. using electronic media. The fast developing internet facility can also be used for providing effective career information services.

2.1 Current Awarness Service for Career Seekers

Up to date knowledge about the job market and job opportunities is essential for a job seeker. Any service to meet such need for current information can be treated as Current Awareness Service (CAS). Libraries can provide CAS to career seekers by the constant scanning of the job advertisements appearing in different publications such as newspapers, career journals, Employment News etc. (Jalaja and Dineshan, 1997). The techniques generally used in libraries for providing CAS to scientists can undoubtedly be used in providing CAS to career seekers as well. This service includes notification list for alerting the job seekers about the appearance of job advertisements, sending current awarness bulletins, newspaper clipping service, etc. In a modern library with the computer facility, different files can be created in the computer according to the nature of the job advertised. Periodic updating can also be done using computer. A computer mailing list of job seekers will be helpful for speedy communication of the career related information.

2.2 Selective Dissemination of Information for Career Seekers

Selective dissemination of information (SDI) is aimed at providing relevant information according to one's choice and requirements (Guha, 1983). The career/job interests of the unemployed range from top class services like IAS, IPS, IFS etc. to the lower clerical cadre in the government sector and various placements in the private sector in the home country as well as in foreign countries. Considering the job interest of the unemployed, they can be grouped in order to provide the information about relevant job opportunities. The same technique of providing selective dissemination of information (SDI) to scientists and researchers can be used for providing SDI service to career seekers in a computerised environment. The main activities involved in providing SDI service to career seekers are creation of user profile and document profile, matching, notification, feedback and readjustment. These steps are the same as in the usual SDI service.

2.3 User Profile

The preparation of user profile in this context means representation of interest field/job according to one's qualifications, taste etc. For this the job seekers are to be interviewed and asked to express the specific choice.

2.4 Document Profile

This profile can be represented by the terms for specific jobs advertised, the sector where the opportunity is available etc. Whenever new advertisements of job vacancies appear in various publications, they are to be added to the computer database of job opportunities using standard terms.

2.5 Matching

At regular interval the match between the profile of career seekers (User Profile) and the profile of job vacancies notified (Document Profile) are to be determined As the job notifications have only the life of very short span, the matching has to be done at the shortest possible intervals. The matching is done by the computer.

2.6 Notification

If relevant match between the interest of the job seekers and notified jobs (User Profile and Document Profile) are found, that is to be communicated to the job seekers. The notification may be in the form a list of job advertisements with details of the publications in which they appeared.

2.7 Feedback and Readjustment

The user (career seeker) is expected to answer the questions relating to the relevance of the notified items. When the feedback is received by the library, it is to be analysed to find out whether necessary modifications in the user profile are necessary. If the notification is relevant, it is safe to continue with the present profile.

2.8 Internet Services for Career Seekers

The internet is becoming a complementary resource tool for career planning and job searching (Anderson, 1996). The employment resource on the internet are diverse and to get comprehensive listing of jobs and other career building information, one has to explore all its possibilities. (Crumlish, 1998). The different types of career information available on the internet are the individual company web sites, career hubs (web-based job search databases), web sites for particular types of jobs, job matching etc.

Though many of the university libraries in India have internet connection, the access to it is restricted to the academic community of teachers, research scholars and students. As career seekers are not identified as a dominant group of users in such libraries, they are most often denied the most useful service. Internet service is useful to job seekers in getting various job related information as well as for sending application and getting

in touch with the employers.

The internet is useful for career seekers in various areas such as browsing the different web sites devoted for career related information, publishing personal resumes, communicating through E-mail etc.

2.9 Browsing the Web

The job and recruitment information are increasingly available on the internet (Anderson, 1996). Most of the important web search sites have special section devoted to jobs, careers and employment issues. All the major search sites such as Yahoo, Excite, Infoseek, Lycos etc. present employment information in a specific way (Crumlish, 1998). Some of he web sites which job seekers can visit on the internet are:

htt://www.excite.com
http://www.infoseek.com
http://www.lycos.com
http://www.yahoo.com
http://www.careerpath.com
http://www.jobweb.org

2.10 Publishing Personal Resumes

One of the most important advantages of the internet is that, job seekers can even publish their personal resumes through the net where prospective employers can look at person's qualification (Anderson, 1996). One can create a simple home page describing the qualifications, experience, competence etc. and the photograph. The probable search terms employers will search for specific type of employees, are to be used for the title of the web page (Crumlish, 1998). This will help the career seekers as well as the employers to get the correct match. Job seekers will, thereby, get the right positions and employers will get the right persons.

2.11 E-Mail

Another important application of Internet in career selection is in the field of E-mail. Job seekers can establish an electronic presence in the job market in the form of resume file that can be sent via E-mail. This personal resume can be circulated through job banks and prospective employers' web sites. The most important advantage of having an E-mail address is that job seekers can communicate with the employers in a speedy way regardless of their location. More over there are group discussions through listservs and bulletin board system on career and job related topics (Anderson, 1996).

3. CONCLUSION

It is evident that career related information has a great demand in a

country with crucial unemployment problem. In addition to providing various resources generally available in all libraries, in the electronic environment, libraries can provide various services to career seekers in a speedy way. The internet facility is a great boon to career seekers as it provides information about employment opportunities in a global level. Modern libraries cannot abstain from providing such services as long as they have social commitment.

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DISSEMINATION OF ELECTRONIC CONTENT PAGES

Subrata Deb *
Debal Chandra Kar*

ABSTRACT

Information is the modern day requirement for any countries development. Information in the Internet is enormous. Journal publishers on the Internet has developed the novel way of reaching out its ultimate clientele by inviting free subscription to their electronic content pages. This requires an e-mail account. The subscribed electronic content pages are delivered in the subscriber's E-mail. These are more current than the current hard copy journals or even the Current Contents by ISI. There is a requirement for a person; professionally equipped to classify the same, and then transfer the same to the researcher's desktop looking for that content page(s) within or outside an organization. This saves time from visiting libraries and also physically browsing the journals. The techniques for selective and automatic transfer of electronic content pages from Internet published journals has been explained in this article.

1 INTRODUCTION

Information is of vital importance for economic and scientific development of an individual, organization, state or country. One needs information for research, paper-writing, making a presentation (speech, seminar, conference, workshop etc.)

Although lots of information are being produced everyday yet it is a well established fact that many of them (create noise/pollute the information or causes information overload.

Tapping/capturing information and then passing right information to the right person and bringing the required information to the users (researchers) is the supreme task of Information Scientists (Librarians, Cybrarians, ...).

The latest information is published in primary journals. But it takes more than 6 months time for an article sent for publication in journal to reach the readers. This time gap needs to be reduced.

With the advent of Internet the time gap has been reduced due to online access to the electronic journals. This has reduced the access time to less than 6 months or even less, from reaching information to researchers.

* Information Analyst, Library, TERI, Darbari Seth Block, IHC, Lodhi Road, New Delhi-110003

But in India a few researcher does have access to Internet. Mroeover researchers do not have time to browse through all the journals and find out information of his interest. To cope up with this problem, many publishers are coming up with the idea of providing contents page or Table of contents page, free of charge. One can subscribe to this service either by sending a letter of request for the content pages and they will start receiving the content page of their (publisher's) published journals or through Internet accesses, subscribing directly and then receiving the content page of their interest in his/her e-mail address.

But the problem of information olverload is yet not over. To cater to this problem the Information Scientists should actively help in ensuring right information to the right person in the minimum possible time.

The purpose of this article is to provide useful tips and techniques for filtering (refining and then forwarding) the contents page of a journal to a particular person who really requires it.

In TERI (Tata Energy Research Institute), the library is working towards automatic categorization and forwarding of the content pages received from publishers to the researchers with the help of LAN. If E-mail facility is available then access to Contents Direct for most of the publishers; journals is easily possible. Contents Direct delivers the tables of contents pages by e-mail directly to the subscribers. If the researchers/scientists are too busy to surf the Net but want to stay ahead of this respective field, Contents Direct comes directly to them.

2 SERVICE

The page of many document that contains titles of the articles with their locations of that specific document/volume/issue is called *Contents Page*. Out of various *Current Awareness Service (CAS)*, Content page service is a type of alerting service which falls under the preview of CAS i.e. it is published well before publication in the secondary/tertiary sources. The content pages received from the Internet publishers are pre-publications. These are free, time-saving service from Internet publishers and as current as online publishing of journals on the Internet. When the content pages of each journal is send to selected users by defining the users profile then it falls in the area of another service called *Selective Dissemination of Information (SDI)*. As this service is both current and dissemination is selective, so, this service can be called as *Selective Current Awareness Service (SCAS)*.

If you have acces to the Internet, then you can register for Contents page service of the Internet publishers. If there is no access to Internet facility send an e-mail/letter for availing the service. It delivers the table of contents by e-mail directly to your PC. If you are too busy to surf the Net but want to stay ahead of your field, Content pages comes directly to the

subscriber. The table of contents of each journal issue is automatically sent to the subscriber on a regular basis.

3 OBJECTIVES

The objective of providing this service is to get information directly on the researchers' desktop without losing any time in Net-surfing. This helps them keep aware about the articles being published in a particular journal in his/her field, which may be of his/her interest immediately within 2-3 days after the publication or 3-6 months before the hardcopy reaches the library.

4 COVERAGE

This service provides journals title, volume and issue number, issue, publication date, and article title and author names. It also provides news of editorial board appointments, call for papers/announcements of special issues, news of changes in aims and scope, notice of publishers' present at upcoming exhibitions and conferences, discounts on new books.

5 SCOPE

Internet publishers are providing this service in all discipline. However, Elsevier Science covers the areas of Chemistry and Chemical Engineering, Clinical Medicine, Computer Science, Earth and Planetary Sciences, Economics, Business and Managemnent Sciences, Engineering, Energy and TEchnology, Life Sciences, Material Science, Mathematics, Physics and Astronomy, Social Sciences, Multidiscipline.

So far TERI's area of interest is concerned, Elsevier covers most of its requirements. It becomes more important to provide current content of pages (after classifying them Group Wise) to TERI researchers. After sending them using Group Wise facility by automating there is a further need for feedback and then keep revising the profile depending on the feedback from the researchers.

6 TECHNIQUES

For almost all publishers *steps* for subscribing to Content Pages are same.

Basically it involves two main steps:

1. Subscribing, and
2. Submitting your E-mail address

However, the detailed steps are:

- Subscribing to Content Page Service
- list of journals are then sent by the Internet publishers
- The list of journals is sent by the informatikon scientist to each researcher/ group for short-listing
- The unwanted journals are then unsubscribed and the list is updated.

- Publisher starts sending journals from the finalized list.
- The information personnel automates the transfer of relevant content pages to required person/group
- Feedback from the researchers/group
- Modification of the profile/Remove bugs (if any in the transfer program)
- Depending on the service and users will lead to other services (e.g. Bibliographic, Abstracting, Full-length article delivery service may be initiated at this stage. These services may also be pursued electronically).

The above steps involved has been broadly shown in Fig (1).

General techniques for subscribing to the publishers contents page service is to login to their home pages and find out the services being provided by them. Where they also talk about contents page services. There is a fair chance that different publishers may call this Content page services by variant names (e.g. Springer calls it as *Link Alert*; Oxford University Press, by *Table of Contents E-mailing Service*; Elsevier by *Contents Direct*; ... and so on).

Once you opt for this service you need to provide them with some information they require. Apart from these, the most important point is to submit your E-mail address.

7 STEPS TO BE FOLLOWED TOWARDS SUBSCRIBING CONTENT PAGES FROM ELSEVIER SCIENCE PUBLISHERS

Although a general technique for subscribing is given, yet it would be better if the detailed techniques for publisher like Elsevier is given. Elsevier incorporates wide range of journal publications in various disciplines with various options and steps. If one knows the steps and processes involved in subscribing to their Contents Direct service will help in handling other similar services provided by Internet publishers.

The steps are given below:

- Open Internet, Enter http://www.elsevier.com/ at Location Tool Bar and then press RETURN Key
- Select Alerting & Awareness Service
- Select Contents Direct [e-mail service which delivers journal tables of contents pages directly to your PC, providing you with the latest information on soon-to-be published papers in Elsevier Science journals].

When following four options will be available:

1. New registrations
2. View/change/cancel registration
3. More information
4. Feedback (The required feedback you want to send).

For the Ist two options an online electronic form is available.

Option 1 is for New Registration. Those having Internet access, want

to subscribe for the first time should click this option. Once this option is selected an online electronic form is available. Detailed information about the subscriber is required to be filled-in in this form. It also provides option for selection of journals and a unique passcode/password for further modifying/deleting one's profile.

Option 2 includes View/Change/Cancellation of registration. *View* shows the latest information about the subscriber's details. *Change* is for revising/ updating the profile. Cancellation is to cancel the registration as subscriber.

The 3rd option Information provides detailed information about the Content Direct service.

Feedback, the 4th option for this comments/remarks about the service.

Once registration is done and E-mail submitted the content pages start pouring into the e-mail. It also sends an e-mail giving details about the subscribers password and list of selected journals. The list of journals may be forwarded to individuals/expert of each group for selection of the journals. The lists are then received from the user end.Depending upon their choice for journals select the *change* option from the menu when it will ask for the password. Key-in the password carefully and press<enter> key. At this point of time the unwanted journals may be unsubscribe. Afterwards the revised the form may be submitted. Now you will start receiving the content pages of the latest selection. A mail from the publisher's service; listing latest opted journals will also be sent to the subscriber for automated forwarding of Contents Direct to Researchers.

Once information-personnel starts receiving the content pages from the publisher, their is a need for forwarding the content pages to the researchers olf their choice.

TERI is having a mail handling (external/internal) software called *Group Wise*. This software is having an option for automatic forwarding of received e-mails. With the help of this software the content page of a particular journal is forwarded automatically to designated researcher.

Once researchers find articles of their internet, will lead to other services like Bibliographic, Abstracting, Full-length article delivery services. Hardcopies of the articles is procured from local Information Centres or Libraries. Depending on the demand, hardcopy is procured from the publisher or even in electronic form on an urgent basis. Although electronic article is a costly affair yet it is a timesaving and effective system.

This service which we are practicing in TERI has been found to be quite useful. This service is an efficient way of selectively alterting the scientists for the latest article in their area of research.

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SEARCHING AND RETRIEVING PATENT INFORMATION OVER NETWORKS

Biswaranjan Padhi*

ABSTRACT

Patent is the grant of the exclusive right to make, use or sell an innovation, usually for a time period and hence patent Information serves a useful information for the business and research communities. This article presents the different search techniques employed to access patent information for different database, available over networks. This article pinpoints the patent information needs of user groups, the various information sources available on international networks, primarily the STN and Internet and the different feasible ways adopted in getting access to it. The study is augmented by a profile of questions on patent information usually answered. The author, out of his experience of working on STN and Internet, mentions some general barriers to accessing information over network and gives suggestions on how best the network should be augmented.

1 PATENTS AS A SOURCE OF INFORMATION

1.1 Introduction

Patents are usually the first documents to be published on inventions and innovations. It is often years, if ever, before the technical breakthroughs are described un the trade or technical press. Carefull monitoring of patent activities can help one anticipate trends and developments in the market place, see where one's competitors are allocating most of their research efforts, make better decisions about how to counteract potential competitive threats. It will also help one to detmine what has already been invented in the field of research .Hence during the industrial revolution of Enghteenth and Nineteenth centuries, industrial countries devised systems for the development of technology and information to later inventors know about the advances made in their field of interest. Patent information systems are the series of deveolopments in the right directions [9]

1.2 Patent Issuing bodies and organisations

Patents are normally filed in the Patent Office of the concerned country and are sanctioned after verification. But due to the very commercial nature of the patents, patentees may want the rights in other countries. The national

* Officer (Lib and Inf services), Gharda Chemicals Ltd, MIDC, Lote Parshuram, Tal Khed, Dist: Ratangiri, Maharashtra 415 722

laws of most countries are unique to the particular country. Getting a foreign patent becomes an immenselt difficult task. For that matter, most industrilized countries are parties to one or more Internatinal conventions, such as the Paris Convention to which more than 80 countries are signatories, which provides for the filling of foreign patent appllcations. The most important regulation is the granting of alone-year priority term fior subsequent applications in contracting state of the convention eith the same date of filing and content as the national patent appllication. Another such convention at regional level is the European Patent Convention, to which most European countries belong.

1.3 Patent Families

Patent specifications are published as individual documents in the language of the originating country, but many inventions are claimed in patents issued by more than one country. These patents form a family of equivalent patent documents, which usually disclose the same information but may differ somewhat in the scope of the claim[1]

A simple patent family is based on a single priority application, in which each family member discloses the same information and cites the same priority application number. A complex patent family contains patent documents having at least one common originating application. An extended patent family contains all of the patent documents having at least one priority application in common with any other member of the extended family.

1.4 Relevance and Significance of Patent Data

Patents often furnish valuable information on technology that is not available elsewhere. Since patent applications are generally submitted when the inventor or assignee expects to profit from the product or process, information on developments that are to be patented is not always published in journals. For this reason, a large portion of technology information available worldwide can be found only in patent literature. By searching patents over network, one can gain access to

- bibliographical\legal status data
- application and publication dates
- year in which a patent is granted
- inventor and assignee names
- priority information
- patent family information
- opposition data
- abstract
- claims
- index data
- graphical data

1.5 Patent User Groups:

A patent document not only describes an industrial invention but also the scope of protection for or granted by the concerned authority. Specific problems concerning the management of patent information results from this two-tier function and the user groups are categorized accordingly. The first user group is mainly intersted in the industrial inventions and it comprises research and development scientists. They have to be informed speedily and comprehensively of new technical deveolpments and must be supported by providing immediate access to the huge stock of technical knowledge embodied in the patent literature. The second user group is interested in the legal implication of the patent documents and it comprises of patent specialists. They are engaged in filing patent applications, protecting and enforcing Coporate right, and opposing impending monopolies of other parties. They must be supplied with accurate and up-to-date information on existing patents and their legal status.

2 SECONDARY SOURCES OF PATENT INFORMATION

2.1 Introduction

Patent information systems were conceived as a means for promoting technical progress and encouraging the dissemination of imformation on technological developments expeditiously. Patent offices worldwide have traditionally announced the issuance of new patents in bulletins and gazettes. Organizations such as scientific and technical societies and profit making publishers have produced value added patent information services. These secondary sources of patent information serve multiple purposes, among them are current awareness alerting, document delivery, and retrospective searching. Traditionally, such products have appeared as printed publications. With the rapid increase in electronic information storage, such products are now also available on CD-ROMs.

2.2 Patent Office Gazettes

When a patent is issued by the patent office, it is normally announced by publications typically known as gazettess and bulletins. It includes bibliographic details, including patent number, title, inventor, patentee, patent classification, application number and date and priority application details if relevant. Advance information is also published in a patent gazette by some countries prior to the publication of patent documents, notifying just after the patent is filed. Some gazettes also mention additionally, patents that have been rejected, challenged or disclaimed. Almost all the gazettes are supplimented by indexes to the information they contain. Examples are the PCT Gazette, the patent Journal, Official Gazette of the US Patent and Trademark Office, etc.

2.3 The Patent Office Registers

Each patent office runs a register in which the gazette entries are cumulated and the current legal status is known for every patent or application. A number of patent offices also offer public inquiry services.

2.4 Abstracting and Indexing Service

Some of the abstracting and indexing services produced by renowned scientific and technical societies have traditionally included patent information, especially in the field of chemisty, for instance Chemical Abstracts product by American Chemical Society . Derwent during the 1960s began a series of more complex information services, providing both alerting and retrospective retrieval capabilities in the feilds of Pharmaceuticals, Agro-chemicals and polymers. In the ensuing years, the Derwent organisation has broadened its country coverage and improved in its information retrieval capbilities in many ways.

Even though patent serve as a useful source of information, yet notable information services in the field of science and technology do not include patent . One example, despite the fact that many patents are based on some aspects of engineering, the Engineering Services Index. Science Abstracts covering physics, electricity and electronics do not cover patents. For these reasons, other publishers have stepped in to develop a variety of patent information services.

Other organisations involved are EPIDOC, INPI, French Patent Office, API and so on. Other specialised patent information products that include patent and other information are produced by a variety of organisations, most notably in the area of pharmaceuticals.

2.5 Online Patent Databases

2.5.1 Abstracting and Indexing Databases

Derwent's World Patent Index databases, covering since 1974 both Chemical and Non-Chemical patent, offers a wide range of bibliographic and subject based access points. With detailed patent family information, as well as archival and document delivery capablilities, Derwent is indisputably the overall leader in providing patent information. The WPI databases on the STN systems provides powerful cross-file search capabilities between the fragmented coded references in the WPI system and the specifically registered references in CA. INPADOC, EPIDOS registers, EDOC, CLAIMS databases are also worth mentioning [6]

2.5.2 Full text Databases

LEXPAT database on the LEXIS-NEXIS system is the first commercially available full text patent file. However Dialog's PATFULL files followed by STN's USPATFULL, both searchable by familial Boolean techniqes and featuring greater capability for searching selected protions of

patent information have changed the scenario. EUROPATFULL, the full-text patent databases, updated weekly, covers all applications and granted patents published by European Patents Office from 1996 to present. For granted patents, the claims are also published in English, French & German[4].

2.5.3 Other Databases with Patent Information:

Many other databases contain substantial amounts of patent information, notably amog them are Derwent's Biotechnology Abstracts, the TULSA databases, several specialized pharmaceutical files, PAPERCHEM and METADEX.

3 SEARCHING AND RETRIEVING PATENT INFORMATION

3.1 Introduction

It has been found that, out of the 821000 chemical substances CAS registered in 1996, 636000 are organic in nature. Organic patent literature is an important source of information about these new substances. Considering the enormous data that these records contain, it would be easier to search data in electronic form. So in these contexts, databases play a major role so, also the networks which facilitates access to such international databases.

Almost 54% of the chemical patent documents are issued by the Japanese Patent Office. The share of the European Patent Office and the United States Patent and Trademark Office are 10.3% and 6.9% respectively[2].

3.2 Patent Information Searches (Type of)

3.2.1 Novelty Searching

Novelty search is done normally before the patent application is drafted in order to help ascertain whether the invention is indeed patentable. It focuses on the specific details of the invention for which searching of one or more on-line databases are increasingly done. Various databases have strengths and weaknesses that complement each other; hence use of multiple databases facilitated by multi-file and cross-file techniques provided by online hosts such as STN and Dialog is prudent[3].

However novelty searches are not limited necessarily to patent information. The anticipation of a purporedly noval idea can also occur in journals, books, etc. Thus the potential scope for a novelty search is essentially infinite.

3.2.2 Infringement Searching

It is essential for anyone contemplating a commercial ventue that is technology dependent to find out first whether or not the proposed venture falls within the area covered by adversely held patents. Since the exact language of claims is vital to matters of infringement, the search of full

patent specifications remains the most reliable methed. The full claims text of US and European patents are available on-line in Dialog and STN.

3.2.3 Validity and Opposition Searches

An individual or organisation may chose to obtain a validity study in the hope that reference can be located which show that an invention was either anticipated or obvious, and that the patent should not have been granted. It has the same requirement as validity searches, but these searches are performed long after the filing of the patent application so that retrospective search can be done.

3.2.4 State of the Art Searches

A state-of-the art search is broad and general and is typically carried our when research in a never area is to begin. Some organizations prepare and maintain detailed strudies, particularly when the subject area is of great importance or significant commercial and research interest, even though state-of-the-art search is not the norm.

3.2.5 Alterting Searches

A combination of different methods available for keeping up with the latest in patent can be effective. There are databases such as INPI's FPAT file of French patents. CAPlus on STN, EPAT, Derwent's Patent Review and World Drug Alerts, that are updated promptly. The US Official Gazette and PCT gazette can be in one's hand within a week of patent publication.

3.2.6 Family and Enuivalent Searches:

It may be desirable to find and equivalent to a known patent in a given language, Typically but not necessarily English. It may also be necessary to trace the entirely of complex extended family at one or more stage. Derwent's WPI databases, EPIDOS's INPADOC, INPI's EDOC are significant efforts aimed at this. The Chemical Abstracts database does not have an on-line family capability, but does publish a patent index, with family data obtained from INPADOC [5]

3.2.7 Citation Searching

Citation searching of patent offers a perspective defferent from traditional class or subject index searching. A citation search on known fundamental patents can also lead directly to improved patents. CLAIMS-Citation databases covering US patents and the Derwent's Patent Citation Index can be searched for citing as well as cited patent and non-patent reference.

3.2.8 Business Related Searching

Business related questions with subjects such as the patent assets of competitors, statistical analysis based on citation, identification of candidates for joint ventures or acquisitions, process announcements by competitors, technology being offered for license or purchase can be answered by

searching of patent databases over networks.

3.3 Searching Techniques and Software

3.3.1 Coordinate Indexing and Boolean Logic

Coordinate indexing is the one in which all of the individually indexable concepts of a documents are posted to the record for that document. Entries in coordinate indexs may be based on groups of words, single word, or codes. However, using the Boolean logic, on-line databases in the recent times can be searched effectively.

3.3.2 Subject based Retrieval Parameters

Different databases offer differing subjects on which a searcher can develop search strategy. A well-written abstract highlights the most important concepts in a document; hence words in abstracts can be highly valuable retrieval terms. Full-text databases such as STN's US files can help improve the quality of full-text searches, but there are concepts embodied in drawings or structural diagrams that can not be expressed in natural language search of full text. Controlled indexing can help overcome the vagaries of free text to some extent.

3.3.3 Structure searching

For searching a particular chemical structure in patent, there are systems developed by Derwent and APIPAT. Derwent's MARPAT system handles generic and Markush structures (Murkush structures are generic sturctures appearing in manny patents where one structure diagram may represent hundreds or thousands of individual compounds [7].

3.3.4 Cross-file and Multi-file Searching

Cross-file searching techniques allows elements of one database to bear on another. It permits the searchers to combine the approaches and capabilities of different databases and achieve a synergetic result. STN's Smartselect, questel's MEM, Dialog's MAP, Orbit's PRINT SELECT software are some of the examples. Multi-file searching differs from Cross-file searching in that it permits s single strategy to be brought to bear on more than one file at the same time. Dialog's One Search, Orbit's PowerSearch are some examples.

3.3.5 Term Extraction and Analysis Software

A searcher may carry out a state-of-the-art search and obtion a listing of the patentees represented, ranked by the number of patents for each. There are software such as Dialog's Rank, STN's Select, Questel's Memsort, Orbit's Get, that extracts terms and provides statistical analysis of their occurrence within the set being analyzed.

3.4 Searching over Internet

Internet, the network of network, has enabled us to access a wide range of information from different subject fields. Information service providing organizations including the scientific societies of repute have created their websites over net. These websites provide a wealth of information about all aspects of patent literature, either free of cost or on subsciption. The websites that are frequented by us are as follows.

http://casweb-cas.org/chempatplus/-> Chemical Patents Plus from CAS, US patents from 1971 onwords are available free of cost.

http//patents.uspto.gov/-> US Patent and Trademark Office.

htttp://www.patents.ibm.com -> IBM Patent Servier Home Page that would give access to a range of databases, including Derwent's and those on Questel-Orbit system.

3.5 Searching over STN

In addition to providing one with access to major US and worldwide patent databases needed for comperehensive patent searches, STN also gives one the powerful search tools to find patent information that one need quickly and efficiently. SmartSELET, CASLINK, FSEARCH are some of the worth mentioing.

4 BARRIERS IN ACCESSING PATENT INFORMATION

4.1 Introduction

Organisations and socities involved in providing patent information services are not covering each and every nation, even though, majourity of them are covered. Patent Offices in concerned nations do not have a uniform way of recording and granting patent document, for which there is centralised systems at international level, thus making it a must for the searchers to go for several sources simultaneously. Patents published in a language often do not come with translations in other languages and where it's equivalent is not available in a language looked for by a user, translation, which is expensive, is the only way out., Except the US patents (1971 onwards), full text patents are not available free on Internet, even efforts are on for the European patents. These are some of the barriers that come across the fres flow of patent information.

4.2 Typical Patent related Questions (usually answered here)

1. What are the different synthetic pathway for a particular produce and the patents available on each of that?
2. What are the sources of key chemicals?
3. What are the known methods for producing laboratory grade meterials of a product ?
4. What is the current development on a particular poduct?

5. What is the key technology coming off patents?
6. What are the patents granted to a particular industry?
7. What are the patents available till date on a particular product?
8. What are the equivalent English Language patents to a foreign patent?
9. When was a particular patent was granted?

Timelessness adds value to the information. Hence no information system can achieve self-sufficiently,. simply on the ground that betterment in the information services is always there. That is precisly the reason why a system is reviewed periodically so that necessary changes in accordance to the changing requirements cound be done and incorporated into it. In view of the rapid technogical developments in science and technology, patent information systems should undergo substatial changes, embracing the points as below.

All patent information systems should provide on Internet, full text patents free of cost. There shold be attempts to update the patent databases immediately when a new technology is reported and patented. All patens where there is no equivalentt in other languages, should have translated versions readily available. The library networks existing at local levels should play a major role in bringing out union catalogue of patent of holdings participating libraries, paricularly science and technology libraries, and ensure availability to members easily. Patent User Groups should exist at national and regional levels. They should function in line with similar groups functioning elsewere and should ensure and promote availablity of patent Information instantaneously.

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METHODOLOGY FOR EXPEDITIOUS QUALITATIVE INFORMATION PROCESS IN HEALTH UNIVERSITIES

T. N. G. Sharma*
T. S. Sai Babu**
G. Vijaya Kumar***

ABSTRACT

While advocating a change in the role of information science professionals in the health information, from a passive to a pro-active one, the quality paradigm should be essentially suggested, as it is better strategy to proceed successful in the profession.

Information exchange is a crucial factor for success of any university/institution. Conducting research serves no purpose if the results are not communicated to those who can benefit from the knowledge gained or the technologies developed. On the other hand, one cannot conduct research in isolation. Information needs to flow from our research partners, institutions, and policy-makers if an institution's research is to be effectively targeted. This is possible only when there is an effective and efficient information exchange.

In health universities, apart from health services, research and education are also equally important and significant. In this information-age, quality of information is essential to attract the attention of readers concerned, otherwise there is every chance of skipping of the important information.

The principal objective of a researcher is to concentrate more on dissemination of the research results immediately so as to maximize the information value, i.e., the information should reach the right person on time at right place. In order to quicken this information process, it is appropriate to suggest the need of an information science professional to assist the researcher in preparation and finalization of his research results, i.e. in editing, processing and publishing the information qualitatively and quickly, and in getting his results to be published through national and international publications, journals, conference proceedings, electronic publishing in-house-external publications, etc. To process the information quickly, a separate cell is to be established, if not already existing, under the title of Information Services or Information Management and Exchange Programme, editorial committee etc., to carry-out such tasks effectively and efficiently.

The techniques on how quickly the information can be processed and published, and some guidelines to authors are being presented in this paper.

1 INTRODUCTION

Today we are living in the age of information explosion and communication revolution in which the computers have made their presence felt both in the print as well as the electronic media. The media educators

*Computer Assistant, Computer Division, NIMS, Panjagutta, Hyderabad500 082. A P.
** Plot No. 162, Road, No. 8, Janapriya Nagar, Miyapur, Hyderabad 500 050
*** Deputy Medical Superintendent and Associate Professor

are required to think globally and act locally, as the world has now shrunk and been transformed into Global Village. Multimedia, e-mail, and the World Wide Web called Internet have revolutionized the communication field. In the wake of new millennium, India also has come to the foer with a staunch beacon light in the spread of information technology confidently competing with the already IT-developed countries in the world. Therefore, it may not be out of place to designate India IT-Rich India. The Hi-Tech City which has recently come into existence at Hyderabad is itself a practical exemplary.

Any university/research institute should consider to set up a separate cell bearing the nomenclature, for example, Information Services or Information Management and Exchange Programme, if not already existed. They also should grant autonomy to this cell in terms of its administrative and academic activities, and adequate funds for this cell may also be provided for in the annual budgets.

There are various administrative constraints which blocks or procrastinate a research publication by an author in any academic institution. In order to clear such bottlenecks, the need has already been felt to have set up an exclusive wing that deals in expeditious information process of quality publication of research and general nature. It is appropriate to suggest the need of Information Management and Exchange Programme (IMEP) headed by a Senior Information Science Professional to assist the researcher in preparation and finalization of his research result, i.e., in editing, processing and publishing the information qualitatively and quickly, and in getting his results to be published through national and international publications-journals, conference proceedings, electronic publishing, inhouse-external publications, etc.

2 AUTONOMY

The IMEP should be granted unrestricted autonomy both from the administrative and financial aspects so as to enable it to render multifarious information services to the University. Adequate funds may also be provided for in the annual budget for IMEP. By this act the IMEP can launch its various institutional programmes to the zenith of quality information services through electronic media.

The necessity of granting autonomy to IMEP is largely contingent upon its most essential academic and research functions/activities of the university, like Editorial committee, Art unit, Translation unit, Photolab unit, Composing unit, Printing unit, Distribution unit, etc., to bring out a full-fledged final publication of the research results.

3 PRE-REQUISITE QUALITIES OF A RESEARCH PUBLICATION

Researcher's responsibility does not end with doing research. Researcher has also an obligation to publish the research results. Only then

can new knowledge enter the existing database which in other words-called science. If results are unpublished, or if they are published badly, the research is wasted. If they are published slowly, further research suffers. The research results (information) should be published and disseminated to the right person on time and at right place. To achieve this objective the author should ensure that: (a) the research results are original and unpublished; or a review article, (b) specify to which journal the paper is intended to publish, and follow the English spelling (American or British), (c) follow the particular journal style, (d) Institution's clearance for publication, and (e) the paper is double-checked, proof-read, statistically analysed, and information is graphically represented (figures, photographs, etc., where necessary). It is the responsibility of the editorial committee to carryout such jobs. The Editorial Committee guides the author right from the word-processing of the manuscript till its publication, so that the researcher can relatively be free from the publication process.

Publishing the results is an integral part of the research process, such as problem identification, hypothesis formulation, design and conduct of the experiment, data analysis and hypothesis testing, writing up the results and publication., KIS MIT— Keep it simple Make it interesting is a sound advice for the content and form in publication. Communication should be efficient as well as effective. To produce quality publications on medical research in time and for dissemination of such information to the reading community, framing of guidelines on publications is a must under the guidance of the IMEP. These publications, for example, can be classified into three categories—Department-level, Institute-level and miscellaneous.

4 EDITORIAL CLEARANCE

Editors exist, to help authors communicate with readers. It is a part of researcher's job to report work fully, accurately, clearly, and promptly. Editors help in that process through Editorial Committee/Board. The details of processing of information are shown in the Flowchart-1

One of the significant reasons for continuing lag in knowledge transfer from discovery to user, is due to shortage of the trained personnel in exercise of the techniques of scientific reporting, or lack of skill in simplifying research results for greater understanding by public at large. Though excellent research has been conducted in the Third World, it still needs to reach the interested people, thus creating demand for more qualified, skilled, and trained editors, who play a key role in bringing close the author and reader through effective communication. In fact, as all are aware, the key role of the editor is to bring author and reader into the most effective possible communication.

METHODOLOGY/INFO-TECHNIQUES FOR QUICK INFORMATION PROCESSING

1 Editorial Clearance

Editorial clearance on the manuscript, report, etc., through editorial committee/Board. .

2 In-house Information Processing Service Units

Maximal utilization of In-house Information Processing Service Units like Art unit, Translation unit, Photolab unit, Composing unit, printing unit, Distribution nit, etc.

3 Standard Guidelines

1. To follow standard guidelines on publications (e.g. university in-house publications style guide)
2. Inssue of prescribed guidelines to authors
3. Framing of statistical guidelines

4 Development of Information Resources

1. Application Research Education/Enriching writing skills/latest methods and techniques, information technology, databases, programmes, etc., networking (internet, internet, etc.); modern information technology and computer software like MS-Office under Windows-98 environment, etc.
2. Membership with information centres like INFLIBNET, INSDOC, DELNET, DESIDOC, etc.
3. Development of Information Resources (New models of resource development, internet, web technology, CD-ROMs, integrating physical and electronic forms of information services, digitizing library collections, acquisition, etc.).,
4. Adopt guidelines on how to successfully organize a regional, national, and international workshops, conferences, etc.

FUNCTIONS AND ACTIVITIES OF IMEP IN QUICKENING THE QUALITY INFORMATION PROCESS

- Editorial Committee/Board certifies whether the information is a new one or already published elsewhere
- Coordinate with external publishers/editors/institutions and negotiate all correspondence on behalf of the authors thereby centralize the publications activities and save the time of authors/researchers
- Keep track of all-in-hour and external publications of the university
- Maintain good relations with Press/TV/Radio
- Up-to-date maintenance of university library home-page on internet
- Up-to-date maintenance of university library catalogue
- Develop and maintenance of In-house publications style guide, proof

readers' marks for ease and quick process of information prepared by researchers and thereby reduce the time of editors on editorial work and quick editorial clearance is possible.

- Maintenance of various journal guidelines/styles for preparation and submission of papers meant for publication
- Collecting, compiling, coordinating, and processing of various information of general and routine nature meant for research/public usage quickly and qualitatively
- Obtain the ISSN and ISBN numbers from appropriate authority wherever required
- Training in computers (LAN) to Researchers (beginners), for instance, American English or British English, e.g. BRISC training course (Basic Rapid Independent Study Course), etc. to enrich knowledge, in the relevant field, in quickening the process of information
- Ramification and micro analyzation of electronic information, the IMEP is responsible for the activities, viz., creation of specialized database, OPAC, packaging/repackaging of information services, web publishing, library home-page, information retrieval and electronic resources, and resource sharing services.
- Development of information resources (New models of resource development, internet, web technology, CD-ROMs, integrating physical and electronic forms of information services, digitizing library collections, acquisition, etc.)
- Maintenance of university-relevant global publications catalogues

7 CHANNELIZATION OF INFORMATION

One receiving the green signal from the Editorial Committee, channelization of information, concerning in-house publications, obviously plays a vital role in information process field, as is illustrated in the Flowchar-2.

8 GUIDELINES TO AUTHORS/REVIEWERS/REFEREES

Adhere to the style spelled out for journals. If you don't, reviewers might think you wrote the paper for another journal, and sent it to us after it was rejected there. This is not the best attitude on the part of the reviewer while giving it a perusal.

An irritated reviewer is no better than a negatively disposed reviewer. What irritates reviewers? Unnecessary errors. Edit your paper carefully to eliminate spelling, punctuation, and grammatical errors. Even after your are finished and you know the paper is perfect, lay it aside for a few days and then read it again.

Check the accuracy of your references scrupulously. You would not believe how many papers arrive at a reviewer's desk with incorrect dates, titles, and author names in reference lists; or one year of publication or spelling of the author's name in the reference list and another in the text

citation.

Scientific editors and headquarters editors are not supposed to rewrite a poorly written or sloppy manuscript; that responsibility rests solely with the author only. If you have difficulty in using scientific terminology, consult a colleague who is in sound in such work, or seek out the services of a professional editor who will help you for a fee.

Papers received are read first by one or more of the experts of the university in the relevant field for the purpose, who decide whether to send them to a referee or otherwise. The referees are asked for their opinion on the originality, scientific reliability, clinical importance, and overall suitability of the paper for publication in the journal, and their reports may be sent to the authors to indicate any changes required. To help them, referees are sent a copy of guidelines for referees.

The IMEP is also expected to have readily updated prescribed (computerized) guidelines for the advantage of referees for offering comments on the publication of a research paper/article in a scientific medical journal.

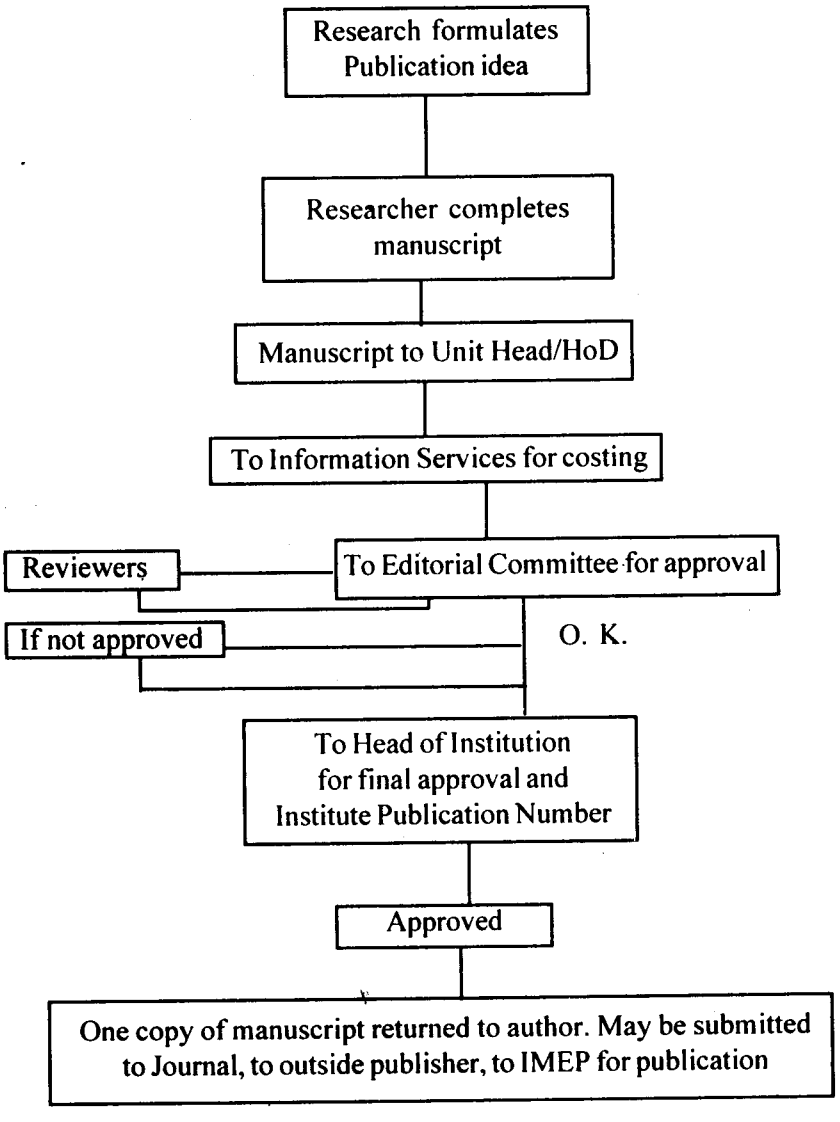
9 CONCLUSION

Change is a predominant phenomenon in any sphere, so is manifested in information science. This change has broadly to pass through three tiers-amount of change caused, duration of the change, and the extent of its effect., In other words, it is a revolution, an information revolution. The same revolution should be transparent and reflective in the universities/ institutions.

With the emergence of IMEP equipped with all the info-tools any university or Institution cane effectively interact with external institutions through electronically quick information exchange media and produce quality research publication within a time frame.

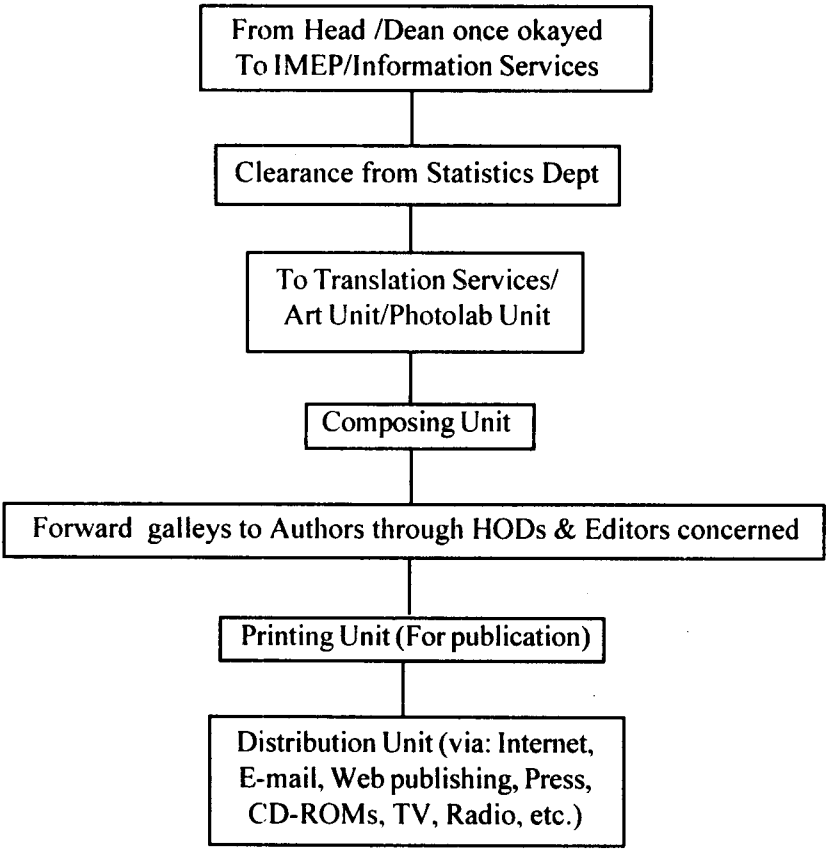
FLOWCHART-1

PROCESSING OF INFORMATION FOR PUBLICATION



FLOWCHART-2

CHANNELIZATION OF INFORMATION FOR PUBLICATION



IMPORTANCE OF STOCK VERIFICATION IN LIBRARY SYSTEMS

B. T. Gangu*
V. Uma**

ABSTRACT

This paper discusses the need for library stock verification and the modern methods adopted.The process of stock verification of the IGM Library in the light of automation has been described while mentioning the methods followed for filling up the gap in the collection.A brief description of the advantages of stock verification is discussed.

1 INTRODUCTION

It is a common practice in big business houses and government departments to periodically undertake annual stock taking in order to assess the profit or loss. Stock taking variously called as stock verification, stock inventory, etc. is the physical checking of each book in stock. It is quite a simple exercise where the library is a closed access one and some libraries remain closed during the period of stock taking operations. In the early times it was an uphill task to produce books due to the absence of printing press and the duplication of a particular book was a life-long job. Hence, it was but natural that books were considered valuable assets and these were preserved like treasure troves. In those days, there was no need of stock taking as only few rich people used the libraries and the books were kept away from the reach of the common man.

With the invention of printing press and with the advent of democracy and renaissance the production of books multiplied and more and more books were read and barriers of caste, sex, age and class started vanishing. Still the sense of property swayed high. To preserve this treasure closed access continued to be in vogue and every care was taken to ensure that no book was lost. Later the concept " Books are for use" and not for preservation enabled the common man to reach the books. Gradually the need to prepare an inventory of the books was felt.When library economy was the thing rather than library science, one of the significant administrative actions was that of taking an inventory of library material as a means of determining the integrity of the collection and making certain that the stock matched the shelflist.

Opinions differ regarding the need for stock verification.Stock inventory is often referred to as stock verification. Some are of the opinion

* Both the Authors are Senior Professional Assistants at IGM Library, University of Hyderabad

that with the growing holdings undertaking stock inventory is a waste of time, manpower and money; few others consider sample or periodic stock verification is necessary to assess the quantum of loss.

2 IS STOCK VERIFICATION NECESSARY

In olden days, there used to be tens books in number and these too were chained to desk or preserved in almirahs.Readers were also few and they used to be scholars. Books were hand written and illustrated which was difficult to duplicate and hence had to be preserved and protected.Thus books had to be referred only within the four walls of library.

With the advent of printing more books and number of copies could be produced and hence the collection increased and the concept of chained library became redundant. There was more access the users as the books were allowed to be borrowed by the users. Still books were kept under closed access with only the catalogue card to be referred by the user and borrowed through the help of the librarian.

With the modern technological change and proliferation of reading material and information exposure, the concept of libraries has transformed from storage centre to information centre. As a result of the unrestricted access to the library resources, the loss of reading material has proportionally increased so much so that libraries all over the world are forced to access the loss frequently and take measures to prevent the loss.

When the collection is very vast, it is not feasible to undertake stock verification. It is generally felt that periodic phase by phase verification of stock inventory is a better solution. Many libraries no longer stocktake each year. Some undertake the operation perhaps once every five years. A continuous stocktake can sometimes be tiring, by working slowly through stock records when other work permits, although the results may be unsatisfactory. Missing books are indicated but the losses cannot be stopped or the books recovered. It is extremely costly in terms of staff time and completely disrupts the library's work while it lasts. Some librarians doubt the value of stock taking since it is a negative exercise which produces nothing.

3 ADVANTAGES OF STOCK VERIFICATION

All libraries are prone to loss of its holdings and all reading materials are susceptible to theft.Therefore, periodic stock inventory becomes a must to verify the quantum of loss. The loss could be permanent or temporary that is, misplaced (deliberately or inadvertently. Stock verification helps to know and trace the missed and replace the lost material depending on the importance of reading material. It helps to find which material is frequently required by users. Such material can be purchased in multiple copies.

Stock verification also serves the purpose of reshelving the collection properly and affording the librarian an opportunity to determine whether the loss was actually a result of mislocation or theft. This action is a means to determine the nature of collection and particularly in an institution with

a vast circulation system, it enables to clear up snags and make administrative decisions about filling reserves, replacing missing items, or cancelling the record.

Stock verification helps in weeding out unnecessary material and also rarely used material; and finally to replace the missing gap if necessary. Missing book is normally a book which is in great demand and used frequently. Stock verification helps to determine the value of its holdings, i.e., the collection often in use and in demand, thus being prone to theft.

When stock verification is done quarterly or annually and if it is found that all the copies of particular book are issued out frequently, it indicates that more copies of such books are prone to theft. It also helps to make certain that the stock matches the shelflist. Next it provides opportunity to rearrange the collection systematically. Further it also enables to clearly determine whether the loss is actually due to misplacement or theft.Thus stock verification helps the librarian to take final decision as to cancel the item from the record or replace the loss. The gaps in stock when found can be covered through requests and reserves. Further stock figures can revised and the catalogue be kept upto date.

4 TYPE OF MATERIAL LOST

Usually it is the prescribed reading material for the course that are frequently found missing during stock verification. Next category is the light reading material such as fiction , general magazines, newspapers etc. which are frequently being taken away by users. Further many illustrated books, reference books, journals, etc. are often mutilated which needs to be replaced.

5 DEFINITION AND ROLE OF STOCK VERIFICATION

"The process of taking stock by checking records of books possesed with copies on the shelvs or records of books on loan."

"Stock verification implies the physical check up of the articles on record."

6 ROLE OF STOCK VERIFICATION

In large libraries physical verification of the holdings will cause dislocation of the routine work and also inconvenience to users.In such libraries section by section or class by class with the help of shelflist will avoid such problems. Further physical verification can be undertaken in academic libraries during vacation, while public special libraries, etc. it can be done during less pressure days depending on the concerned library. The frequency of verification is dependent on the needs of each library's and the quantum of loss.

7 METHODS OF STOCK TAKING

There was change in the form as well as quality of the reading material. Therefore, library materials range in the form of books, periodicals, serials, maps, films to audio video cassettes. Thus the libraries were under pressure

to acquire increasing number of reading materials of various types and as a result the need to prepare an inventory of the holdings of the reading material at regular period arose.The method of stock taking vary according to the kind of stock records in use.

7.1 Conventional Methods of Stock Verification

In olden days when the public did not have access to books stock taking was quite easy and books were verified physically by using the shelf list. After that, a century ago, when the number of readers were not large and the library being closed during stock verification the methods undertaken was also the same. that is, to physically verify the stock with the shelf list. The next method was to take census of the holdings of the library. This count was deducted from the total stock records, which would show the missing books at the time of the check which again will not give information as to the actual titles.

One more way is the use of accession register or shelf list as a check if it is the flexible form.Cards are checked against shelves, the issue, the stock, bindary, repairs and other collections of material in progress. The cards are marked to indicate the presence of a book at stock taking. Cards for missing books are separated, rechecked at a later date and withdrawn or replaced. Cards for books which are not traced immediately are filed in a separate tray which are called as untraceable record of books. Rechecking is done once or twice to ensure the actual loss. This is simplest way of stock taking suitable for small and medium libraries.

For larger library systems with many branches the stock taking can be complex and speed on operation is essential. Further libraries with extensive stock accomdation might adopt an audio method using a small portable tape -records with a label microphone.The tapes can later be played back at leisure which a clerk marks off details of the books checked.

7.2 Stock Verification and Computerisation

With the introduction of computers in the libraries for in-house operations even stock verification is also automated which has made the process efficient and fast. Various library application packages are available even in India which have exclusive sub menus for stock inventory.

8 STOCK RECORDS

There are three types of stock records which are being used in libraries.

8.1 The Accession Register

It is a record of books added to a library. Books are numbered progressively as they are added to stock and entered in the register which may be in book form or on cards.The accession number links the book with the bookseller's invoice and identifies each copy in the catalogue and the issue system. This link between the book and the invoice may also be useful for audit purposes.

8.2 The Shelflist

It is a stock record of book stock in a classified order. It may provide a link between the catalogue and the charging system when accession numbers are used for checking. Many libraries do without a shelf list prefering to rely on the classified catalogue instead.

8.3 The Catalogues

The main stock record of any library is its catalogues which are the keys to the library stock, arranged in a systematic order.Various added entries are included to ease tracing by different approaches. The catalogue record describes and indexes the resources of a library.

9 LOSS OF BOOKS

'Lost' in the context of this considerd as study has been euphemism for stolen. The word can also be used instead of misplaced, misshelved, missing in circulation, unusual delay in return, borrowed by faculty/staff etc. All libraries can be victims of loss and all library materials are susceptible to loss.

10 REASONS FOR LOSS

The reasons for loss vary in the case of rare items from a desire to possess the item to the desire to translate item into cash. At times both the reasons are operative.Various methods of theft may be users may erase the property marks, duplicate rubber stamps, due date slips, date stamps etc and take the book out without it being charged against the name of the borrower at the circulation desk. Very often such people already have market and necessary established contacts to sell the book or make duplicate stamps.

11 RESPONSIBILITY OF LOSS

In India, the responsibility of loss was fixed on the librarian by making him responsible for his collection, but this was considered a deterrent to service and called for consideration of norms of loss. The process of developments of norms is is still continuing.

The other major thrust is in the area of measuring and reducing losses.This latter relates directly to the eventual installation of security systems.as a result of the installation of a tattle tape system after a selective inventory by collections was made.

Practically all the prominent university libraries are kept open at least for 12 hours everyday.The working hours of a university librarian are usually from 9A.M to 5 P.M. In his absence, his senior collegues look after the library. The librarian does not carry the keys of the library with him. All the books and journals are displayed on the open shelves. When the library is closed for the night or on Sundays and holidays the keys are with the watchmen. It means the responsibility of safeguarding of the library is divided among all the staff members and no individual can be held responsible for the missing books least the librarian who is held responsible for the loss.

Phonograph records disappear from their sleeves by duplicating the takeout in other sleeves. Microfilm reels and microfiche are pocketed. Cassettes are perennially lost and lend themselves to vocal graffiti. The New york Public Library has suffered the loss of original art prints while maps have disappeared in other libraries.

In order to be fair to all the workers of a library some proper measures are to be taken to grapple with this sensitive issue. One of the measures is that the library staff should not be held responsible for loss of books and at least five books per thousand be written off. In case of abnormal losses necessary investigation be made and action taken as per the rules of library.

12 MUTILATION/LOSS

People belonging to different community make use of the collections in the library.A few of them mutilate the books or try to hide them on the shelves. A negligible percentage of them try to pilfer the books and journals. Under this category came even those readers who in fact belong to the so-called well-to-do families. Besides these readers even sadhus pilfer the reading materials. Hence loss of books because of these reasons ,is inevitable in spite of necessary precautions which are usually taken by the university librarians. The responsibilities of losses which is inevitable in open shelf system and in view of the social and economic conditions prevailing in our society should not be fixed on the library staff.

13 PREVENTION OF LOSS

The prevention of theft is the most urgent problem of libraries the world over. In the past many attempts were made to prevent theft of reading materials with not much success. Eventually with the introduction and installation of modern security systems most libraries especially in the western countries have found considerable reduction in the material loss. Successful prevention requires that security and check should be established at all exit/entrance but the better control system is to have a single entrance/ exit adjacent to circulation desk.

Electronic security systems in libraries were introduced in 1960's then tremendous changes have to make the systems more efficient. Until the eighties, most libraries had locking gates or turnstiles. Later many libraries eliminated this type of systems on the grounds of aesthetic and economic reasons and introduced open check point system.

Further in a number of libraries rows are asked to exit between a pair of sensing screens called by various names such as detection screens, columns, posts etc. A person exiting through this system with the 'live' target, triggers an audible or visual alarm.Two modes of library security are in vogue. One is bypass and another is full circulating system. In recent years, the systems available operate on both the modes.

In 1980, three vendors of electronic surveillance systems were in the forefront: Checkpoint Systems, Knogo Corporation Sentronic Corporation and the 3M Company. There were two operating systems in vogue: Radiofrequency and Electromagnetism.

Checkpoint Systems introduced Mark I a bypass only, metal detection system (1973).It was replaced by Mark II a radiofrequency plexiglas system by 1974.This system was replaced by Mark III by 1979.In 1984 checkpoint introduced a dual frequency system which allowed Mark II users to take advantage of Mark III system too.In 1983 checkpoint introduced a floor mat detector, a mat that fits between screens to increase detection zone.In 1987 Affordable I was introduced.

Knogo entered library market in 1974 with its Mark II.In 1980 it released MarkIV and then Mark VII in 1986.The size and cost of sensitise/ desensitize equipment decreased with the introduction of the smallest targets ie Electro thread.

3M is the largest library security system vendor released 2 electromagnetic system in 1970's: Tattle tape and Spartan.Both the systems included sensing screens/optional gates/turnstiles and a control module.By 1986 the Ecotag was released. Ecotag a radiofrequency system was available as a wall or floor mounted single panel.

13 PROCESS OF STOCK VERIFICATION IN IGM LIBRARY

University of Hyderabad was established by an act of Parliament in the year 1974. Indira Gandhi Memorial Library (IGM) has approximately 1,80,000 books, 58000 back volumes with around 800 current journals and with 50 popular magazines apart from a good number of newspapers both national and international. There is fairly good collection of over 2000 text books acquired under SC/ST book bank.The library in addition has a good collection of 16mm educational films.

IGM library has more than 70 staff members University Librarian at the top, 2 Deputy Librarians. 4 Librarians, 1 Documentation Officer, 5 Senior Professional Assistant, 4 Professional Assistant, 15 Junior Professional Assistant comprising mainly senior cadre staff and others being the junior level library Assistant.

IGM Library started computerisation of its in house operations initially in 1989. The application software 'LIBSYS' has been used to automate all the house-keeping operations and the records of the library are available on the database.The library follows the D.D.C 18th edition with certain modifications and the AACR-II. Being an academic library where open access system is in vogue the IGM Library conducts the verification of its stock once in three to four years. The IGM library has initiated the process of stock verification through the 'LIBSYS'package.

14 THE LIBSYS AND ITS STOCK VERIFICATION MENU:

LIBSYS software package of the LIBSYS Corporation has five main menus to facilitate computerised operations of all the sections.

It stock verification sub-menu is part of the cataloguing menu.It has three sub menus of its own:

1. Initiate Stock Verification
2. Stock Verification
3. Verification Report

Initiate Stock Verification function sets the system for stock inventory process which should be run only once during the cycle of stock verification.

Stock Verification function the system on accept accession numbers one by one, registering in the database the presence of the item on the shelf. On entering an accession number and pressing the enter key, the system displays brief details of the title along with its current status.

This sub-menu has three options Modify,Quit and Process.'Modify option' is selected to change the status of the book(Default is 'on shelf') to either of the Damaged or Withdrawn

The 'Quit'option is selected for accepting another accession number.

The 'Process' option is selected for registering the presence of the book on the shelf.

There is also a facility to accept the list of accession numbers in a file, where each line contains only one accession number. This is helpful in grouping titles having the same status, for example 'Withdrawn Books'. In such a case file option may be used. The file of accession numbers is developed off-line and is saved in a file which is used as the input file when the system asks for the file name.

On entering the above information and pressing the enter key, the system will start registering accession numbers for verification in the database.

Verification Report function provides a list of all the books either alphabetically or by accession number or class number. There is a facility to include the status against each title.

- On Display
- On Shelf
- Checked-out
- Lost/Written-off
- Damaged
- Bindary
- Withdrawn
- Missing
- In-Process
- Reference

Reports may be generated separately for any of the above groups. One may also select any one or more groups to be included in one report. There is also an option to specify "Location", in case the verification reports are needed for specific collections.

15 METHOD OF STOCK VERIFICATION OPTED BY IGM LIBRARY

Books are arranged accorded to calls numbers based on D.D.C 18th edition.The shelf list cards are sorted out at randm, made into sets with tags for easy operations.

The Junior Professional Assistants are normally posted to attend to this work during the summer vacations when the post graduates don't visit the library. Initially reminder letters are sent to the faculty and students to

return the books stating that the stock verification would be taken up.The senior Professional Assistants and the Assistant Librarians are posted to supervise and coordinate their work of stock verification.

The staff members so posted take the shelf list cards arranged according to Call Numbers.wise to the concerned stack area and then check the Call Numbers and accession Numbers with the book placed on the shelf. When the book matches with the corresponding card, the book is pulled out and ' checked stamp' along with the year is put at the verso of the title page to ensure that the book is checked and found to be there. The missing books and the corresponding cards are separately sorted out and arranged separately in a tray.These cards are taken to the circulation counter where the checking is done to ensure whether the book is in issue.Finally, it is also checked at the binding and reserve.

1 Verification at the Circulation: The circulation module is opened with the LIBSYS main menu and the concerned password.Then under the sub module "enquiries" the copy status is verified with the use of the Accession Number of the cards of the missing books. It gives the details of the book whether the same is in issue or on the shelf. Thus it is cross checked at the circulation counter.
2 Verification in the Interlibrary Loan Register is also done.
3 In the periodical module provision is made to know whether the particular book is sent for binding or not.
4 In case of missing books the cards are again arranged in a separate tray which is periodically checked by which process most of the books are being traced.Then finally after thorough checking the list of cards for which the books are not traced are placed before the library committee which takes a decision to write off.Then the cards of the written off books are withdrawn from the database and also from the general catalogue cabinets.

Normally if the books which are lost are of textbook nature or rare collection, it is replaced by either procuring it with the recommendation of the Head of the Department/Dean or the same copy if available elsewhere is taken on ILL and xeroxed copy is then bound and put on the shelves to fill up the missing gap.

5 Rechecking the lost books Periodic rechecking is done normally once in one or two years.The books that are traced are entered in the database if it was withdrawn earlier to complete the online book holdings information of the library.Then the books lost are entered in the database under" Loss of Book" file which would anytime show the loss of books.

16 CONCLUSION

Keeping in view the advantages of stock taking, it is suggested that only "sample stock verification" of the library holdings may be done provided the extra staff is sanctioned to each university library. Modification

if any in this proposal may made depending upon the number of books a library has.

The extra staff throughout the year will remain engaged in stock verification and in this manner the stock of the entire library will be verified within five years or so without closing the library. If the services of the regular staff are utilised on stock verification the routine work of the library is bound to suffer which should not be allowed at any cost. As it is said earlier more emphasis should be laid on 'service to readers' if the real purpose of a modern library is to be realised.

Finally it is stated that both the Radhakrishnan and the Kothari commission Reports have attached tremendous importance to the role of a library in the life of a univerity. Realising the importance of a University library the Kothari commission has brought library staff at par with the teachers in all respects.In view of the above examination and analysis of the complicated problems of " stock taking"in nutshell it is suggested as under

1 only sample physical verification of the stock be done every year.
2 In order to implement the recommendation of the commmission the following extra staff are required depending on the number of books in the holdings of a university library.

- One post of Professional Junior/Assistant Librarian
- Two posts of Library Assistants
- One post of clerk-cum-typist
- One post of restorer
- Two posts of book lifters

Energies of regular staff should not be utilised in doing this job at any cost.

Though the UGC has already allowed the utilisation of one third of the book grants in purchasing multiple copies of textbooks be enhanced so that readers may not be tempted to mutilate or pilfer the reading material of a University library. All University libraries should maintain " Reserve Book or Textbook Collection" where at least two copies of text books should be preserved in addition to eight copies.

To date no control method has proven entirely effective in preventing library materials being lost, even that of keeping the entire collection under lock and key and not permitting to be used.

Since this is not a feasible solution it is contended that the loss of library materials will continue to remain a constant problem and an administrative challenge.

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ECONOMIC ANALYSIS OF INFORMATION - MARKETING RESEARCH FACTORS

K.Somasekhara Rao *
G.A.Prasad Rao**

The analysis of economics of information is concerned with the resources available to promote the process and constraints that limit it. To make best use of funds to overall benefit the society as well as to individual information producers and users, thorough understanding over the use of funds and the economic analysis of information are necessary. To allocate resources for production and dissemination of information, number of tools and methodologies are available. Among the tools welfare economics, cost-benefit analysis, demand analysis, marketing research, cost-effective analysis, cost analysis and operational research models are included. Out of these factors Marketing Research is discussed to understand product preference, a sale forecast by region, purchase power of consumer, product priority, etc. The concept of marketing research is a technique to understand the market trends as also information market. This technique is useful to understand the necessity of information service and products in library and information service. Unless these things are understood well it would not be possible for any firm to attain success in market. So marketing research is very important area of knowledge in marketing. Information centre cannot succeed by supplying products and services that are not properly designed to serve the needs of the customers. To understand the users demand, collection of relevant data and its analysis is necessary. Marketing research techniques are usually employed not to provide scientific solutions but provides indicators. Through this process, information centres can well understand the demands of present and future, thereby they get required response to their products and services. Different steps in marketing research are included, particularly collection of information is discussed at length.

1 INTRODUCTION

Library and information centres that provide information services are coming under increasing pressure to justify their continued existence. The information centres are to compare the cost of providing the service and its advantage. The economics of information includes new information by researchers and inventors; continuously through the dissemination of information by educators, the communication media, computers and

* Associate Professor, Dept. of Library & Information Science, Andhra University, Waltair.

information services, and processing are use of information by users. The analysis of economics of information is concerned with the resources available to promote and process and the constraints that limit it. At this stage economic analysis of information must provide best mean's to maximise the benefits with limited resources. For allocation of resources a good number of tools and methodologies are available. The tools useful for economic analysis of information comprises of welfare economics, cost benefit analysis, demand analysis, marketing research, cost effectiveness analysis, cost analysis and operational research models.

Marketing research is usually carried out to understand product preference, a sales forecast by region, purchase power of consumer, product priority, demand, etc. To understand all these concepts well the needs of customer and behaviour should thoroughly be studied. This is possible only through marketing research. Economists fix price to a product based on the laws of supply and demand. Since information is considered as a resourc,e most of the economic principles are applicable. To understand supply and demand for a particular product and service, suitable marketing research techniques should be applied. If necessary the facilities of information technology be used, particularly to understand ever changing user interest, reactions to price, etc. through on-line information facilities. So marketing research is one of the important areas of marketing.

Many people confuse marketing with some of its sub-functions, such as advertising and selling. Authentic marketing is not the art of selling what you serve, but knowing what to serve! It is the art of identifying and understanding user needs and creating solutions that deliver satisfaction to the users. Information centre can exist and gains importance by creating user satisfaction through product innovation, quality and user service. If these are absent, no amount of advertising, sales promotion or salesmanship can compensate for it. The job of marketing research is to think about users and to guide information centres and non-profit organisations to develop information products and services.

2 DEFINITIONS OF MARKETING

According to Philip Kotler "Market research is the systematic design, collection, analysis and reporting of data and findings relevant to specific marketing situations facing the company"

As per American Marketing Association, "Marketing is the systematic gathering, recording and analysing of data about problems relating to the marketing of goods and services".

According to Green and Tull, "It is the systematic and objective research for and analysis of information relevant to the identification and solutions of any problem in the field of market".

3 MARKET RESEARCH PROBLEMS

The classification of marketing research problems can be done considering the characteristics like routine problems and non-routine problems, short-term and long-term problems based on subject etc.Out of all these classification based on subject is more accepted method, as:

1. Research on products
2. Research on market
3. Research on consumers
4. Research on advertising & promotion method.
5. Research on distribution
6. Research on price
7. Research on competition
8. Research on sales

Research on information products include studies on the competitive position of a product/service, the level of user acceptance, studies on packaging, studies on new use of a product, etc.. User research includes studies on user behaviour, user motives, user loyalty, user assistance, etc.. Research on competitors comprises trends in competition, evaluating the marketing process of major competitors, identifies their status and analyse their cost versus performance. Research on distribution includes on distribution policies, transportation, warehousing, channels, etc.. Research on advertising and promotion includes on advertising effectiveness, studies on media and their relative effectiveness and cost benefit, sales promotion, etc..

4 STEPS IN MARKETING RESEARCH

1. Defining the marketing problem to be tackled
2. Specify the information requirement
3. Development of research design and the research procedure
4. Collection of information
5. Analysis and interpretation
6. Summarising the findings
7. Preparing the research report

For any kind of research, definition of problem is important and in marketing research it is still more important. In Marketing Research the problems should be clearly identified, defined and conceptualised. Defining the research problem is not that easy as the issues of research problems need not be explicit always. Unless the problem is well defined, the cost of information gathering may well exceed the value of findings. Many researchers view that a well defined problem is half solved. If the research problem is not understood precisely and clearly, the research leads certainly to confusion. Once, the problem is defined it requires, systematic analysis. This analysis helps the researcher in collection of relevant information.Development of Research Design and Research Procedure:

The next stage in marketing research is development of research design and procedure. The research design depends on the depth and extent of

data required, the costs and benefits of the research, the urgency of work and the time available for completion. The research design is the blue print of the research project. A research procedure develops from research design. Research procedure develops from research design, it spells out the plan for securing the information. Example: Market survey, Collection of Information, etc.

Data is the foundation of all marketing research. It is the basic information on which the entire research revolves. Data collection is an elaborate process in which the researcher makes a planned search for all relevant data. Data is the raw material with which a market researcher develops valid conclusions. Data collection methods are rapidly changing due to the availability of telecommunications and networks. Some of the research firms now conducting the interview through teleconference method, voice mail, etc.. The researcher has to gather two types of data to complete the research.

(a) Primary data

(b) Secondary data

4.1 Primary Data

Primary data is data gathered first time by the researcher. The researcher goes for primary data if the secondary data is found not sufficient. Now the researcher decides the amount of primary data to be collected. Accordingly the suitable primary data source should be identified. To collect primary data lot of technical expertise is required. The provider are the source of primary data is termed as respondent.

Example: Putting questions to the respondents and collection of information, periodicals, research reports, personal dairies, etc..The methods for collection of primary data:

1. Mailed Questionnaire,
2. Schedule,
3. Interview technique,
4. Observation.

4.2 Secondary data

Secondary data is the data borrowed and used by the researcher from secondary sources of information. The researcher must make use of all secondary data sources for taping primary data. Some times the information available in secondary sources is sufficient to complete the research. Therefore thorough analysis of secondary sources of information is advisable. Now most of the secondary sources are available in compact discs and in networks. The cost of searching for secondary data is always cheaper to primary information. This is further classified into external and internal secondary data. Secondary internal data is generated in a firm and always keeps high value . Example:

(a) Yellow pages of Telephone directory
(b) Industrial product finder
(c) Data through Telephone
(d) Indexing and abstracting services, etc.

To verify the quality of collected data scaling techniques are available. There are five types of Scales:

1. Nominal scale
2. Ordinal scale
3. Interval scale
4. Ratio scale
5. Attitude measurement techniques

4.3Nominal Scale

In nominal scale numbers are assigned for facilitating identification. The nominal scales are just numerical and are the least restrictive of all scales. Ex: Credit card numbers, Bank a/c. numbers, Employee identity numbers, etc.

4.4 Ordinal Scale

These scales order or rank items according to some attribute. Ex: Preference of a particular information service out of the available information services. Preference of a particular toilet soap based on a particular characteristic of a toilet soap.

4.5 Interval Scale

An interval scale is an arbitrary zero point with further numbers placed at equal intervals. A Thermometer is a good example of an interval scale.

4.6 Ratio Scale

A ratio scale has a natural zero point and further numbers are placed at equally appearing intervals.

Example: Measurement scale, Weight, etc.

4.7 Attitude Measurement Technique

The attitude measurement technique deals more with psychological measurement.

5 ANALYSIS AND INTERPRETATION

The next step in the marketing research process is to extract pertinent findings from the data. The researcher tabulates the data, averages and measures of dispersion are computed for the major variables. For additional findings, the researcher will attempt to apply some of the advanced statistical techniques and decision models in the analytical marketing system. To identify important relationships among variables in the data multivariate statistical

techniques are used. Some of the techniques are given below:

1. Multiple regression analysis
2. Discriminant analysis
3. Factor analysis
4. Cluster analysis
5. Conjoint analysis

5.1 Multiple regression analysis

The researcher may be interested in one of the variables in analysis. This variable is called dependent variable. When one variable is involved the statistical procedure is called simple regression and more than one variable known as multiple regression. Example: To understand the attitude of library staff on information technology, variables like designation, sex, age, etc. should be analysed together.

5.2 Discriminant analysis

In many marketing situations, the dependent variable is classificatory rather than numerical. This technique is useful to understand the users product preference, criteria for market segmentation, etc..

5.3 Factor analysis

Factor analysis is a statistical procedure for trying to discover basic factors that may underline and explain the correlation among the larger number of variables.
Example Attitude towards air travel, television programs, etc..

5. 4.Cluster analysis

Many marketing research problems require the division of objects into sub-groups or clusters. The objects are described by multidimensional data. Ex. The library users into teachers, research scholars, students groups.

5. Conjoint analysis: This technique is used to appeal the product to target users. This is very useful in information marketing to understand the users preferences.

6 SUMMARISING THE FINDINGS AND RESEARCH REPORT

To summarise the findings the researcher should not use unwanted statistical techniques which may devalue the findings. The researcher should present major findings that are relevant to the current problem. The research report should be prepared precisely and a specially designed format be used for preparation research report. The report should act like a bridge between the researcher and decision maker.

7 LIMITATIONS

1. Marketing research does not provide solutions to problems, it only provides indicators.
2. Marketing research and even the results are disproportionate to the benefits of research results.
3. Limitation in terms of the time element.
4. Influence of government controls and other external factors.

8 CONCLUSION

The ever increasing complexity of marketing business activity made marketing research more complex. To take decision on market mix, product design and distribution, promotion and advertisement, pricing, etc. specialised skills and research techniques are necessary. To understand problems of information market the techniques of marketing research are proved useful. To select a research problem and its definition, the available information technology is very useful. The information databases and networks are highly useful to take final decision in the research process. Through marketing research procedure the information products and services can be refined time and again in order to meet the ever changing interest of information users. If the information products are not up to the mark, Marketing research provides pertinently accurate information for the business executives to facilitate the process of decision-making. The information industry can switch over with their products and services from local to national and national to international markets, based on research findings. Marketing research report facilitate the introduction of new and innovative products and services. It helps the information centre to understand the user, the competition and market environment.

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AUTOMATION OF ACQUISITION PROCESS OF LIBRARY MATERIALS IN UNIVERSITY LIBRARIES

V. J. Suseela*

ABSTRACT

Advantages of automation are mentioned with reference to the acquisition procedures followed in university libraries. The automation process of acquisition of books, serials, back volumes of serials & other materials are, described briefly in connection with the Integrated Library Operations through different modules of LIBSYS. Utilities of these operations are discussed through Acquisition and Serial Control module, suggesting the requirements at the end to achieve completion in the task and produce satisfactory results in library operations.

1 INTRODUCTION

Automation though not a recent concept in Indian environment, until recently only the special/R&D libraries are taking advantage of it and university libraries are now active in modernising their services by computerising their library inhouse operations and bibliographic records further getting into the present stage of sharing the resources through the Library and Information Networks. University libraries catering to the needs of post-graduate study, teaching and research acquire following categories of materials in support of the goals of the parent organisations:

1. Books
2. Serials including Periodicals
3. Reference Collection
4. Reserve/Text Books
5. Government Publications
6. Conference Proceedings
7. Thesis, Dissertations, Research Reports, Annual Reports of Research Organisation
8. Educational/Course Guide Material
9. Microform Publications (Microfilms, etc.)
10. Electronic documents like CDs

Automation of acquisition process (compared to manual work) facilitates

- to reduce the time/labour involved in repetitive jobs

* IGM Library, University of Hyderabad, Hyderabad

- to standardize the data
- to avoid maintenance & checking of bulks of cards through various files of On Order, In Process and Catalogue for duplicate checking, which is one of the very important tasks of acquision of Books, Back volumes & Serial Publication, etc.
- To trace the position of an item being procured for the library, i.e. whether on approval/approved/ordered/received/billed/paid/sent for process, etc.
- to maintain Annually/Periodically the accounts of Budget & Expenditure (utilisation) showing the balance without additional effort
- to draw and generate statistics easily and automatically

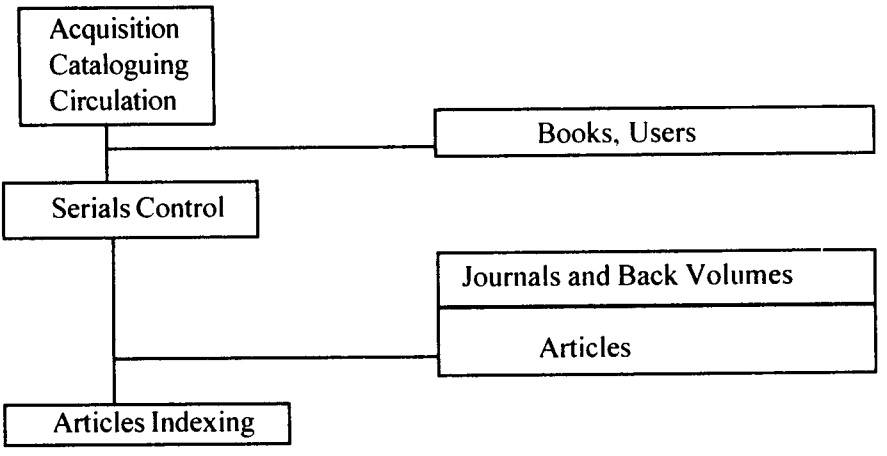
Common procedures the university libraries follow for procuring documents including serials are follows:

1. Budget allocation to various Schools/Departments
2. Receiving indents for processing documents from the Heads/Deans of various Departments/Schools
3. Duplicate checking
4. Placing orders either through Agency or directly to the concerned Publishers
5. Updating the receipt position after receiving the ordered documents
6. Accessioning
7. Invoicing and forwarding the invoices for payment
8. Making payment
9. Finding the balances, if any available after utilising the allotted amount
10. Sending reminder notices for the unsupplied items of documents.

2. INTEGRATED LIBRARY OPERATIONS

One-line Advancements in Computer Hardware and Software Technology, facilitated the use of tailor made systems, i.e. Application Software, in support of Database Management and various housekeeping operations in various developmental activities and the same trend is set in the Automation of Library & Information systems and services. Among the available Library Software, the IGM Library of University of Hyderabad adopted LIBSYS, which is functioning through the following Modules for computerising various library in-house operations, integrating them in relation to the database of library materials, producing the databases of documents, to facilitate the users with the Searches (OPAC) .

1. Acquisition
2. Cataloguing
3. Circulation
4. Serial Control
5. Article Indexing
6. OPAC



3 AUTOMATION PROCESS OF ACQUISITION

After the computerisation of the Retrospective Conversion of Data of Books and other documents already existing in the Library while handling the Catalogue of fresh documents and circulation of books, automation process of acquisition of library materials was taken up with books and other materials in the year 1992, Serials from the year 1995, which a was followed by bound volumes of periodicals 2 years later. Acquisition operations of books and other material was carried through the Acquisition Module and serials processing through Serial Control module. These modules were initially made operative by standardizing the following through the Record Keeping Functions of the respective modules.

1. Standardizing codes for currencies and updating with the current GOC/ RBI Exchange rates e.g.:

US Dollar	→ $
Australian Dollars	→ A$
British Pound	→ BP

2. Standardising codes for Vendors/Agencies/Publishers/Binders to whom the purchase orders are placed, e.g.

Allied	→ ALL
India Book House	→ IBH
Globe	→ GLO
Standard Book Co	→ SBC

3. Standardizing Terms for various Budget head as each Dept/School is dealing with various Budgets to spend on different items and updating the budget allotment under each head when necessary, e.g.

Chemistry	
Book Grant	→ C1
M. G.	→ C2

Books-SAP → C3
Periodical Grant → C6
Per. Grant-SAP →C8

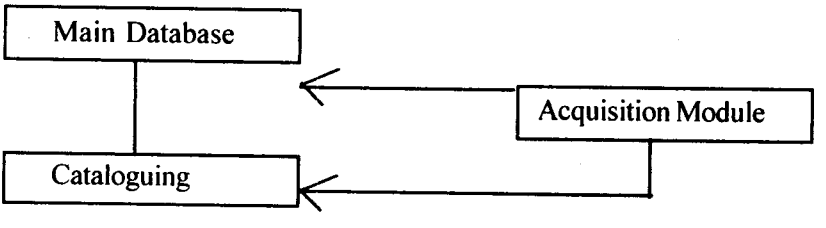
Physics

Physics-Book Grant → Cl etc.

4. Standardizing codes for languages of documents e.g.
   English → E and
   Russian → R etc.
5. Standardizing the types of material/documents e.g.
   Books → Books
   Bound volumes of Periodicals →V
   Research Dissertations RD
   Research thesis RT etc.
6. Standardizing texts for Acquisition Module and Serial Control Module separately to generate the Text relevant to the function, i.e. Notices/Forms especially for approvals, orders, reminders, payment, orders, etc.
7. Standardizing the Serial types through Serial Control Module e.g.
   Monthly → M
   Quarterly → Q
   Bimonthly → BM etc.

3.1 Book Acquisition System

The Acquisition Module is devised for computerising the main operations, correspondance, enquiries, expenditure analysis, etc.



After the budget allocation and receiving indents for books, serials, etc. title(s) from the indents are entered, selecting the document type while duplicate checking and updating bibliolgraphical details, indent details, etc. system automatically generates the Control Number. The control number(s), which represents title pertaining an indent/requisition collectively can be placed for order to the Vendor/Publisher.

After receiving books in the library along with Invoice, the order status of title is to be updated to receiving position. Both the existing provisions in the software, i.e. Invoicing while Accessioning or Invoicing then Accessioning

are helpful, not only for recording the price, Invoice details but also for sending the titles with bibliographic data to catalogue module and Invoices to Payment Requests function. The amount from the respective invoices pertaining to a party are clubbed together for making payment. The payment (Cheque/Draft) details are to be recorded finally in payment updates.

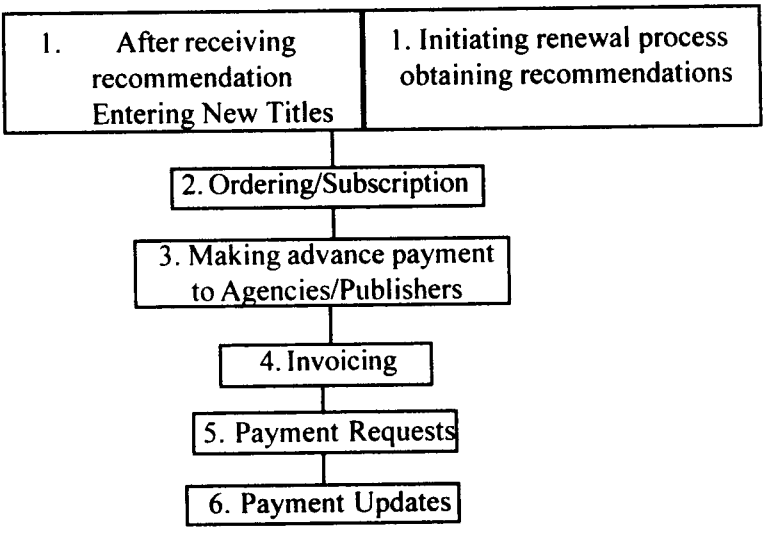
Libraries acquire documents also by way of gifts, exchange programmes, dissertations, thesis/research and project reports of their own organisations and also other organisations. Further university library also include the books and other material purchased by their research scholars and faculty under various projects, grants, etc. The bibliographic data of such documents are also computerised through Free/Gifts function of Acquisition module.

3.2 Serials Acquisitions

Serial acquisition also refers to the term Subscriptions, which is operative through the Serial Control module. It produces the journals database with current issues and bound volumes. The Serial Control module is coordinating the several operations through four sub-modules, i.e.

1. Subscription
2. Issues Management
3. Miscellaneous
4. Circulation

The Subscription process of journals involves New Subscriptions, Renewals, Invoicing, Payment Requests, Payment Updates, etc. as detailed in the figure.



After the budget allocation to each department/school and receiving the recommendations for journals from them, the subscription process commences with the entry of Titles of Journals along with publication details, subscription details, budget heads, vendors etc. and continues with placing orders for the subscription of journals for both new journals and also renewed journals. The thire step of making advance payments to Agencies/Publishers is lacking in Module for our operations. In Invoicing, where the ordered titles are selected to record the payment details, Subscription Number, etc. these invoices are bundled together to forward for payments to the concerned authority. The payment details are to be updated in 6th step Payment Updates.

The Submodule Issues Management is helpful in recording the journal issues indexes, annual volumes, special, issues, proceedings, etc. as and when received and for their binding operations.

Another submodule Miscellaneous is the base for managing all the serial control operations and standardizing data in various fields such as Currencies, Agencies, Budgets, Serial types and updating the data through Record Keeping function.

Through Enquiries function, it is feasible to know the status of a serial in the system and the expenditure under each budget head between the respective years. Reports is the most important feature to generate various lists, Notices, Forms, Directories, Registers, etc. which would reduce most of the correspondence in Serial Acquisition system.

3.3 Acquisition Process of Back Volumes of Serials

IGM Library acquires the backsets of Serials/Periodicals and add them to the existing collection after the accessioning:

- by way of purchasing directly from the Publisher/Agency
- by way of binding the loose issues of journals
- Gratis

After entering the retrospective data of back volumes of periodicals from dBase files, the acquisition process of bound volumes is carried out from Binding/BV Collection function of Issues Management submodule in the following steps:

1. Bindary updates: Loose issues of journals are selected through the system to form units for binding. Bindery Numbers are generated for every unit.
2. Binding order: to process these units to the binding order placed to the binder.
3. To Collection: Receiving them from order and accessioning.
4. Accessioning of back vols: Accessioning of the back volumes acquired directly by way of purchse or gift, recording the price details of the volumes acquired.
5. Change Accession No.: To change the Accession No. in case of mistake or alteration.

6. Status Updates: To update the status of back volume i.e. in bindary/on shelf/on order/ received.

4. UTILITIES

The Acquisition and Serial Control modules are functional for regular routine operations from the stage of recommendations till making payments. Record Keeping function is aiding in preliminary set up before initiating the computerisation in both the modules. The enquiries and Reports are the products/finished data of entire computerised acquisitional operations apart from Budget control/Expenditure analysis and OPAC.

4.1 Budget control

Budget Control and Expenditure analysis is to be explicit throughout the system, especially before executing the recommendations for the Purchase of books. Budget availability can be ascertained while operating ordering function itself and also entering title. Expenditure is computed immediately after the payment details are updated and provides Expenditure statements for specific year(s) in Enquires function.

4.2 Enquires

Enquiries function provides information regarding the routing status of the titles through various stages of acquisition process, details of ordered titles by Vendor/Agency, paid and unpaid titles, overdue (unsupplied) orders, processing stage of Bills.

4.3 Reports

Reports are derived from the data input through various functions of Acquisition/Serial Control Module and also from the following updates of concerned Texts:

- to effect the correspondence, i.e. Purchase Orders, Approval Forms, Notice, Letters
- to help in record keeping work i.e. Directories, Lists, Registers.

4.4 OPAC

Acquisition operations through these generate databases of Books, Serials and other materials and facilitate the users with online search of library documents.

5. REQUIREMENTS

The services and procedures followed by University Libraries demand more than conventional/routine operations. The software is still to be developed in order to perform such operations also.

Post orders

Order placed to regularise after receiving bills with documents. The system rejects the process of Purchase order after receiving the bill.

Standing orders

Placed to procure the serially published monographs, Annual Reports, Government publications, Advances, Annual Reviews, etc. Both the modules are lacking the provision for these standing orders, which is part of our Acquisition Programme.

Advance Payments/Prepayments

University libraries process advance payment against proforma invoice(s) in the case of periodical subscription orders either direct to the publishers or to the agencies. Advance payments are unavoidable even in the case of Books procuring directly from non-profit organisations, authors, foreign publishers, etc. Both the Modules are not having the facility to operate this function and thereby Acquisition processing is becoming incomplete in the absence of these functions.

6. CONCLUSION

The acquisition of books, serials and other information material is the prime and leading part of the university library collection development programmes, where the requirements of various types of users are pooled up to design a system favourable to most of the operations. Automation should facilitate not only speedy, precise operations, flexible presentation of Information/Data on several enquiries, reports but also should fulfil the requirements for processing all the operations to achieve the completion of the task to reach the set goals of automation.

DISTANCE LIBRARIANSHIP : EMERGING ROLE AND RESPONSIBILITIES

V Ramadevi*

ABSTRACT

Distance education (DE) has come of age. Traditional educators and government leaders the world over are its latest advocates as they struggle with the challenges of democratising higher education in increasingly difficult fiscal condition . Many of the systems used in the education of on-campus students are not appropriate methodologies to reach distance learners. By inproving library profession for distance students, librarians will also automatically inprove services to on-campus students. In this paper an attempt has been made to study the role of distance librarianship and its responsibilities to provide efficient services to the distance learners.

Methodology includes to study the characteristics of distance learners, use of technology in distance librarianship, the literature and interactors in distance librarianship, networking, education for distance librarianship.

Since the concept of DE involves the supplementing of print material with multimedia inputs, as one of the strong support services libraries in DE system play an important role. Hence it is essential of know the responsibilities of distance librarianship. The present study could gather information that would provide insights into the problem of the development of librarianship in distance teaching institutions. In conclusion we can say that as DE systems continue to gain credibility, their importance as a means of providing quality education will continue to grow. Consequently libraries, librarians, library educators, library administrators and library library providers must give to distance librarianship the support that is needed and required.

1 INTRODUCTION

Distance education has come of age. Traditional educators and governement leaders the world over are its latest advocates a sthey struggle with the challenges of democratising higher education in increasingly difficult fiscal conditions. Distance education has marked as one of its distinguishing features - as the term 'distance education' implies - the means to provides education at times and places determined as much by the students as by the institutions they are enrolled with. Print, audio and video materials, computer communications and telecommunications, or satellite television are all media used in distance education, and often in the form of open education. Distance education is sometimes viewed , if not as a cheap, then certainly as an economical means of providing education. However, it appears cheaper

Dr. Braou Library, Hyderabad (AP)

because many administrators are not costing into their programmes the adequate provision of support services, especially library services, which will enable students to obtain best value from their distance programmes.

But librarians cannot work alone to achieve the results that are required. If it is essential that librarians become integral members of teams, which include teachers and distance administrators and, instructional and support materials. There is a need for librarians to become more proactive and more ssertive within their institutions, thus ensuring that students's needs are optimised thereby making the learning experience not only satisfy but extending.

Many of the systems used in the education of on-campus students are now appropriate methodologies to reach distance learners. On the other hand a number of strategies used to enhance distance students' experiences can slso be used to benefit on - campus students. By improving library provision for distance students, librarians will also automatically improve services to on- campus students. distance students will consequently have essentially the same services available for on - campus learners. Increasingly important for libraries is how to provide distance students with adequate instruction in the use of libraries, materials and other information sources needed to support their course work and learning needs.

2 CHARACTERISTICS OF DISTANCE LEARNERS

The distance learners have certain qualities unique to them. These qualities reflect their disadvanteged condition with reference to their learning capabilities. some of them are:

1. Most of the distance learners are adult learners and they are bound by social, economic and cultural dimensions and limitations.
2. Many learners lack learning atmosphere at their places and hence they are less motivate.
3. They are separated from the institutions teachers and the peer learner group.
4. They have to depend largely on the learning packages sent by the University/Institution and have to make independent study.
5. The learners have to traval long distance from their places of residence to make use of facilities such as audio - visual sections, library facilities and the face-to-face contact sessions provided by the University.

Distance educations main emphasis is on distance learners motivation. For this purpose they follow multimedia approach , print material audio video. Their print material i.e., course material is in self-instructional style so as to motivate the distance learners. However, to follow the course material, they need some support either by themselves or consultig by some others regarding their contents and monotony of mediums. Some of the other barriers to their study are physical environment and understanding problem. In some houses learning is made difficult by unfavourable conditions

or it is not encouraged, or there is not sufficient time to follow the course material. Some learners need to know about how to fillup the application particulars due to their background studies. These limitations force the motivated learners to depend on a more broader environment of learning resources like libraries.

3 DISTANCE LIBRARIANSHIP - RESPONBILITIES

Librarian, in partnership with teaching staff, have a responsibility to identify distance students who may be information starved, relying solely on the pacakaged and pre-packaged materials sent to them by course administrators and tutours. Total reliance on prescribed and predetermined information inhibits the develoment of life - long learning skills. These are increasingly being recognised as essential to enable people to reach their potential. Librarisn attempting to provide services to distance learners need to aim to:

* be integral members of course planning and implementing groups
* develop programmers in information literacy
* actively market their services
* distribute guides to services and subject information sources
* use the fastest means of transmitting meterials
* provide phone or E-mail services where possible to receive equiries and
* provide dial - in access to library catalogues and other database available on campus

It is clear that the achievement of these goals will depend on the degree of sophistication and level of resources in the country and institutions providing the services. Nevertheless they are key goals. With lesser student numbers and few resources it may be possible to make contractual relationship, so that the student can access other libraries with relevant materials.

Distance librarianship is inextricably linked with the growth of distance education systems around the world. The phenomenal pan - global growth of modern systems of providing education via distance dictates that librarians and other information provides re-examine the processes and procedures that are used or not used to provide their services to distance student. Libraries are acting as centres of learning resources and librarians are in the for front of the helpline. They are always ready to provide an environment and initial training in study skills to independent learners. They are responsible for curriculum design workshops, student support services, counseling, IT and reprographics, media services, etc. besides usual library and information services.

4 TECHNOLOGY IN DISTANCE LIBRARIANSHIP

The application of Kelmology to support the delivery of modern distance education programmes is widely used in developed countries. There is widespread assumption on the part of many distance educators and administrators that technology is accessible to all distance learners. This assumption is not always correct in developed countries and certainly cannot be assumed to be the norm of distance learners in Third world countries. Many distance learners are located in places that are not technologically sophisticated. The only medium that is widespread in the Third world is radio. Now - a - days its usage has been increased even in remote rural areas. Anyone listening to a broadcast is able to absorb atleast some of the information being transmitted. Therefore distance teaching by radio provides an element of continuing education for those who listen to such programmes out of general interest in addition to supporting a prescribed course of studies.

The use of toll free telephones services, E-mail, the Internet, faxes, on-line public Access datalogues (OPACS) with dial-up connections, fast mail, home videos, home based computers with a variety of other technology dependent services and devices have all been fashioned to provide support to distance learners with regard to their library and information services in developed countries. But the application of these technologies are not unique in all the developed or underdeveloped countries.

Therefore the application and integration of technologies into the delivery of library and information services to distance learners in the Third world cannot be teken for granted. The use of technology driven services has to be based on existing services. The development of contingency plans for whatever reason, is an imperative. Cost factor is also a critical variable in the use of technology in distance librarianship. Communications carriers must become more sensitive to the need for and use of their services for educational purpose.

5 THE LITERATURE OF DISTANCE LIBRARIANSHIP

One of the difficulties that of new field a discipline encounters is the scarcity of documentation. Information on distance librarianship has only recently begun to be reported in the literature. In a random survey of 13 publications on distance education, including conference proceedings, Cavanagh (1994) reported that no mention appeared about the library in the majority of items scanned. This is in keeping with the finding of other writers (Appavoo, 1985, Carty, 1991, Watson et al 1992). "Library services for off campus and distance education on annotated bibliography (Latham, Slade and Budnick, 1991)" is the first major publication of this genre in the field. In 1991, another important contribution to the literature appeared in a special edition of 'Library Trends', off-campus library programmes in higher education are examined. The scope of this publication is worldwide. It provides

significant information of the practice of distance librariaship at the tertiary level.

Kascus and Aguiler's (1988) paper on 'Providing library support to off-campus programs is our important benchmark in distance librarianship in United States. While the focus of the paper is American, the information it provides is of utility to the practice of distance librarianship wherever it occurs. The professional literature of Australia and New Zealand is replete with a number of articles on distance librarianship in both of these countries. Much of this material reports on specific libraries, system and experiences. The development of distance education system in the Indian Sub - Continent as well as the large published industry in the country are conducive to the wealth of published material on distance librarianship. These range from Journal articles to books, and other material(Neela Jagannatham - et al. 1988).

INTERACTORS IN DISTANCE LIBRARIANSHIP

Distance librarianship has four distinct sectors or groups. Their characteristic are:

- distance educators and tutors, and others associated with the design and delivery of the academic programmes
- distance education administrators and those who are responsible for the machines and delivery of distance programmes
- distance learners who used such systems to achieve their eductional goals and
- distance librarians who provide critical support services;

Apart from all those groups mentioned above libraries and librarians have a critical role to play in closing the distance learning circle thus becoming a connecting, communication and inter-linking educational force through their provision of information to learners one of the most important challenge that librarians and other information providers face is the need to educate distance educators and adminsitrators about the place and importance of libraries in distance education. Also needed is an appreciation of how important the development of information - gathering skils is for students. Need to develop a professional collection on all aspects of distance education is paramount. The professional collection must cover all aspect of distance librarianship as well as of the other discplines that are required to provide quality library services to distance learners. To provide efficient library services depends upon the organisations mangement structure, funding of the distance services including norms, professional guidelines, local practices, international trends and developments and user pressure on the system, facilities that will be provided to house all the activities that emanate from or are required by or of the new service, library's collection development etc.

7 NETWORKING

One of the most important activities that distance librarians have to pursue vigorously and rigorously is a serius and sophisticated system of networking with other involved in the delivery of distance education programmes. Librarians can no longer assume that educators understand and know what they do and how their services fit inro the distance education process. In additions to speaking with professional colleagues; distance librarians also have to network with packaging department. post offices and other services unit that effects the delivery of library services to distance learners.

Omissions of the library service from the distance education system is also due to lack of understanding on the part of librarians about the process fof distance learning. Librarians are therefore charged to acquire a greater level of understanding about distance education so that they can provide a better level of service to their learners. The value of networking must not be under estimated and therefore every effort must be made to develop strong and ongoing liaison.

8 EDUCATIONAL FOR DISTANCE LIBRARIANSHIP

Successful distance librarianship services are to translate needs into services and convert anticipation inro demands the development and spread of distance library services has implications for the curriculum of library schools and continuing professional education programmes. Distance education is on a growth spiral in all countries. Therefore, the existence of a cadre of professionals who are trained in distance services and able to perform the activities associated with distance librarianship with assurance and confidence must match the growth of distance education system.

Of importance is the exposure of librarians to the principles of distance education. Services based as a knowledge of the field and on understanding of the principles of the discipline are usually of a higher standard. Acquainteance with students needs, profiles, difficulties and expectations and contribute to the quality of service given and the esteem that is accorded to the profession.

9 CONCLUSION

The implications and impact of distance learning for libraries are significant. As distance education systems continue to gain credibility and recognition their importance as a means of providing quality education will continue to grow. Consequently libraries, librarians, library educators, library adminstrators and library providers must give to distance librarianship the support that is needed and required. Financial support is essetial. Distance librarianship demands that librarians find new and innovative methods to provide services. it also requires methods to provide services. It also requires methods and processes to provide library and information services to their

clients. Changing relationship and roles as well as redefining of responsibilities are all a part of the distance education scenario. By extension these changes must and will have an impact on library services to distance learners. With all this we can assume that the future of distance librarianship is challenging.

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ELECTRONIC INFORMATION ENVIRONMENT IN STUDENTS INFORMATION CENTRE—A CASE STUDY OF BISHOP HEBER COLLEGE, TIRUCHIRAPALLI

A. Manoharan*
R. Selvakumar**

ABSTRACT

This paper outlines the need for launching Students Information Centres in colleges with Electronic Information Environment. Explains the services in terms of information services. Guidance and Counselling services. Highlights the modes of Information dissemination. Brings out the details regarding Hardware. Software. files maintained and options to retrieve the information to create Electronic Information Environment. Plans the future activities to be sanction sufficient fund to launch Students' Information Centres in all Colleges of our Nation.

1. INTRODUCTION

Learning being a continuous process in the academic environment, access to the information available at their place and also in other libraries become a must. The libraries and information centres play a vital role in providing library and information services. As a social process, college education plays a vital role to mould the modern society. Besides the usual library services, the students need some proper guidelines to proceed their educational career and to seek employment opportunities. In this situation, the users of the college libraries should be guided properly. Hence, there is a need for having information centres in colleges.

2. BISHOP HEBER COLLEGE

Bishop Heber college is an institution of higher education locatged at Tricuchirapalli. Tamil Nadu and run by the Trichy-Thanjavur Diocese of the Church of South India and affiliated to Bharathidasan Unviersity. It has several distinct features. It offers research facilities and a variety of under-graduate and post-graduate courses of study, mostly life oriented and some offered here for the first time in the whole country. Amidst the scenic beauty of college campus and academic innovations is located, the students' information centre.

3. STUDENTS INFORMATION CENTRE

Most students who come to Arts and Science Colleges are frustrated because they did not get admission to a professional college. This frustration becomes more insense as parents, teachers and almost everyone give them the impression that is one does not get into a professional college. One is no good or Second rate and that they do not have any scope for success in their lives. Added to the blind acceptance of this fallacy in the absence of clear goals which leaves our students drifting aimlessly without interest and motivation. Thus, Arts and Science colleges have become a kind of abode for a high percentage of unhappy discouraged, uninterested and disoriented learners.

Hence, the authorities of Bishop Heber College have decided to reverse this trend by first removing the many misconceptions that cloud the students mind and then help them to find directions and goals for their lives.

By recognising the needs of the users, students information centre was launched in the college campus. At college level, it is the first institution in India which provides information services to the students with electronic information environment and also with well furnished materials, equipments and fixtures in a separate building which was exclusively designed for that purpose.

4. SERVICES

Students' Information Centre is the channel which provides meaningful message recorded in conventional or non conventional media. The Centre provides information Services, Guidance and Counselling Services, Special Courses and Placement Services.

4.1 Information Services

The Students' Information Centre of Bishop Heber College provides the following information to the users.

List of educational institutions at local, State, National and International level.

a. Courses offered in education institutions.
b Paper notifications about admission to the colleges and universities.
c. Scholorship details.
d. Career opportunities in India and Abroad selection procedures and qualifications required.
e. Bus, Train and flight services.
f. Important tourist sights with their location.

4.2 Guidance and Counselling Services

Students often face problems in choosing an apporpriate course of study or a career. The guidance service is meant to help the students make this vital choice based on their aptitude, abilities and family and financial

background. Counselling service is meant to help students deal with their personal problems like lack of concentration, disappointments, failures, alcohol and drug related problems and problems in relationship.

4.3 Special Courses

Students need help in two broad areas. Some need help to remedy their learning problems, improve their language skills and feel self-confident to meet the challenges of collegiate education. Some others need help to prepare for higher achievements like passing competitive examinations, getting expertise in computers and learning more languages. The following courses are offered in order to meet all these needs of our students.

a. Coaching programme for I.A.S., I.F.S. and IP.S.
b. Effective Communication, Personality Development and Leadership Development Programmes
c. Programmes for Competitive Examinations
d. Spoken English, German, Hindi and French
e. Computer Programming Courses
f. Coaching Classes for UGC-NET Examinations

4.4 Placement

The Student Information Centre maintains a classified list of students with their marks, specialisations and additional qualifications and make them available to prospective employers as and when required. Campus Interviews are regularly organised by the Student Information Centre and this service is gaining momentum.

5. Mode of Information Dissemination

The information services are provided through

a. the staff who man the Centre
b. News paper cuttings which are enlarged. Classified and displayed
c. Bulletins, Booklets and Brochures obtained from various sources
d. Computers.

6. ELECTRONIC INFORMATION ENVIRONMENT

The growth of technology especially that of electronics and telecommunications has opened up the world and ushered in the second most important revolution since the industrial revolution. It is indispensable that people are exposed to more information ever before. There can be both favourable and criticism on information ever before. There can be both favourable and criticism on this information explosion. Looking at all this growth in information, gathering, analysis and its distribution there seems to be a big demand.

In the fast changing world, information technology and information management are going to play an important role. Information has already been recognised as one of the basic resources for the Socio-Economic

development of a country. Information has now rather acquired the status of the most sought after resource of the resources. The newly emergingt high tech disciplines such as computers, tele-communications, technology etc., are given importance because they store, generate, manipulate, communicate information.

The information scientists are experiencing the impact of the new technology on every facet of information handling. The advent of digital computer has opened up new possibilities in information management and it is likely to change the information infrastructure by merging itself with other related technologies. The increasing use of Computer Systems for the control of management of information important implications for our thinking about information. And this information processing, storage and dissemination with the art of computer is probably called the Electronic Information Enviropnment.

7. HARDWARE

The Pentium 166 mmx Intel(3wr) which was isntalled in Student Information Centre of the College has 16 MB EDO RAM, PCTVGA 3ith 1 MB VRAM, 1.44 MB FDD, 2.1 GB HDD, 14 inch colour monitor, 104 keys-keyboard, 3 buttons Logitech mouse with multimedia kit. It is also equipped with MSP 245 Dot Matrix Printer and the operating system Windos NT.

8. SOFTWARE

The software Visual Basic is used for information retrieval in students' information centre which allows for creation of power application that exploit the key features of MS-windows including multiple Document Interface (MDI). Object Linking and Embedding (OLE) and dynamic Data Exchange (DDE). More graphics and Visual Bascis can be extended by adding custom controls and by calling procedures in Dynamic-Link Libraries (DLL).

TYPES OF QUERIES

The system can respond to queries such as

	QUARIER	INFORMATION RETRIEVAL	OPTIONS
1.	List and location of education institutions at local, state, national and international level.	a) Name of the Institution b) Address of the institution c) Faculties	a) Name b) Place
2.	Educational Programmes offered in Institutions	a) Name of the Institution b) Name of the Course c) Duration of the Course d) Eligibility e) Selection procedures	a) Subject b) Institution

		f) Fees g) Scholarship.	
3.	Competitive Examinations	a) Name of the examination b) Date of the examination c) Eligibility d) Fees e) Address to which applications to be sent f) Last date	a) Name b) Last date
4.	Flight Timiens	a) Flight Number b) Place of departure c) Place of arrival d) Distance e) Fare f) Time of arrival g) Time of departure	a) Flight Number b) Place
5.	TrainTimings	a) Train Number b) Place c) Place of arrival d) Distance e) Fare f) Time of arrival g) Time of departure	a) Number of departure b) Place
6.	Materials available in the centre	a) Author b) Title c) Publisher d) Place e) Year f) Abstract	a) Author b) Title
7.	Local Places of Interest	a) Name of the place b) Improtance c) Converyance facilities d) Accomodation	a) Place Name
8.	Campus Information	a) Bame of the department b) Location of the department and class rooms c) Details of the courses d) Subject taught e) Number of seats	a) Department b) Name

f) Eligibility
g) Slection Procedure
h) Faculty profile

10. TOWARDS THE FUTURE

The enter next millennium and the turn another page of its history from paper society to paper-less society, the Centre plans to implement the following:

a) Creation of digital information with multimedia object storage, retrieval and transmission, hypermedia navigation. One line services for career guidance. competitive examination and placement services.
b) Strengthening of CD-ROM Discs in Education
c) Instllation of CDS/ISIS for bibliographical records and News database management.
d) Compilation of the Directory of Internet Website addresses exclusively in Education

11. CONCLUSION

Applications of Electronic Information Technology in information Centes is becoming very common these days. This has made enormous changes in the operation of the students information centres in our country. But widespread use of computers is not found in Indian libraries and information centres. Though there is no difference of opinion about the need of students informtion centres in colleges, due attention is not found to be given for their inception and services mainly due to the finance.

There is no doubt that collection and compilation of a wide range of information as mentioned above is not an easy work. While initiating a New activity it is essential to go with an open mind and a high degree of imagination. To prove this Bishop Heber College is maintaining a full fledged self financed Sutdents Information Centre.

In order to fulfil the requirements of the Indian students, all colleges in our country should come forward to launch a Students' Information Centre with well equipped Electronic information technologies. For that the UGC should come forward to sanction sufficient fund to launch Students' Information Centre in all most all the colleges of our nation.

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CONTINUOUS PROFESSIONAL DEVELOPMENT (CPD) OF STAFF IN ACADEMIC LIBRARIES

S. D. Vyas*

ABSTRACT

E. L. Thorndike's educational theory that "man's mind does not cease learning till the age of 35 as human beings lose the power of learning in inverse ratio to their age" opens a new chapter in the field of continuing education programme. Discusses and defines the concept of CPD. Explains objectives of CPD as well as its need. Argues that if staff appraisal system is introduced in libraries it will seek better performance of employees and achieve greater efficiency through motivation and commitments. It will also realise the potential of staff, gather data for human resource planning and improve communication. Studies the observations of experts in library profession as well as from management. Explains why do we need staff appraisal and staff development. Explains why do we need staff appraisal and staff development training for the library staff and for head/chief librarians. Throws light on the need of such schemes, and how the librarians' role have undergone changes during last few years. Analyses the problems of librarians about their miscellaneous role which makes imperative that they undergo a management training and education to control libraries in better fashion. Warns that if there is no preparation of librarians they will have more problems and conflict in future. Exhorts that librarians' stock of learning and conditioning need continual replenishment.

Concludes that UGC forms another Ranganathan Committee for academy libraries management. Librarians be exposed to information technology every few years so that they remain uptodate.

Libraries are considered as heart of academic institutions although overall performance of libraries is presently quite dismal. Today the condition of the heart is so deteriorated that it needs heart transplantation.[1] The reason being that funds are not given to the libraries on the basis of its need or if given, are diverted to other areas. As far as continuous professional development (CPD) is concerned, we trace the educational theory advanced by E. L. Thorndike in 1928 who said that "a man's mind does not cease learning till the age of 35". According to him human beings loose the power to learn in inverse ratio to their age. Thus all strategies should be adopted for Continuous Professional Development (CPD). Einstein Rose says that the library profession expects its practitioners to work with professional unity and continuity.[2] Denis J. Grogan uses the term Lifelong Education,

* Librarian, Banasthali Vidypath, Banasthali 304 022.

Lifelong Learning, Education Permanent for continued professional development. According to him there are two dimensions to the education of library professionals:

1. Basic schooling, and
2. Initial professional training or education.[3]

The above dimensions matter in one's professional career. Cyril O. Houle, a Professor of Adult Education at the University of Chicago says that the alumni graduates' reaction towards the professional courses irrespective of their profession are as follows.

1. Between 1-5 years Practical techniques
2. Between 6-10 years Basic theory
3. Between 11-15 years Administration or about relations with their co-workers and subordinates.
4. Between 16-20 yearsShould be given more knowledge about profession.
5. Above 20 years Broader orientation to all knowledge, scientific and humane.

Margaret Oldroyd's edited book Staff Development in Academic libraries brought out by the Library Association of Britain provides a concept of Continuous Professional Development (CPD). The book provides a full length study on the concept. It discusses the need, aims, definition, appraisal and staff development for the library staff as well as for heads/librarians.

1 DEFINITION

The following definitions have been prepared for staff development and training by Margaret Oldroyd for the purpose of CPD.

"a purposeful effort intended to strengthen the library's capability to fulfil into mission effectively and encouraging and providing for the growth of its human resources".

"the training is understood as the process by which an individual learns new ways, information or techniques and changes from a state being incapable of doing the job or being ineffective.[4]

The above two definitions can enable staff to do their job effectively and prepare them to meet changing needs of present times and future.

2 OBJECTIVES

The objectives of continuous professional development are as follows:

1. to improve the effectiveness of present library and information science teaching.
2. to adjust with the changing professional growth.
3. to help in individual and professional growth.
4. to help in improving their career prospects.
5. to set social recognition of professional status.
6. to disseminate new ideas and to keep the knowledge of library science

teachers uptodate about new trends in the fields.

Fielden Report (1993) of Great Britain recommends that institutions should consciously plan for the people who will be responsible for putting their library and information service plans into effect with particular reference to changing staff roles.

According to Margaret Oldroyd, the following issues have influence universities and colleges in the last decade.

1. Growth in student numbers with a parallel rise in resources
2. Changes in teaching and learning methods.
3. Increasingly diverse student population.
4. Continuous rapid change.
5. The need to manage resources on value for money basis.
6. The requirement for customer-centred high quality services, and
7. Development in information technology.[5]

3 NEEDS

We need to have CPD for the library staff due to the following reasons:

1. Duration of library and information science courses is too short to give them sufficient background in the subject.
2. Library staff needs a regular flow of information in order to be relevant and useful to the academic institutions.
3. The use of information technology i.e., networking particularly internet surfing is percolating to academic libraries of small towns and rural academic institutions. Library staff should regularly get exposure to new information technology.
4. Getting one time knowledge is not enough.

4 APPRAISAL

Appraisal is a concept related to CPD. A dictionary meaning of appraisal is Valuation i.e., to judge the value or quality of something or somebody in relation to work. Appraisal system is generally used in business organisations. Appraisal has to be used by peers to judge the work of the staff working under him. According to Robert Oldroyd, appraisal is a valuable tool in ensuring that staff is focussing their efforts on real needs, and on maintaining high quality.[6] According to Mary J. Auckland, through staff appraisal the organisation develops the performance of employees and achieve greater efficiency through motivation and commitments to the institutional aims, realise the potential of staff, gather data for human resources planning and improve communication.[7]

Appraisal helps libraries in planning and improving human resources. It also helps supervisor to tell his colleagues how do they view the work of individuals. It is essential that staff should know where do they stand in the eyes of managers and peers. It also helps individuals to judge their own weakness. But the problem with appraisal system is that most often appraiser

takes time to fill in the appraisal form as he is not really sure of evaluating the juniors as to what level he should put them. The objective of appraisal is to think of training or short courses to improve the effectiveness of employees.

5 STAFF DEVELOPMENT FOR THE LIBRARY STAFF

According to Mary J. Auckland, the objectives of the staff development scheme are as follows:

1. To review, performance in the light of previously agreed objectives.
2. To discuss problems which may have affected performance and seek methods of resolving them.
3. To agree future objectives.
4. To assist in individual staff development and career planning, and
5. To identify training needs.[8]

Staff development is needed for organizational change. If we do not have staff development programme, we will have problems in future. Phil Sykes says "Nevertheless it would be mere defeatisum to neglect staff development simply because it is not an all sufficient answers to our problems. Training and development may not be sufficient condition for bringing about organizational transformation, but it is a necessary one."[9]

Fielden Report favours the whole library staff to know about internet rather than selected few. The image of the library is not judged because of the librarian sitting in his office, but one who comes in direct contact with the students.

6 STAFF DEVELOPMENT FOR HEAD/LIBRARIANS

It is wrong to think that head of the academic libraries does not need any development training. We have to accept that investment in staff development in general and chief/head librarians in particular will go a long way in improving efficiency of academic libraries. In the past commonsense, character and background were important for librarians than formal management training and education. Experience of librarians was considered the only way to learn how to manage. In this connection Maurice Line and Keith Robertson say.

Many librarians most until a few years ago were recruited as intelligent and well educated individual who liked books, who had a good sense of social service and were interested in organising knowledge for the benefit of students or the public. The were not recruited as managers. Aptitude for managing was not sought.10

Generally people working under a librarian may say that a particular decision was not correct, but when he himself becomes a librarian, he also finds in same difficult situation. At present due to various problems of academic libraries managing libraries is the last priority. A role of academic librarian is complex. He has a great administrative responsibility, a large building, a large collection of reading material, a sizeable budget, complex

and time consuming technical operations and routines and a whole university to serve.

Ralph M. Edwards says that the job of libraries is not understood by his peers or academic supervisors. If a librarian asks his supervisor about his role as a librarian, perhaps he will say what do I know what you have to do. But I do not want any problem from the library.

Many seminars are held on the academic management of libraries, but some how or other we fail to ask relevant questions. Hence we do not get right answers. It requires unified vision and action.

Keeping in view the future needs, academic librarians will have to develop skills to run libraries smoothly. But then can one acquire such skills in one go? One has to learn the skills at a regular intervals.

7 CONCLUSION

It is suggested that to have strong staff development programmes, UGC in consultation with Indian Library Association should form another committee on the lines of Ranganathan Committee for academic libraries. This Committee should define objectives and go in detail to suggest staff development programmes, so that library professionals remain uptodate. Someone said that if we do not plan, we are planning to fail. Hence we must plan for future. Secondly academic librarians should be given necessary training in information technology at regular intervals to cope up with new challenges.

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MATERIAL, MENTAL AND SPIRITUAL DIMENSIONS OF EMPOWERMENT OF LIBRARIES IN THE EMERGING ELECTRONIC INFORMATION ERA

H.S.Siddamallaiah*
P.S.Sulochanan**

ABSTRACT

A holistic approach of empowering the libraries and librarians in the context of emerging electronic information era is explored in this paper. The current phase of electronic information era is at its peak-point, thanks to the emerging innovative electronic information technologies and its resultant global electronic networks and information superhighways. The current phase is pushing the world towards a new phase of 'transformation' age.

It is high time, the librarians have re-engineered themselves which entails a paradigm shift in their attitudes and approaches towards integrating the technologies with the library system in its right perspective. Technologies themselves are powerless, unless they are put on right track with right flow of information and with enhanced human interface accessibility. This implies a multi-dimensional approach and the holistic or spiritual dimension is a natural corollary in this empowering process.

In tune with the wider implications of the current electronic information era, the material, mental and spiritual dimensions of empowerment process, including the aspects of knowledge, training and skills, are enunciated in its holistic perspective. Further studies and research are suggested in application and implications of spiritual dimension in its wisdom of library and information profession.

1 INTRODUCTION

It is an obvious observed fact that the world at large has been in a continuous transition from 'agricultural society' to the 'industrial society', and still more to the 'information society'. The current dominant 'information era' developed in the later half of this century has taken the world and the people by storm into radical changes, thanks to the sweeping innovative information technologies floating across the globe. Here the transition is from grosser and harder levels to the finer and softer levels, which has

*Principal Library and Information Officer, Library and Information Centre National Institute of Mental Health and Neuro Sciences (NIMHANS), Bangalore - 560 029.
**Library Assistant, Library and Information Centre National Institute of Mental Health and Neuro Sciences (NIMHANS), Bangalore - 560 029.

affected the very quality and core of humankind's life and lifestyle. Now the 'information era' has thrown itself into a prime peak point, enjoined and coupled with trendsetting information technologies—'in the acquisition, processing, storage and dissemination of vocal, pictorial, textual and numeric information by microelectronics based combination of computing and telecommunication.' The current electronic information era has resulted to global electronic information networks. This electronic network-based information delivery is going to play a very effective and creative role towards the next transition of the world into a 'transformation age', as the predictions of the futurists could go[1].

Libraries have always been, and it continues to be so, the legitimate and well established public institutions to serve the cause of information services in the larger interest of the humankind and, the world at large , it may be the olden days 'clay tablet era' or today's 'internet era'. In the emerging electronic information era, there is an imperative and immediate need to empower our libraries and librarians in its finer dimensions, not only physically but metaphysically also. In the following headings an insightful inquiry is made towards identifying and incorporating the finer and holistic dimensions in the process of empowerment of our library system to meet the new emerging needs and to play a very creative and transformative role in the field of information service.

2 HOLISTIC APPROACH OF EMPOWERMENT

As it is generally conceived, there are two kinds of empowerment, (a) empowering from 'without' and (b) empowering from 'within'. Empowering through powers and privileges legitimately given by the higher authority is an example of empowering from 'without'. Inner understanding, transformation, behavioural shift, self-realisation and clarity are the examples of empowering from 'within.' In this paper, the later category of empowering process is stressed and emphasised.

Rappaport, Swift and Hess have defined the concept of empowerment as follows: "Empowerment is viewed as a process: The mechanism by which people, organizations, and communities gain mastery over their lives "[2].

Zimmerman and Rappaport write, 'empowerment is a construct that links individual strength and competencies, mutual helping systems, and proactive behaviours to matters of social policy and social change'[3].

Outside means and measures are important but it could reach only to an extent, and finally it is the transformation, new insight and understanding occurring in an individual that empowers him and that process encompasses both 'within' and 'without.'

Library empowerment essentially entails enhancement of efficacy and sustenance. Empowerment is a multi-focal process and it is 'wholeness' or

'holistic' approach that facilitates a complete and lasting empowerment in individuals and organizations. It is in this context, the material, mental and spiritual dimensions of empowerment of libraries in the emerging electronic information era are considered. It is basically the spiritual dimension that encompasses all other dimensions in a coherent whole, with means, meanings and relations. In this holistic empowerment process a high degree of human interface element is entailed.

3 SPIRITUAL DIMENSION

The current trend is that the 'spiritual dimension' is gaining valued consideration in the science and technology domain. It is more obvious in health sciences and well-being of individuals[4]. Specifically, in a dynamic concept like 'empowerment', the spiritual dimension is bound to play a dominant role.

The spiritual dimension is described and interpreted as the need for: meaning, purpose and fulfilment in life; hope/will to live; belief and faith[5].

Frankl and Burnard assert that, when there is an inability to invest life with meaning, spiritual distress is the outcome and is characterized by feelings of emptiness and despair[6,7].

According to O'Brien, 'the need for spiritual integrity is a basic human need'[8].

Chambers Dictionary defines "spirit" as : the vital principle; the soul; a breath of wind; essence; chief quality.

Mac Donald describes "spirit" as that which gives real meanin [9].

Fish and Shelly describe that spiritual dimension strives for transcendence beyond the here and now in search of some higher power or God/something greater than self[10].

Stoll states that the spiritual dimension inspires, motivates and hopes, directing the individual toward the values of love, truth, beauty, trust and creativity[11].

From the above definitions, the spiritual dimension would appear to be a complex phenomena. Brewer aptly considers the spiritual dimension as the central "artery" which permeates, energises and enlivens all other dimensions of an individual and around which all values, thoughts, decisions, behaviours, experiences and ultimate concerns are centered [12]. It has been suggested that without spiritual well-being the other dimensions, i.e. the biopsychosocial, can never function or be developed to their fullest capacity and hence the highest quality of life is unattainable.

As per the description and definition, it would appear that the spiritual dimension is a dual concept consisting of both vertical and horizontal elements. The vertical element could be considered to encompass the transcendental, i.e. the individual's relationship with a power beyond self or the individual's value system. The horizontal element could be thought of as

an outworking of the vertical in the individual's life style and relationships with self, others, and environment[13]. In the context of library services, the horizontal and vertical development takes it in the spirit of transformation to the IT and the services in humane dimension.

4 MENTAL DIMENSION

Mental or psychological dimension is an integral force of empowerment process. While empowerment is a multi-level construct that may be applied to organisations, communities, and social policies, psychological empowerment is the expression of this construct at the level of individual persons.The individual experience of empowerment is expected to include a combination of factors like self-acceptance, and self confidence, social and political understanding, and the ability to play an assertive role in controlling resources and decision in one's community. Personality, cognitive and motivational components of perceived control have been considered in the psychological dimension of empowerment. The empowerment in this mental-spiritual dimension is to make an incremental growth or transformation, not a total change leaving the tradition of the profession.

5 MATERIAL DIMENSION

The empowerment process entails integration of all the dimensions, including the material dimension. Material dimension no more remains as a mere matter, when we view its meta-meaning and weave it into a coherent whole. All the physical infrastructure facilities, technologies and tools, the monetary factors, the granted status and autonomy privileges are considered as the replica of material dimension. Even the education, training, etc. are in a sense may be considered as part of material dimension.

The strength of empowerment process lies in adding and integrating the holistic dimension into the material dimension. It is the perspective or the focus of attention and awareness that makes the mark of difference. Kenneth Burke has pictured this multi-focus dimension on a simple act of drama. He says, in the drama of action, focussing one's attention on the "scene" yields a materialistic perspective, focussing on the "agent", an idealistic perspective, while the realism appears to derive from as focus on the "act", pragmatism from focussing on the "agency", and mysticism from attention to "purpose"[14]. The IT transformation, in this context, is taken in as apathy or mysticism.

6 ELECTRONIC INFORMATION ERA AND ITS IMPLICATIONS

Even much before the arrival of the modern information technologies, our goal and mission were to move the libraries to the users, instead of users coming to knock the doors of the libraries and ensuring that the information is reached to as many people as possible. Now this idea has become real, at least potentially, thanks to the emerging electronic information

era. The peak-point attainment of electronic information technologies is the emergence of 'electronic networks' across the globe.

Internet, intranet, local and wide area networks (LAN and WAN), CD-ROMs, multi-media, hyper-text language links, online/offline database accessibility, and wide range of other telecommunication and computer-based technologies have a potentiality of virtually converting the huge globe into a small village. Now a mass scale of transfer or exchange of information —textual, images, pictorials, graphs, numeric, audio, visual, virtual reality - is possible on these electronic networks round the clock, across the globe, cutting the barriers of time, distance and space. Electronic networks hold great promise for librarians as they attempt to reach an ever-growing population of persons in need of, information.

Electronic networks-based information delivery across the globe is going to result in tremendous transformation in humankind's life, vision and consciousness. As the futurists predict it, it would usher itself into a transition of 'transformation age'. This network-based information transmission is going to part-take a prominent position.

Despite challenges of depersonalisation and emotional distance, electronic communication appears surprisingly affective, purposeful, and particularistic[15]. According to Refinetti,[16] accessibility of existing information to the scientific and professional community is critical to avoid involuntary replication of previous research and to ensure insights into new theoretical and practical applications. The information highway has opened the door for a wide exchange of data, information, and knowledge between practitioners and scientists. The capacity for a mega-repository of information and research findings will allow for a richer science derived from multiple perspectives.

Toffler describes the transformational effects of knowledge on the conventional disciplines: "with the help of the computer, the same data or information can now easily be clustered or cut in quite different ways, helping the user to view the same problem from quite different angles, and to systhesize meta-knowledge"[17].

From the above description and discussion, it is clear that the current emerging electronic information era entails multi-dimensions in it. It results into meta-knowledge, meta-understanding and transformation in humankind's life. It is in this larger vision and perspective, the holistic approach of empowering the libraries and the library personnel is specifically stressed. Electronic information era is the emergent need, and the efficacy of the librarianship depends on how best he utilizes these technologies to meet the emerging challenges and information needs of the society, which is a process towards transformation. No wonder, to empower others, the librarians have to empower themselves first. It should clearly be perceived that technologies and tools in themselves, can not perform or transform. No golden means are going to be powerful unless it is powerfully utilised by the people. This

are going to be powerful unless it is powerfully utilised by the people. This meta-role lies in the hands of the transformed and empowered librarians. In this context, Rheingold makes a powerful statement that, "technology itself will not fulfill that potential; this latent technological power must be used intelligently and deliberately by an informed population"[18]. The demands of society in need of information service can best be met by appropriate integration of technologies into the library system. The incremental development or transformation is the need of the day along with the tradition of the profession, not leaving behind the profession and changing to become IT professionals.

In this scenario of emerging electronic information era, the librarians and the library system are bound to take a new shift in the right perspective, incorporarting both the local and global spectrum. The essence and philosophy of librarianship is to be reinforced by wisely integrating the technologies, even if it means to forego many a traditional peripheries of the librarianship. Attaining maximum user-librarian interface/interaction, loading the networks with right information flow, influencing and demanding the right redesign and customisation of information technologies, relating and collating the various components into a coherent whole are the prime concerns of the librarians in this new era.

7 HOLISTIC VIEW OF KNOWLEDGE, TRAINING AND SKILLS

It does not follow that in response to a demand for change, we need to discard knowledge, skills, and techniques which are effective and valid within their boundaries. Knowledge, training, skills are the empowering means, but these are to be perceived and pursued in a wider, holistic perspective. In the emerging electronic information era, the librarians need new kind of learning, training, skills and transformation to perform powerfully.

Heron has described the multi-dimensional model of knowledge by identifying four kinds of knowledge which are interdependent and in isolation they are powerless: (1) Experiential knowledge, evident only in actually meeting and feeling the presence of some energy, entity, person, place, process or thing; (2) Presentational knowledge, evident in intuitive grasp of the significance of imaginal patterns as expressed in graphic, plastic, moving, musical and verbal art-forms; (3) Intellectual or Propositional knowledge, which we generally consider as the valid and respectable outcome of systemic inquiry. (4) Practical knowledge, that is evident in knowing how to exercise a skill [18]. This multi-dimensional approach is to be incorporated in all our knowledge, education, training and skills, including in the process of integrating the information technologies.

Philosophers at diverse times and places have arrived at the same conclusion that there are basically three existential stances that man can take with respect to the human condition: (1) knowing, (2) feeling, and (3)

'bhakti', and (3) *'karma'*. Throughout the classical tradition, from Plato and Aristotle on, theorists repeatedly proposed the same three components of attitude under their Latinized names of 'cognitive', 'affective', and 'connative'. This view gives a holistic approach to every actions of the librarians towards the information service, facilitating the integration of information technologies.

Components of both "thinking" and "feeling" are to be integrated in its right perspective, not only in training and development of skills, but also in every action and act of service. Rabichow rightly states that, "as long as we are caught in the absolutes of either thinking or feeling, we are surrounded by the trees and never see the dimensions of the forest. It is not enough simply to think, for thought alone is sterile. Nor is it enough simply to fell, for the complex struggle of life can not be reduced to a mindless and momentary discharge of feeling. When operating in isolation, each of these functions is essentially destructive"[19]

In the emerging world scenario in the context of electronic information era, "on-machine" training just on a monotonous tone is not enough; it is to be integrated with "on-mind" transformation to empower the libraries and librarians. Because, the skills involve maturation process which can not be rushed. Heron describes that "the essence of a skill—whether physical, technical, emotional, interpersonal, managerial, transpersonal—is the knack required to execute it and that this necessarily transcends language"[20].

The effective ingredients of empowering process involved in knowledge and training programmes are (1) self-directed learning, (2) increased participation and decision making, and (3) integration of cognitive with emotional and interpersonal aspects of learning. Both, (1) the interpersonal skills, such as the ability to relate and communicate effectively to others, and (2) intrapersonal skills, such as competence in setting goals, acquiring knowledge, making decisions, taking risks, developing self-control, and understanding one-self are the integral parts of empowered librarians.

8 CONCLUSION

The current electronic information era and its resultant electronic networks and superhighways across the globe, are there to serve the mankind and never to supersede. The peak-point of electronic era is pushing the world into another transition of 'transformation age.' At this stage, the librarians and libraries are bound to take a quantum shift in their approach and attitude towards integrating the innovative information technologies in the greater cause of information service. The greatest boon of the electronic networks is pooling together of information globally and viewing in multiple perspectives and arriving at new synthesis, meta-knowledge and new vision.

networks is pooling together of information globally and viewing in multiple perspectives and arriving at new synthesis, meta-knowledge and new vision.

In this trend of synthesis and transcendence, the integration of a holistic and spiritual dimension would go a long way in empowering the library system.

Spiritual dimension does not necessarily imply a religious connotation and that it can be based on a broader general needs. The librarians' mission of pooling together the divergent components - technologies, information, people, and services - and relating/assimilating them into a meaningful web and facilitating towards transformation, transcendence, and meta-understanding in a global perspective, necessarily involves a spiritual and holistic dimension in it, especially in the back drop of emerging electronic information era. Spiritual dimension gives new meaning, direction and strength in its right perspective in integrating all the components into a coherent whole. It is obvious that there is no agreed definition of what is meant by "spiritual" in its application in the field of library and information services. There is a distinct lack of research and guidelines on spiritual and holistic dimension and its application in the field for the librarians. Further studies and research in this regard, specifically in relation to its application and application are earnestly suggested. Let us conclude this paper remembering the words of Bronowski: "Man masters nature not by force but by understanding"[21].

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PROFESSIONAL EDUCATION FOR LIBRARY AND INFORMATION NETWORK FOR THE NEXT DECADE : AN OVERVIEW

K. Veeranjaneyulu*
L.S.R.C.V. Ramesh**

ABSTRACT

The present age of information is characteristic of technological and industrial advancements attained by rapid urbanisation, increased employment opportunities and abundance of new goods and services all in their wake bringing in a boom of jobs, crafts, trades occupations and professions. Library and Information science as a profession is concerned with the knowledge and skill by which the records of human communication are collected, organised and utilized. No wonder Librarians also stake the claim for a full fledged profession and believe that their caterory can stand the test of a profession. Professional education for library and information studies is primarily ahead. Professional education for library and information work is now organised on the assumption of fulltime study. The challenge of the next decade willbe one to consolidation rather tah growth; and the educators themselves their courses accepted and established. There is hardly any systematic literature in library and information science on 'future studies', it is need of the hous to restructure LIS curriculam. New information technology has brought in many changes in almost all the professions. An informative analysis of future professional educational prospects of LIS network is portrayed in this paper.

1 INTRODUCTION

Of all developments of a qualitative kind the most important in the long term are probably those which move us further along the road from craft to discipline based profession. A pre-occupation with techniques, perfectly understabable and proper when 'education' was a part time activity, and employers releasing students for library school classes looked for direct relevance to the job in hand - their job in hand - is no longer necessary or desirable when professional education is full time, when techniques and technology are changing rapidly and when students take off from library school in a whole variety of different directions. In such a situation the

*Asstt. Librarian, Central Library, ANGR Agricultural University, Rajender Nagar, Hyderabad 50030
**Junior Asstt. Central Library, ANGR Agricultural University, Rajendra Nagar, Hyderabad 500030

objective of the library school becomes thah of offering a general professional education which will equip a reasonable period of induction. The aim will be to equip him at library school with a firm understanding of general principles and objectives so that he can adjust quickly and easily to new tasks to new working environments, and to changing conceptions of the nature and role of libraries and librarians. From this is follows that the library school need feel no over-riding obligation to devote long periods of class time to - practising techniques such as catalging and bibliographical searching; these are skills which are much more appropriately learned on the job, once the principles have been assimilied at library school.

2 ASSUEMPTIONS OF TOMORROW:

The present situation of fulltime education for our profession represents a hard work victory, the benefits of which are in view beyond dispute. It has to be said, however, that prefessional educationists have attached so much importance to this principle and understandably so that we have become over rigid, over doctrinous in our attitudes towards professional education on a part time basis. We can surly relax a little now, and without prejudice to the firmly esteblished principle of the fulltime route being the normal reoute, accept the fact that a very small minority of people have perfectly legitimate need for part time facilities; and that it is our business to do sometimes for them.

The second assumption, that we should offer a bases professional education at a general level, carries with it a very important corollary; that post qualification education and training facilities will be available to provide deeper, more specialised knowledge and skills, as a librarian,'s need for them becomes apparent. This brings us to the need for 'continuring education' - a phase on many lips now days not just those of librarians . It has come to be associated with rapid technological advance.

Shaffera Socioligist and Librarian enumerates important features as theoretical knowkledge, education and training, competence, code of conduct, service organisation etc. in 12 following characteristics for the benefit for next generations.

(1) Specialised knowledge and skills
(2) Reserach and continuous in-service updating of specialised knowledge.
(3) Intellectual activity.
(4) Social necessity
(5) Service to society rather than personal gains.
(6) Recognition by people and status in society
(7) Standardised terminology
(8) Close professional organisation having an altruistic philosophy
(9) Stability of the profession through permanent membership
(10) Cole of ethics for practioners
(11) Autonomy of the profession

(12) Authority of the practioners.

3 LIBRARIANSHIP TODAY

Thisr profession is still in the making. The present breed of the librarians have greatest of the responsibilities as torch bearers for the generation to follow. Professional status can be achieved only by hard work, sincerity, perseverance and sacrifice.

Library and Information Science, as a profesion, is concerned with knowledge and skill by which the records of human commnications are collected, organised and utilized. Librarianship today, has arrived at the information age where the role of information is increasingly emphasised as an economic resource, a marketable commodity and as a social wealth. "A librarian is a mediator between man and the graphic records that his and previous generations have produced and the goal of the librarian is to maximize to social utility of these records for the benefits of humanity". As such a modern librarian has a very important role to play in the process of communication of information in today's world for which hs/she must be well educated, highly qualified and professionally competent. He/she will have to act as a facilitator, advisor, consultant, instructor, navigator, searcher, researcher, evalutor, organiser, preserver, promoter, communicator, technical expert as well as a manager, leader enterpreneur and visionary.

The fast changing environment of the LIS profession has left the individual professionals in utter confusion. The profession is confronted with the problems of 1. Copying up, 2. Distance maintenance, 3. Fragmentation, 4. Craze for false and baseless identities, 5. Claze for new titles and designations for the same functions performed at different places and situations. The identity of LIS professionals if under threat due to diverse names of the profession and the professionals\practitioners. For good the distinct titles: librarians and librarianship is to be retained or else thereis every danger that we may be lost in the masses as anonymous entities. It is indeed time for a second cradle ceremony for the profession.

4 IMPACT OF NEW INFORMATION TECHNOLOGY

Skill in information technology can be gained only when one gets hands on training and experience in laboratories under simulated conditions or in real life situations. The graduates and post graduates turned out by library schools do not possess adequate skills and expertise to interact confidently with IT specialists, evaluate what is recommended by them and fulfill their requirements.

Technological innovations have given rise to new ideas relating to collection, processing and dissemination of information. These innovations and ideas including Artificial Intelligence, Robotics, Speech Synthesis, Electronic mail, CD-ROM, CD Networking, Bar code system, Electronic publishing, Hypermedia, Multimedia, Telefascimile, Radio data paging,

Networks, etc, share a common technology revolving round electronics, computers, telecommunication, printing and reprography.

5 IMPLICATIONS FOR LIBRARY AND INFORMATION SCIENCE EDUCATION

The rapid technological developments has touched every facet of library operations and services. Computers have, in different ways influenced acquistition of documents, management of serials circulation system etc. The library network like, INFLIBNET, DELNET, CALIBNET, etc. are also a witness to ushering in a new era in the Indian library world.

It has become imperative to incorporate appropriate components of IT in LISc education if the profession intends to retain its identity. A few library schools have responded to thus challenge by expanding teaching areas and including computer technology in order to prepare professionals capable of functioning in non-traditional settings.

6 NEED FOR CURRICULUM DEVELOPMENT

To every school of librarianship its role and just as some schools will quite properly adopt a reserved stance about a more theory oriented curriculum, and continue along established and more traditional lines so will some of them not wish to be come heavily involved in research. Hence LISc courses offered by Indian library schools in different universities have become partially irrelevant since long. The debate about changing the LISc curricula has been going on for the last few years, but nothing concrete has yet been done at the national level, expect for some suggestions to restructure the syllabus of LISc education an attempt has been made to collect the syllabus of different library schools, scan and analyse them. It has been found that in many library schools the curriculum of LISc does not contain one or the other aspect of rapidly changing information technology to produce professionals capable of functioning in diverse information settings.

7 LIBRARY AND INFORMATION SCIENCE NETWORK FOR THE NEXT DECADE

One year of undergraduate and postgraduate study is simply not enough time to cover the wide ranging and increasingly complex field of study that makes up present day library and information science. Here then, is a challenge indeed for the next decade to overcome all the economic, social and educational forces that have conditioned us to the view that only one year is required for postgraduate education for librarianship.

In view of resturcturing and strengthening LISc curricula with the given options the course duration of Marter's degree should be extended to two years. In addition, for effective teaching and learning we will have to follow the technology based learning and teaching (TLT) . Computer assisted learning (CAL) is the need of the hour. The existing faculty members should be trained to cope up with the new requirements of LISc schools. The

Government of India should come forword to help LISc schools for experience to the students of the next decade.

8 CONCLUSION

In looking back over the last decade one can but be acutely conscious that there is little hope of matching it, in the decade ahead. Knowledge and information to day are strategic inputs in all walks of life, alongwith the traditional ones of men, money and materials. Knowledge and Information will continue to play a significant role in the socio-economic development. Developing the theoretical framework of our subject increasing the duration of our courses, offering more scope for part time study, expanding and improving our contribution to continuing education can lays strong foundations for LISc network for the next decade.

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EMPOWERING LIBRARY EMPLOYEES WITH KNOWLEDGE, SKILLS, DIGNITY AND ATTITUDES: SOME EXPERIENCES, OBSERVATIONS AND REALISATIONS

K. C. Dabas*
Nasib Singh Gill**

ABSTRACT

This paper is designed to highlight importance of training and development in the upgradation of knowledge, skills, dignity and attitudes of the library professionals so as to enable them to play their new roles effectively and ensure smooth shift of their libraries into new electronic era. Authors discuss in brief the unparalleled opportunities and challenges available to library & information professionals in new global information environment. Define empowerment as an individual mindset which helps employees to visualise themselves and their environment through different lenses. Explore the concept of empowerment and differentiate library empowerment with employee empowerment. Emphasise the need of empowering library employes with knowledge, skills, dignity and attitudes amidst shifting paradigms of library and information management. Highlights the role & importance of training and refresher course in the empowerment of professionals by illustrating the practical experiences, observations and realisation of the author during 17th training course of computer application to libraries at Inflibnet Centre, Ahmedabad and Refresher course in Library & Information Science at GND University, Amritsar. Outline the organisational characteristics conducive to employee empowerment and elaborate the features and characteristics of empowered employees and empowered Library and Information Centres through role models of Vikram Srabhat Library (ILM) Ahmedabad and Space Application Centre (SAC) Library, Ahmedabad. Stress that training/workshops/Refresher courses are prerequisites for library employees empowerment. Recommends that all types of training courses/seminars/ conferences for library and information professional should be organised at metropolitan cities.

1 INTRODUCTION

In the emerging knowledge driven global economy, information technology (IT) has been the greatest agent change of 20th century and changing every aspect of human life. Keeping in view the global information environment, the IT task force: Information technology action plan addresses critical national needs in the areas of information infrastructure, Internet

*Asstt. Librarian (S. G.), M. D. University Library, Rohtak 124 001, Haryana
** Senior Lecturer, Department of Computer Science & Applications, M. D. Univiversity Rohtak 124 001, Haryana

access, HRD, etc. The Government of India is committed to implement the recommendations of the task force after reviewing. This implementation will help India to ride swiftly on the information superhighway and to become a front runner in the age of information revolution. Enabling technology has altogether changed the very concept of conventional librarianship by changing the reading material carrier, library operations, processes, services, library management, library professionals and other stockholders, library approach, arena and philosophy. Both challenges and opportunities are of greater magnitude, but employees trained in traditional technology cannot avail the opportunities. In order to provide information services, products and consultations according to the needs, desires and expectations of the users, we need committed, competent, confident, dynamic, educated, motivated, trained and skilled information workers. It is in this context that has brought library empowerment to the centre stage of library management in new information environment. The scope of this paper is limited to the empowerment of the library staff through formal and informal training and development. This paper draws heavily on the experiences, observations, interviews and self realisations of the authors during 17th training course on computer application to library and information services at Inflibnet Centre. Ahmedabad; Refresher course on scientific management in libraries at Academic Staff College, Guru Nanak Dev University, Amritsar and experiences at work places. The paper also addresses characteristics of empowered organisations, librarians and professional staff through the help of role models of Vikram Sarabhai Library, Ahmedabad and Space Application Centre Library, Ahmedabad which have been successful in bringing an easy and smooth shift into electronic environment through empowerment of the staff

2 THE CONCEPT OF EMPOWERMENT

Mr. N R Narayan Murty is considered to be most meticulous practitioner of the art of employee empowerment. He is of the opinion that real value comes from the people. It is the empowerment of the individual with dignity, knowledge and skills so that they may contribute to the society. The cornerstone of Murty's management strategy centres around respecting and recognising their sweat equity. The ability to lay down the same rules for himself as for his colleagues is the biggest strength of a manager. TQM is generally known for empowering people. People generally want to do the right thing and they want pride of workmanship. Empowerment is a mindset compatible with accountability and professionalism. It helps employees to visualise themselves and their organisation through different lenses. Empowerment goes beyond delegation because delegation of responsibility has no meaning without devolution of authority. An empowered person apart from doing the job is allowed to take the decision with responsibility.

3 LIBRARY EMPOWERMENT AND EMPLOYEE EMPOWERMENT

Library empowerment is a wider term. It includes the empowerment of all the stockholder, e.g. in a University library major stockholders are library users i.e. students, teachers and non teaching employees, library staff, library management, librarian, library committee, university authority, state govt. UGC, global information society and posterity. Library empowerment includes the empowerment of all the stake holders. Employees empowerment include the empowerment of the librarian, library management and library staff. Libraries are still non-profit making service agencies having an HRD effect on the community to be served. The user is an integral part of the whole service delivery system.

3.1 Need of Library Empowerment

Information environment is continuously moving from known to unknown. Like other services libraries are expected to remain a few steps ahead of its clients. Moreover shifting paradigms have forced the librarians to reinvest librarianship to cope with the challenges as explained below:

From	To
Custodians of books	Service oriented information providers
Print media	Multi-media
Own collection	Library without walls
In good time	Just in time
In sourcing	Out sourcing
Local reach	Global reach
We go to library	Library comes to you

Collective wisdom is superior to the knowledge of an individual so power, authority, responsibility and accountability must be decentralised so as to free the librarian from mundane task and concentrate on higher order work. Superior performance depends on superior learning within the organisation and an impulse to learn at its heart is an impulse to be generative and to expand capacity and capability to provide service with competence, assurance, empathy, and smile. Poorly treated and degraded employees can't override a natural instinct to respond negatively.

In view of the above formal and informal training is needed for the empowerment of the library staff so as to ensure a smooth and timely shift to new electronic environment.

2.2 Formal and Informal Education and Training

Training aims to standardise behaviour in a predictable set of circumstances but education enables to exercise judgement and decisions. Education and training is every thing as is clear from Charles Dicon's quotation "Peach was once a bitter almond and cauliflower is nothing but a cabbage with college education thus.

- Accountability and responsibility
- Team and teamwork
- Recruitment and training for customer care
- Basic and computing skills
- Respect and recognition

4 AN IMPORTANT LIBRARIES COMPUTER APPLICATION TO

The 17th training course on computer applications in libraries under Inflibnet was organised during 23 November to 19 December 1998 at Ahmedabad. It was conducted exclusively for 18 university libraries which were funded Rs. 6.5 lakh each during financial year 1997-98, for the establishment of the information infrastructure for the computerisation and networking of libraries, eighteen participants mostly from Assistant librarians cadre attended the training programme. Prior to this training, a workshop on automation and networking of libraries was organised for the librarians of the same 18 universities during 3-9 August 1998 at Ahmedabad. Both the formal workshop and training programmes aimed at empowering the libraries for the shift to new information environment. A total of 170 university libraries are to be covered under this project. One Assistant Librarian in charge of North Maharashtra University who attended the workshop as well as the 17th training course provided the necessary feedback to the authors regarding the deliberations during workshop. The workshop was meant for motivating the librarians to provide conducive and supportive managerial mindset in a trusting and team oriented organisational climate with well defined objectives, goals, mission, and vision. Librarians were told not to behave like a banyan tree and get rid of the traditional, bureaucratic, hierarchical and caretaker image of the librarian. Library staff must be considered as the rarest, central and precious asset to be developed rather commodity to be used. Librarians were taught to play the role of innovators, creators, communicators, negotiators, enable, facilitators, coaches, intrinsic motivators, Database managers, and team leaders. All the participants including the author reported significant changes in the behaviour attitudes, mindset and leadership style of their respective librarians those happened to attend workshop during during 3-9th August 1998. It is evident from Inflibnet culture that by recognising and respecting people, management has been able to harness the latent potential of their employees, resulting more confident, sincere, committed and competent resource persons for training programmes and

other house keeping operations. All the 18 participants mostly without much exposures to computers and communication technology have successfully and in an interactive manner attended lectures, demonstrations, practicals, completed assignment, taken four weekly tests, evaluated resource persons facilities and information systems and also provided necessary feedback and suggestions for the improvement of training programmes and other activities of Inflibnet during busy schedule of 9.30 am. sharp to 10 p. m. All this proved that employees if treated properly can easily be conditioned to work in a co-operative, creative, adaptive, responsible, responsive, accountable, committed and learning way and can be motivated to move the mountains. This training at Inflibnet centre, Ahmedabad was not a formality and compulsion and not in any way accountable for securing senior or selection grade. Despite the above fact and being fully aware of the tight and busy schedule of the training, 18 participants attended the same and are still interested to attend some more training course of the sort in future. This change in attitude, aptitude is the sudden realisation of the mission and vision of libraries and librarians in the new millennia which is around the corner. All those professionals who attended the workshop and training courses and all the potential aspirants of these course want to empower their libraries with requisite information infrastructure, skills, knowledge and work culture so as to ensure an early and smooth shift into new information era.

The four week training was aimed at applications of information technology in libraries. The training schedule was designed in three layers, i.e. theory through computerised presentations, followed by computerised demonstrations and hands-on experience. Computer technology was the theme of the first week training which included the following:

4.1 Fundamental Knowledge about Computer

Introduction to operating systems, Windows-95, Windows-NT, computer configuration. MS-Word, MS-Excel, MS-Access, MS-DOS, Word-Star.

Since creation of databases of books, theses, serials, projects, experts and universities on CDS/ISIS tools and platform is the main activity of Inflibnet so the theme of the second week training was CDS/ISIS software.

Bibliographic standards for all types of data bases and common communication format (CCF), Creation of FDT, Worksheet, FST, FMT, display format, searching and retrieval tools, sorting and printing export-import system utilities. Discussions were held for the need importance, techniques and planning for library automation

Since CDS/ISIS is useful for creation of databases, for retrieval of information Inflibnet is developing a customised software i.e. Integrated Library Management Software (ILMS) was the theme of third week training, the various module i.e. circulation, catalogue and OPAC were displayed for training as well as for feedback purposes. Application of GIST card and utilities of bar-coding for training as well as for feedback purposes.

Application of GIST card and utilities of bar-coding technology were the main attractions of this week.

The fourth week of training was meant for the applications of telecommunication, networking, Internet and CD-ROM technologies in libraries with a view to enable the participants to search not only the resources of their library but search the global resources in order to meet the information needs of their own as well as global users.

This training has equipped and sharpened the capabilities of the participants required to perform various roles in a computerised and networked environment and also to perform expected roles in envisioned future. The training also developed the general capabilities of the participants and exploited their inner potential for their own and library benefit. It inculcated in the participants right attitudes towards enabling technology and customers and also helped in knowing & developing an organisational culture congenial in new information era. The information technological skills and knowledge acquired during the training has enabled the participants to train their colleagues, subordinates and library users and thus paved the way for library empowerment by creating a learning environment. Prolonged exposures in personalised training and coaching helped the participants to work with dignity, poise, grace and confidence under pressure. Trained library managers have started grooming the trained subordinates to take up higher positions or levels of responsibility. Working with staff in setting goals, making decisions, solving problems is the best kind of staff training the librarian can offer. However unwillingness on the part of librarians to let control go off from the jobs of the staff is the major obstacle in employee empowerment.

5 REFRESHER COURSE AT A.S.C., G.N.D.U., AMRITSAR

The UGC sponsored subject oriented refresher course in library science on the theme scientific management of academic libraries was organised by Director Academic Staff College and co-ordinated by Dr. Sewa Singh Head Department of Library and Information Science G. N. D. University, Amritsar during 31 January 1997 to 20 February 1997. 24 four participants comprising of 15 college librarians, 6 Assistant Librarians and 3 lecturers Lib. Sc. attended the course. For active participation initiation and involvement of the participants the co-ordinator assigned the duty, responsibility and accountability of each participant on the very first day of the course. Each participant was expectred to introduce the resource person to the participants in the beginning of the session and to acknowledge thanks after the session on a fiexed day for all the four sessions and also had to work as repporteur for the day. The same participant had to report proceedings of the previous day in the reporting session at morning. The rapporteur was empowered to evaluate the thought contents, style of presentation, relevance of topic to the course and library. Science. All other participants were allowed to

complement, supplment and modify the report. In this way every participant developed the feeling of initiation and group discussion. It was a very good practice which improved not only the quality and contents of deliberations but upgraded the personal and professional skills of the participants. Each participant prepared a paper after selecting the same from the list circulated by the co-ordinator and presented the same as a resource person. In this way participants learnt the art and science of scientific writing, comprehension, reporting and presentation. The course contents of the fresher course refreshed the participants about the latest developments and trends in the library profession. The hands on computers motivated and boosted professional, technological and personal competencies, helped every participant to be happy and felt empowered to work as librarian in new environment, mindset, culture and innovations amidst shifting paradigms. Since the author had the opportunity to have deep insight into the minds of the participants by observing their reactions and feelings after the sessions so it can be concluded that this course was altogether different in all respects from the refresher course attended earlier. After this course all the participants appeared confident, inspired, encouraged, motivated, guided, disciplined, delighted, respected, trusted, conditioned, and empowered. Since the participants don't get any thing academically during their work so all desired to attend the similar and more advanced course for personal, professional and academic development.

6 VIKRAM SARABHAI LIBRARY AHMEDABAD: ITS ROLE MODEL

With a view to have background knowledge of the library empowerment process and experiences of computerisation, networking and to observe the functioning of the library from close corners the authors visited the Vikram Sarabhai Library of the Indian Institute of Management, Ahmedabad many times. This library is accessible from all corners of the IIMS and is also the nucleus around which the national Information System (NICMAN) is set up. Although the architect of the library building is quite fascinating for strangers yet the small transparent office cabin of the librarian very near to the hub of library activities has been source of attraction for the author and aroused the feeling to know more about this library from staff and users. As this library remains open from 8 am to 2 am so the authors used this library at different intervals to observe the functioning by adjusting himself so that training schedule may not disturbed in any way. The author found the professional staff well informed, trusted, committed, respected and well recognised. They have sense of self determination, sense of meaning, sense of competence, sense of impact, pride of workmanship and also have very clear picture of their role and contribution. The standardised behaviour of the staff was due to formal and informal training and posting of right person

at the right post. The front line staff was of very high morale and competent enough to satisfy the inquiring minds. The interaction with the users and staff has given the clue that the library committee and the Director, IIM are very happy and satisfied with the library and librarian. In order to know the secret of the way success of this great library the author keenly desired to meet the librarian who has been managing successfully this prestigious library for the last ten years. The authors met the librarian when he was busy in doing some work on computer in his small transparent office cabin. In response to a question regarding the major achievement of the librarian during the last ten years was told that there was not a single computer in the library at the time of his joint. Since he promised to computerise the library with out any prior knowledge of computer so that was the first agenda of the librarian and he was very happy to turn this dream in to reality. The librarian proceeded gradually and slowly with his agenda by the method of plan Do Check Act Strategy of Deming. Since he has no knowledge of computer so close collaboration with computer people and with his friendly demeanours, dedication, openness, alertness and readiness to help the users and staff, conveyed a similar confidence, trust and commitment down the line which helped in completing the project. Marketing himself and his work has been a regular feature of this librarian so first of all he computerised the membership records and sent reminders to members with over due books. All the users supported the infrastructure. The second most important section form budgetary as well as from user's point of view was periodical section. The librarian kept on making himself and his system familiar with the staff and the cream of the IIM and his staff. Again purchased a customised software Libsys for current as well as retro-conversion. The librarian never faced staff resistance and there is no place for fire fighting, stress and fear. It is very easier to manage in such a healthy and happy work place. Librarian and staff is fully involved in library work and used to come on holidays even. All are able to sense, serve and satisfy the needs, wants and expectations of internal as well as external customers. This library is a model library on management in Asia and have bench marking impact on other libraries.

7 SPACE APPLICATION CENTER LIBRARY AHMEDABAD (SAC): ITS ROLE MODEL

Space Application Centre is the part of Indian Space Research Organisation (ISRO). SAC library is the Documentation Division of ISRO. The increasing demand for new, value added and improved services and other factors like increased work load, efficiency, effectiveness, resource sharing and centralisation led to the genesis of the idea of automation in 1982. Later on the idea was supported by SAC authority and proposal was discussed and endorsed by the SAC library committee. At that time it was

not possible to develop an integrated system. For information storage and retrieval machine readable file had been created for books, journal articles, technical reports, etc. This file was used as database for providing current awareness services, production of catalogue, indexing, SDI and retrospective search services, etc. Database of books, reports, etc. was made ready in machine readable form from mid 1987 only on a regular basis using DBASE 111. Bibliographical standard format was prepared using AACR 11. For retro-conversion of books prior to 1987 collection was managed through vendors by inviting quotations as per samples of 25 retrospective records supplied to the vendors. A comparative statement was prepared from the quotations and the sample entries received. The criteria of accuracy, efficiency and price was taken into account for appointing vendors. Library shlef list cards of books were given to vendors after having Xeroxed copy for record purposes. Reports conversion was got done partly from staff and partly from vendors. The bound volumes data base was built up in house by library staff. Retroconversion was managed slowly and gradually by following standards for catalogue operations and search. In 1991 the SAC library purchased a customised and integrated library management software Libsys. The data conversion of existing database was carried out by Libsys, M/s Information Pvt. Ltd. New Delhi. SAC library has fully developed computer based information storage and retrieval system in multi user environment on UNIX platform using Wipro GENESIS 386/PC. More than 73,000 records of documents are available in SAC library database. This library is now fully modernised and can provide latest Information, technological products, services and consultations, Internet, Intranet, CD-ROMs, Multi Media and ADINET. The information is accessible simultaneously along with internal information.

This smooth shift into an electronic environment was not happened overnight but proper training was given to staff to make them understand their empowered roles by role modelling, by building confidence, trust and teams. Open communication was promoted to encourage participation and for simplifying bureaucracy. As reorganising the organizational structure was not enough so organisational transformation was ensured by bringing fundamental changes in the operational activities of SAC library. During the process of transformation the SAC librarian was fully empowered to play the role of resource facilitator, trainer, coach, communicator, intrinsic motivator, fosterer of new values, attitudes, work culture, behaviours, problem solver, team maker and team player., The librarian is not just using a pair of hands of their employees but he is in the habit of dealing with the whole person of an employee and get them bring their head and heart at work places. Every staff is very liberal in sponsoring librarian and library staff to conferences/ seminars/workshops. Librarian is fully empowered to correct and adjust the SAC library system accordingly and so also his task masters to improve

concerned processes, operations and practices keeping in view the ease, convenience, comforts and happiness of their ultimate customers and not for the convenience of the staff and organisation.

8 CONCLUSION:

Empowerment is not a management practice but a mindset. Library management must create conducive organisational climate where every employee is clear about the vision, mission, goals, objectives of the library and challenges and opportunities of the profession. Since the prototype of yesterdays librarians is today endangered species. Library and information professionals, in order to play new roles of specialist, interpreter, disseminator, research, navigator, cybrarian, trainer, etc. need to be empowered with new knowledge, skills, dignity and attitudes. To that end training, workshops, refresher courses, seminars/conferences organised at metropolitan cities or at vicinage will not only equip the professionals with requisite capabilities, but also facilitate to observe, examine, experience and realises in person the whole transformation, empowerment process and also present status of the world class library and information centres.

INSTRUCTING THE USER IN THE CHANGING ENVIRONMENT OF THE PRESENT DAY LIBRARIES

Jyoti Misra*
N. R. Satyanarayana **

1 INTRODUCTION

Libraries are changing with the time from mere storehouses of collection of documents to dynamic service centres. The emphasis has shifted from macro-document to micro-information. The medium of information storage is also changing from book form to electronic and optical media of CD-ROMs. The present period is a period of digital libraries, electronic libraries and virtual libraries. All these changes demand development of modern skills for both library professionals as well as users. The information that is available in digital form, requires new and modern methods for its handling. Therefore, there is a constant need for librarians and information professionals as well as for users to learn the new skills to cope with the present situation. Many seminars and workshops are being conducted in India to train the library professionals, but nothing has been done from the point of view of users. It becomes necessary to reconsider 'User Instruction Programme' in the context of changing environment of present day libraries and information centres.

2 AIM OF USER INSTRUCTION PROGRAMME (UIP)

The aim of UIP in the new environment should be to instruct the users in making use of both the traditional as well as electronic resources of the library. Libraries and information centres are still passing a through transition phase, they have not been able to fully transform themselves into a new environment. So, it becomes the additional responsibility of the librarian to instruct the users in such a way that they are able to exploit the resources available both in documentary and electronic forms themselves.

3 USER INSTRUCTION PROGRAMME IN CHANGING ENVIRONMENT OF LIBRARIES

* Assistant Librarian, Tagore Library Lucknow, University, Lucknow
** Dept of Library and Information Sci., Lucknow University, Lucknow-226007

Before planning UIP the libraries should at the first stage assess the knowledge of the user community about library and library-services. For this purpose, a structured questionnaire need to be circulated among the users. Personal interviews will also be useful. This will help in knowing the details about users' socio-economic background, category, age, education, reading-habits, his information needs and requirements, etc.

The following steps may be considered essential for a successful UIP.

3.1 User Awareness

It is the initial step in user instruction. It should be designed to increase visibility and inform potential users to reach a specific category of users and to acquaint users with the different information units and services. The objectives can be achieved through publishing the library, with special reference to its resources and services. Films and video-tapes have been an effective means of introducing user-awareness. However user-awareness must be a continuous process.

3.2 Library Orientation

The library-orientation is intended to familiarise users with physical layout and the procedures for using the library units relevant to their needs. In the new digital environment, library components consist of:

1. Local library system with adequate PCs having LAN, local databases in machine readable form, CD-ROMs, etc., provision to provide e-mail service, access to servers and to remote databases, etc.
2. Networks, including the network of networks.
3. A variety of system functions to coordinate, manage the entry and to retrieve data.
4. Well trained man-power

In such an environment, it will be wise to orient the users with computer environment. This could be done through library-tours, lectures, tape-slides-presentation, video or film showing an overall picture of the library, its resources and services. Demonstrations and workshops will prove useful in acquainting the users with changing environment of library. This will also help them to win over the computer-phobia. It will also be useful to acquaint the users with library staff who are available to assist them and to make them comfortable in seeking assistance.

3.3 Bibliographic Instruction

Once users are oriented with changing environment, it will be easy to instruct them for bibliographic instruction. The aim of bibliographic instruction is to instruct and motivate the users to make effective use of library resources and information resources and help themselves to satisfy their information needs. In the new environment libraries are acquiring and developing local database in machine readable form. They are also providing e-mail and Internet facility to their users. It becomes essential to instruct the users to

make use of this facility on their own and to retrieve information through databases available on computer and search CD-ROMs on their own. Bibliographic instruction, therefore in new context should enable the user to:

1. search local databases available on local computers
2. search CD-ROMs of his subject interest
3. make use of E-mail services
4. surf and locate information on Internet and other networks on his own and
5. make out hardcopy of desired information.

This could be done by organising lectures, seminars, workshops and demonstrations, etc. by a resource-person. The same could be done through film/video, tape-slide for group instruction; tape-slide for individual instruction; practical exercises; programmed instruction; self-instruction manuals; instruction through B. I. Kits; and individual help.

3.4 Interest profiles

This consists of creating profiles of the users who are to be provided bibliographic instruction. A profile consists of keywords that collectively characterise the subject interest of an individual or of a group. A proforma should be designed for this purpose. Each user should be requested to fill up the proforma. After the subject-interest of the user is ascertained, the next step is to procure documents, CDs and other electronic-resources and databases. Interest-profiling is hitherto associated with selective dissemination of information (SDI).

4 EVALUATION OF USER INSTRUCTION PROGRAMME

A system of evaluation based on the feed-back must be developed in order to improve the overall performance of user instruction programme. This will help in rectifying the faults from time to time. This evaluation should be a continuous process.

5 MODEL USER INSTRUCTION PROGRAMME

A model user instruction programme must have the following components:

5.1 Users Skills Development

5.2 Changes Taking Place in Libraries

Arrival of computers (PCs, multi-media), CD-ROMs, computer networks (LAN, WAN, MAN), E-mail, Internet, electronic and optical storage medium, on-line data searching, reprography, etc.

5. Steps involved in UIP

(i) User awareness

User awareness of the importance of information, sources and availability of information, library and information centres as resource-centres has to be cultivated. The following methods may be adopted:

(a) Circulating library brochure
(b) Library publicity about its resources, services, etc.
(c) Celebrating important days of library importance such as birthdays of eminent personalities, foundation day of library, annual function, library week, etc.
(d) Organising conferences, workshops, seminars, exhibitions, etc.

(ii) Library orientation:

Knowledge of layout library and information centres, acquaintance with information resources, information storage and retrieval tools are vital. Acquaintance with computer system of library, computer networks, computer peripherals is also a must. Orientation with electronic publishing, OPAC, E-mail, Internet, etc. is also required, acquaintance with library staff. The following methods may be adopted:

(a) Orientation lecture
(b) Conducted tour of library
(c) Library use instructions
(d) Use of visual sign about library building, collection and services
(e) Film/video/tape slides demonstration, audio-visual aid as for instructing the user
(f) Closed-circuit T. V. including video cassette

(iii) Bibliographic Instruction

This should include nature and types of information sources, organisation of information in information sources and usefulness of each type of sourcesare. Types of information tools and their utility such as guides, catalogues, documentation lists required knowledge is also required about utility of CAS and SDI service nature and type of electronic journals, retrieval of information through electronic and optical storage devices such as CD-ROMs etc., on-line searching of local database/remote database, using of E-mail and Internet service. Methods of B. I. are:

(a) Seminar method/workshop/demonstration
(b) Film/Video/tape slides for group instruction)
(c) Tape slides for individual instruction
(d) Practical exercises
(e) Self-instruction individual help
(f) Programmed instruction (work book, computer assisted instruction, etc.)

(g) Library pathfinders (Film, video tape, book, handbook, practical guides).

(h) Commercially available learning package/education kit, etc.

5.4 Interest Profiles

Determining the group of users is a necessity for making interest profile and determining the subject interest of users. Methods for Interest-profiling are:

(a) Drawing concept maps
(b) Coding profile terms
(c) Formulating search expression
(d) Preparation of profile sheets
(e) Procuring documents and other electronic and optical sources of required information
(f) Matching of information with profile terms
(g) Feedback of users and adjustment of profiles.

6 CONCLUSION

The aim of the User Instruction Programme should be to initiate and develop the basic research skills and strategies for searching information. It should be able to bridge the gap between the user and his information source in our changing environment of present day libraries and information centres. The time has come to rethink and orient ourselves for a suitable user instruction programme. Information professional must organise such programme on a regular basis to transform the visitor to potential user and thereon to a habitual skilled user. It is more so in an academic institution such as a school, a college or , a university. It is more appropriate to quote a Chinese proverb in this context, which speaks volumes about the need and importance of UIP:

"Give a man a fish
He will have a meal
Teach him how to fish
He will eat all his life".

Similarly, we can reinterpret it in the context of UIP as:

Give a user a piece of information/document
He will use it once
Teach him the skills to search
He will use library and information centres for the rest of his life.

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ELECTRONIC INFORMATION SYSTEM *vis-a-vis* INTELLECTUAL PROPERTY RIGHT

K. Padmini*

ABSTRACT

Information is needed for any action. It has become a part of human life. Information available in a recorded form is called a document. The generation of information records in large numbers in various forms of documents in different languages is described as "Information Explosion" or "Information Revolution". For economic growth and consequent social change of a Nation, the full utilisation of human resources and the use of nascent, authentic information suitably tailored to the needs on hand are the two things that are considered essential now. Nations that can put information to the optimum use are being benefited. Libraries and information centres try to help mankind by creating, processing, retrieving and repackaging information available in abundance.

1 CHANGING INFORMATION ENVIRONMENT

Indian information environment is in transition and so are all the activities related to it. To gain competitiveness in an environment of transition, organsations, including libraries and information centres, must reach rapidly to the changing expectations of customers in terms of improved quality and efficient services.

The library environment is currently undergoing rapid and dynamic change. There are revolutionary changes in communication media as well as in communication methods with increasing demand for networking and resource sharing. The information technology facilities transborder information flow at great speed, in less time, with more accuracy and storage facilities, and easy retrieval. Computer based electronic information systems enhance the malleability of recorded information.

2 INTERNET: STATE-OF-THE-ART

The globalisation of information services is rapdily apparent. Many national and international information networks exist for the free flow of information.

The internet is a network of networks: the international linking of tens of thousands of business, universities and research organisations with millions

* Asst. Professor, Dept. of Library & Information Science, Sri Venkateswara University, Tirupati-517 502, A. P.

of individual users. The internet is a global electronic community of over 50,000 inter connected computer networks. Which means more than 50 million people are linked together, computing on what has been aptly termed as the "Information Superhighway" [1].

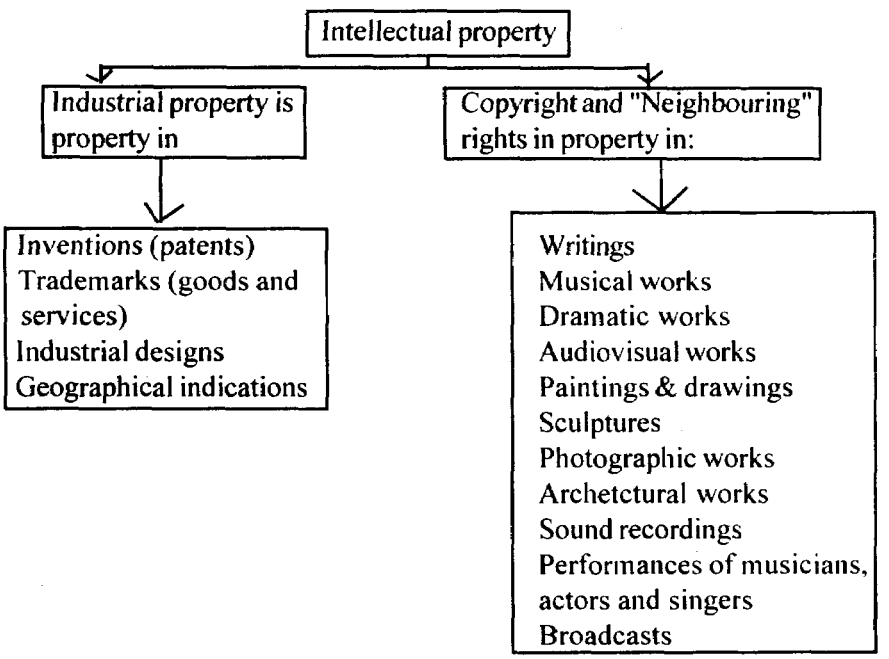
Most networks on the internet make certain files available to other networks. These common files can be databases, programs, or E-mail from the individuals on the network. With hundreds of thousands of international sites each providing thousands of pieces of data, it is easy to imagine the mass of raw data available to users. The internet is by no means the only way in which computer users can communicate with others.

3 PROBLEMS

This proliferation of technology for information transfer raises legal problems and moral ones—when related to the practices of a bygone age. These problems include copyright, consumer protection, privacy of data, subsidies and printing policies. It has the potential danger of electronic crimes, from illegal reproduction of software to the mishandling of electronic systems and illicit intrusion into them, from copyright infringement to electronic plagiarism.

4 INTELLECTUAL PROPERTY

The human brain is very fertile and is never at rest. It results into intellectual output in the forms of inventions, new designs, trademarks and the like. When it assumes a form of an entity, apparently intangible, it takes a form of property, which is aptly called "Intellectual Property". Intellectual property is usually divided into two branches.



There are some people who are neither inventors, nor manufacturers or traders, yet their imaginative and intuitive thinking leads to the creation of original work in the form of immortal literacy, artistic, dramatic, or, cinematographic work. Works resulting from such pursuits directly result into the rights protectable under the copyright laws [2]. The protection in a work depends on whether the work is original and involves skill and judgement which is more than mere labour.

5 COPYRIGHT ACT & COMPUTER SOFTWARE

Copyright protection is governed by the Indian copyright Act 1957 and has been amended from time to time. It was last amended in 1994. Copyright law is the main vehicle for the protection of computer programs and other items of computer software. In India, computer program received statutory recognition as a literary work in 1984 and the definition has been amended and made more specific and precise in the copyright Amendment Act of 1994 [3]

The Act, inter alia, provides for registration of copyrights under six different categories, viz., a) literary works other than computer programs, tables and compilations including computer databases and dramatic works, b) musical works, c) artistic works, d) cinematograph films, e) sound recordings, f) computer programs, tables, compilations including computer data bases [4].

6 PATENT ACT

Till about late 70's there has not been much concern about the patient rights or IPR in this country. The competition in trade among nations and the economic conditions are creating the concern. Patent is a legal monopoly granted for a limited period to the owner of an invention, granted by the state. The patent right can be given away, sold, inherited, licensed or even abandoned. There is no universal agency controlling patents all over the world. The invention is protected through claim in a patent. Claims alone construct a fence round the patented inventions to avoid its unlawful usage. Legal protection is given to only what is included in the claims. What is not included is open to others for new inventions.

The IP system in India dates back to 1856 based on the British Patent Law of 1852. Based on the recommendations of Justice Rajagopala Ayyangar and considering the changes proposed by the Govt. of India, a revised comprehensive bill was introduced in the parliament in 1967. The Patent Act came into effect from 1972 [5].

Issue of Patent right to computer software, programs, and databases, when infomation is being considered as commodity and user as consumer, is still in debate. Computer software has generally been thought to be non-patentable on the same analogy as non-patentability of mathematical equations and calculations and methods. In USA, a patent based on computer

program is allowed when technical effects are produced by the operation of the program. Such patent does not extend any protection to the computer program [6].

7 REMEDIES FOR VIOLATION

One of the major universal problems faced in the field of computer software is software piracy. According to the Software Publishers Association, USA, the estimated world revenue loss to software computer industry due to illegal software copying is to the tune of $12 billion. In India, according to NASSCOM it has about Rs. 75 crores in 1992. It is quite interesting to note that the copyright Act, in addition to the usual civil remedies, provides for very stringent criminal remedies for infringement of copyright. The infringers are liable to a punishment of minimum six months imprisonment, which may extend to three years, and minimum fine of Rs. 50,000/-, which may extend to Rst. 2,00,000. Considering the offence as serious one, the Act authorizes the policy officers to search and seize infringing materials without warrant. The user of an infringed copy of a computer program is also liable for improsnment and fine [7].

Even though all these provisions are in the statute book, law enforcement authorities are not adequately equipped with the machinery for detecting and prosecuting the offenders of software piracy. Realising the need for assisting the policy in prevention of software piracy, the NASSCOM and MAIT created the National Federation Against Software Theft (INFAST). The enforcement of these provisions seems to be a major challenges, before the INFAST and the owners of computer software.

The NASSCOM conducted a baseline survey in 1995. This revealed that India still has a 63% piracy rate in software [8].

8 NEED OF THE HOUR

In the light of the existing IPR Acts and conditions, the following measures are drawn to restrict software piracy and to provide security to computer software and programs.

- Formulation of National Policy for security and privacy of information stored in Computers [9].
- Necessity to establish special cell to enquire the cyber crimes [10].
- To keep watch on developments in the area of IPR and important issues should be made known to policy makers, scientists and technologists.
- Awareness of IPR, the challenges and opportunities in this area have to be created through workshops, seminars and conferences which help to understand the state of the art.
- Care should be taken to introduce standards for information transfer and use at all levels.
- Introduction of IPR in the subject fields of law, information science, information technology and computer science is essential.

- Security and privacy of data are to be maintained at all levels by individual identities, etc.
- Measures are to be taken for proper implementation of punishments for infringement.
- Besides strengthening of patent offices, patent information cells are to be established.
- Computer software and programs can also be considered under the purview of patent Act.
- The procedure of periodical amendments of Acts related to IPR is to be continued.
- Incentives must be announced to those who inform about infringement.
- Periodical surveys are to be conducted to create awareness about information security and to know the measures that are being taken by individual institutions in restricting software piracy.

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USE OF INFORMATION TECHNOLOGY IN ACADEMIC AND PROFESSIONAL COLLEGE LIBRARIES IN TIRUPATI (ANDHRA PRADESH): AN OPINION SURVEY OF THE LIBRARY STAFF

D. Chandran*
B. Ramesh Babu**

1 INTRODUCTION

In the recent years the concept of Information Technology (IT) has been discussed at a number of academic foras and seminars. The use of IT in library and information centres attached to academic institutions has been focussed in order to meet the evergrowing diversified information needs of the users. The library and information centres are to be automated in order to maximise user satisfaction. In India, the trend in the use of IT in libraries in general and academic libraries in particular was slow and is gaining momentum now, thanks to the efforts of University Grants Commission through its INFLIBNET programme. The UGC under its eighth and ninth plans apportioned substantial amounts towards the automation of libraries. In this context it is to be recognised that the attitude of library staff are to be studied and assessed before the introduction of IT in libraries. Further the technological changes in library and information Services are to be approached from the atitudinal or psychological pursuit of view of library staff. The staff attitude is an important factor in the planning of library automation. Therefore, this paper aims to guage the degree of perception of the library staff in the academic institutions in Tirupati (A. P.) towards the IT applications.

2 ACADEMIC LIBRARIES IN TIRUPATI: AN OPINION SURVEY

Tirupati is a centre for worship and temple of learning. It has a rich tradition of Hindu culture and sound educational environment. In Tirupati

Paper presented at the 44th ILA conference held at Hyderabad from 25-28, February, 1999
* Associated Profession, dept. of Library of Information Science, Sri Venkateswara University, Tirupati-517502
** Reader, Dept. of Library and Information Science, University of Madras, Chennai-600 005

there are four universities of which two are deemed universities and two are traditional universities. There are five arts and science colleges and seven professional colleges imparting education in the field of Engineering, Medicine and Law. Appendix-I presents and overview of the academic institutions of Tirupati.

3 METHODOLOGY

A questionnaire has been designed to elicit the library staff opinions working in the academic institutions in Tirupati .... A total of 50 samples has been collected. The data have been analysed qualitatively and quantitatively to draw the inferences presented in this paper.

4 ANALYSIS OF DATA

4.1 General Background Information About Respondents

Appendix-II presents the general information about the respondents with regard to the qualifications, designations, sex, years of service and nature of library they belong to. About one-half of the respondents (56%) belong to university libraries and other one-third (30%) to the professional colleges and only 14% of them belong to college libraries. It is seen that as many as 8 cadres of professional designation were noticed in the staff structure in the academic institutions in Tirupati. While 56% of the staff possess masters degree and 40% possess bachelors degree. It is interesting to notice to that two respondents possess doctoral degree. Nearly two-third (62%) of the respondents belong to male community, which shows that the library profession in Tirupati is dominated by the male professionals. While, 30% of the respondents have of 21-25 years of service, 20% have above 25 years of service. In other words, one-half of the respondents have more than 20 years of professional experience in the libraries. Hence, the opinions expressed by them in the use of IT in the libraries are based on the long years of experience of the staff.

4.2 Attitude of the Library Staff Towards It Applications

Tables-I presents the attitude of the library staff towards IT applications. A total of 11 variables have been identified and respondents asked to give their opinion or otherwise to the said variables. It is seen that variable 1,2,6 and 7 have been endoresed positively by the totality of the respondents, where as variables 4 and 5 have been accepted by 98% each and variable 3 has been agreed by to 96%. The variable 11 has been disagreed totally by the respondents which is a positive attitude towards the application of IT in the libraries. However, for variables 8, 9 and 10 the response were as presented in Table1.

TABLE 1

Sl. No.	Attitude/Variable	Agree	Disagree
1.	IT applications are to improve the quality of the Library & Information Services	50 (100%)	—
2.	IT improves the efficiency of the Library	50 (100%)	—
3.	IT uses to enhance the knowledge and expertise	48(96%)	2 (4%)
4.	IT makes an integration within the organizations	49 (98%)	1 (2%)
5.	IT applications use essential to improve the communication facilities	49 (98%)	1 (2%)
6.	IT application is helpful to obtain the right information at the right right time in the right place and at the right cost	50(100%)	—
7.	IT application improves the status of the Library and Information Centre	50 (100%)	—
8.	IT uses often disturb the routine work of the Library	20 (40%)	30 (60%)
9.	IT reduces the work load of the Library professionals	32 (64%)	18 (36%)
10.	IT takes over the traditional way of information handling in the LICs	30 (60%)	20 (40%)
11	IT applications will spoil the image of the LICs	30 (60%)	20 (40%)

4.3 Reasons for the poor/Lack of IT Application in Libraries

A total of 12 variables presented in Table 2, explains the reasons for the poor IT applications in libraries. Insufficient funds (variable 1) has been rated by all the respondents. It is followed by the lack of support by the administrative authorities (94%) and lack of trained staff (90%). Further, the disagreement for the given variable 3 i.e. library staff are not interested in IT application as also variable 12, i.e., fear of modern IT (86%). This is further endorsed by the opinions expressed in Table 1, i.e., the staff showed positive attitude for IT applications. About 80% of the respondents have expressed that the lack of professional recognition by the authorities (variable 11) and lack of adequate provision for recurring costs (variable 2) are the reasons for poor IT applications.

TABLE 2

S. No.	Reason/Variable	Agree	Disagree
1.	Insufficient funds	50 (100%)	—
2.	Lack of adequate provision of recurring cost	40 (80%)	10 (20%)
3.	Library staff members are not interested in IT adoption in the library	11 (22%)	39 (78%)
4.	Lack of adequate trained staff in IT applications	45 (90%)	5 (10%)
5.	Lack of Coordination among the library staff	28 (56%)	22 (44%)
6.	Lack of initiative on the part of the library professionals	23 (46%)	27 (54%)
7.	No support from the authorities for IT applications in the library	47 (94%)	3 (6%)
8.	Lack of Interest on the part of the readers	13 (26%)	37 (74%)
9.	Lack of scope for the library professionals due to IT applications	21 (42%)	29 (58%)
10.	The library professionals are not intersted in learning IT applications in the library due to poor salary	17 (34%)	33 (66%)
11.	Lack of professional recognition by the authorities of the library	40 (80%)	10 (20%)
12.	A fear of modern IT	7 (14%)	43 (86%)

5 CONCLUSION

From the foregoing analysis it is seen that there exists emerging interest among the library staff towards opting for automating library services. The UGC with a laudable objective of creating machine readable bibliographic databases and active participation in the networks by the academic and research institutes have been advocating and providing sufficient funds leading to the acquisition of necessary infrastructural facilities to realize of its goals. We are entering 21st century which would witness sweeping changes in the world of IT and Communication Technology. The library staff have expressed a grater appreciation of what the new technology can do and cannot do in the provision of better services to their patrons. The present trend is that more and more professionals are becoming not only computer oriented but also moving towards gaining proficiency in system analysis and programming and effective application of new techniques for information management.

ANNEXURE-I
GENERAL BACKGROUND OF THE RESPONDENTS

	INFORMATION	TOTAL	%	CUM. TOT	%
1	No. of questionnaires distributed	50	100%	50	100%
2.	Classification of respondents				
	2.1 University Libraries	28	56%	28	56%
	2.2 College Libraries	7	14%	35	70%
	2.3 Professional Libraries	15	30%	50	10%%
3.	Classification of respondents by				
	3.1 University Librarian	1		1	
	3.2 University Asst. Librarian	3		4	
	3.3 Univ. Lib. Asst. Gr. I	11		15	
	3.4 Univ. Jr. Lib. Asst	12		27	
	3.5 College Librarians	5		32	
	3.6 College Asst. Librarians	8		40	
	3.7 Professional Coll. Librarians	6		46	
	3.8 Professional Coll. asst. Libns	4		50	
4.	Classification of respondents by qualification				
	4.1 C L I Sc.	0		0	
	4.2 B L I Sc.	20		20	
	4.3 M L I Sc.	28		48	
	4.4 Ph. D.	2		50	
5.	Classification of respondents by sex				
	5.1 Male	31	62%	31	62%
	5.2 Female	19	38%	19	100%
6.	Classification of respondents by years of services				
	6.1 Up to 5 years	9	18%	9	18%
	6.2 Between 6-10 years	4	8%	13	26%
	6.3 11-15 years	5	10%	18	36%
	6.4 16-20 years	7	14%	25	50%
	6.5 21-25 years	15	30%	40	80%
	6.6 26 years and above	10	20%	50	100%

ANNEXURE-II
GENERAL INFORMATION ABOUT THE LIBRARIES

S. No.	Name of the institution	Year of estt.	Staff		Collection		
			Prof.	Semi	books	pdls	others
1.	Sri Venkateswara University	1954	12	7	2,55,000	200	500
2.	Sri Padmavathi Mahila University	1983	6	8	40,000	280	
3.	Rashtriya Sanskrit Vidya Peethia	1962	4	2	55,000	120	3000
4.	Sri Venkateswara Inst. of Medical Sc.	1992	1		3,500	101	55
5.	S. V. Arts College	1951	2	1	76,000	43	
6.	S. V G Arts College	1969	1	4	60,000	70	
7.	S P W College	1956	2	3	65,000	90	
8.	S V. Jr. College	1972	2	2	16,800	16	
9.	S V Oriental College	1990s	1		50,000	80	
10.	S V Medical College	1960	2	9	20,400	430	
11.	S V Agricultural & Vet. Sc. Coll	1964	5	2	38,000	200	
12.	S V. Engineering College		2	7,300	20		
13.	Dr B R Ambedkar Law College	1991	1		2,500	10	
14.	S V Law College	1991	1		8,000	20	
15.	S V Polytechnic College	1957	1		19,000	7	
16.	S P Women's Polytechnic College	1975	1		8,700	10	

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1NATIONAL POLICY ON UNIVERSITY LIBRARIES IN INDIA: A HARD LOOK

Sewa Singh*

ABSTRACT

For the overall development of university libraries, a National Policy is required. A couple of attempts have been made in this regard including the one by the Association of Indian Universities. This paper analyses and evaluates the report developed on National Policy on University Libraries as prepare by AIU. Takes into consideration such points as objectives, status of library, collection development, financing, modernization, resource sharing, space, services, education for librarianship, regional library centres, and the like. Concludes that because of non-implementation of the National Policy, university libraries could not develop to the desired extent. It is suggested that the policy may be ameded according to the recent developments and professionals may be called upon to provide quality services in this electronic age.

1 INTRODUCTION

There is no gainsaying the fact that the university libraries in supporting higher education and research have assumed greater importance today, particularly in view of the accelerated growth of knowledge. Education being a process of learning through self study can obtain positive support from the library. The leaders, educationists, thinkers of tomorrow are bred mostly in the libraries. This is why university library is called as the heart of all the university work', or second only to the instructional staff, and many more high sounding view expressed by many commissions and committees in India and abroad. This calls for equipping the university library with material, manpower, furniture and technology.

During the last fifty yearsm university libraries have developed in terms of book resources, manpower, buildings, users, equipments, services, etc. But the development has not been sufficient enough to cater to the fast changing needs of university education and research.

2 NEED FOR A NATIONAL POLICY

For the last many years the need for a National Policy on Library and

*Dept. of Library & Info. Science, GND University, Amritsar-143003

Information System has been felt by the Indian library and information professionals. However, it started receiving more attention after the establishment of Raja Rammohun Roy Library Foundation because it was included as one of its objectives. The Foundation submitted to the Government a draft document on National Policy in 1984. Meanwhile, Indian Library Association also submitted a draft policy statement to the Government in 1985. This rolled the ball and the matter was discussed by the Planning Commission Working Group for the Seventh Five Year Plan (1985-90).

Subsequently, the Government of India set up a Committee with D P Chattopadhyaya as Chairman to formulate a National Policy on Library and Information Systems (NAPLIS) which submitted its report in 1986.

In the meanwhile, Osmania University Library, Hyderabad organised a seminar on 'National Policy on University Libraries' on September 29-30, 1986, and made some useful recommendations. Also, the Association of Indian Universities, took the initiative and formulated a National Policy on University Libraries which was published in 1987.

This paper is restricted to the AIU report on National Policy on University Libraries, and not to the NAPLIS which includes a two-page brief chapter on academic library system. Attempt here is made to critically evaluate the AIU report only.

3 OBJECTIVES

The objectives of the National Policy on University Libraries (NPUL) have been identified as follows;

a. To build up the collection of the libraries is so comprehensive and complete manner as to enable them to be responsive to the scholarly needs of the academicians in the country;
b. To husband the limited financial resources so that a might reservoir of knowledge and information required by the country is built up and the limited funds are thus made to go a long way;
c. To weave into a network the University Research and other libraries in country so that the barriers of time, space and languages that exist between the documents on the one hand and their users on the other are eliminated;
d. To improve the equality of services of the libraries and make them intellectual aids of scholars and the researcher by evolving and contnually revising and updating standards for library practices and performances.

4 COMPONENTS

Let us have a hard look at the components of the NPUL as discussed below:

4.1 Status of the Library

It has been recommended that the library shall be given the status of a teaching department in the university and so shall be the status of the professional staff.

4.1.1 Comments

Though adequate and liberal staff is suggested for the university library, yet it should have been better if a fresh staff formula for the same was worked out for the libraries of all sizes and at all stages of development.

4.2 Collection Building

The policy document has made appropriate suggestions for establishing advanced centres specialising in one area or subject without duplicating with other centres. It has further been suggested the acquisition of newer media, i.e., audio, video, microform collection as well as government documents, and total collection target of 8-10 lakh volumes has been suggested with annual intake of 25,000 volumes and 1,500 journal subscriptions.

4.2.1 Comments

In order to overcome the acquisition problem of government documents, at least one university library should serve as the depository centre for all govt publications. Care should also be taken to acquire documents of UN and its agencies.

It may be pointed out that hardly any university library may be in a position to add 25,000 volumes annually. The average price of a book in social science subjects is between Rs. 500 to 1,000/-, while that in science subjects is more than Rs. 2,000 However, the total collection of a university library should be sufficient in size and scope to support the education, research and extension activities of the university.

4.3 Financing

It recommends that about 20% of the university budget be spent on development and maintenance of university library. To offset the price rise an annual increase 15% to 20% has also been suggested.

4.3.1 Comments

For a balanced collection of all the varied forms of recorded information, it is a welcome recommendation. The standard for salaries, books, periodicals, binding, etc. are also of interest. However, it remains to be seen if these norms and standards could be implemented for the development of university libraries. This is because in the times of limited funds and inflation, it is the library on which the austerity axe falls.

4.4 Modernization

It is recommended that the modern equipments like microprocessors, minicomputers, etc. be introduced in the university libraries to take care of the routine repetitive jobs.

4.4.1 Comments

The recommendation is welcome in this electronic age when new databases in different subjects are emerging in computerized forms. Computers are being installed in many university libraries with the financial assistance of the UGC and INFLIBENT Programme not only for automating the housekeeping operations but also for networking of libraries. Some progress is being made in this direction. However, in the Report of the Working Group of the Planning Commission on Libraries and Informatics for the Ninth Five Year Plan' (1997-2002) some of the reasons for the slow progress in this regard have been identified as: (i) Lack of standard input format as well as data entry in the automated system; (ii) Libraries have large stocks of documents with varying cataloguing practices and non-standard formats; (iii) Absence of a central agency of the librarians and information specialists to guide, coordinate and monitor the computerization work of the libraries.

4.5 Resource Sharing

It stresses the need for resource sharing with the help of UGC wherein interlibrary loan will be promoted by union catalogues, telex and facsimile services, reduction of postal rates, microfilming and reporgraphic facilities, etc. At the end of the report a detailed note on resource sharing and application of computer is also given.

4.5.1 Comments

It is better if the university libraries and other Indian libraries develop a document delivery system on the lines of Online Computer Library Centre (OCLC, USA), or British Library Document Supply Centre (BLDSC, UK). Although it involves huge expenditure, yet if Govt. of India is approached alongwith other apex bodies, some concrete proposal can be worked out in the National Policy document. An optimum use of ILL facilities is not being made in the university libraries, may be because of lack of awarness amnong the scholars, or high postal rates, lack of union catalogues in updated versions, and so on.

4.6 Space

It is suggested that no ceiling on maximum number of titles for a library be stipulated, and setting accommodation should be provided at least for 30% of the potential users.

4.6.1 Comments

Space in the library building has always been a problem in view of its growing nature. There should be some ceiling on the maximum titles a university library could acquire, particularly when already it is recommended that these libraries should specialise in different subjects. The emphasis in the times of resource sharing and networking, should be on quality rather than quantity of collection. To reduce the pressure of space, those documents not put to any use during the last ten years may be weeded out and stored in a *dormitory for future.*

4.7 Services

National Policy on University Libraries is considered as a base to plan and develop the concept of services to users. It has been recommended that all such services as CAS, SDI, documentation and bibliographic services, translation services, reference services long range and quick refernce, referral, and ILL services be provided by the university libraries.

4.7.1. Comments

It is a welcome suggestion included in the National Policy document that the various services be provided to different user groups. A common complaint from the users, however, is the lack of reference and bibliographical services by library staff. It is therefore incumbent on the professional staff to free themselves from routine jobs, with computer taking care of them, and provide CAS, SDI, and other documentation services to support the teaching and research activities of the university scholars. Beter services to users is the *raison dataire* of the university libraries, and these should rather think of providing online services now.

4.8 University Libraries and Education for Librarianship

The policy report finds a technological gap in the present system of library education in India, primarily due to lack of accreditation system.

4.8.1 Comments

Regarding accreditation of LIS education programmes, it may be pointed out that much has been discussed in the professional literature. However, the University Commission has recently established a National Assessment and Accreditation Committee which is already on job of assessing the university courses, and may look into accreditation as well. As far as

technological gap in LIS education is concerned, all concerned feel about it badly; hence it is suggested that computers be provided in each LIS department with at least one teacher adequately trained in computer applications to library activities, and the courses of reading be revised to include information technology components. (Here also the CDC of UGC is already undertaking the necessary exercise).

4.9 Regional Library Centres

In order to provide efficient services to users, the policy report states that the Regional Library Centres be set up which will have a strong collection of resources, and establish liaison with local, regional and national libraries.

4.9.1 Comments

Already the UGC has set up at least three national centres, specialising in different subjects, at ISI, Bangalore for sciences; SNDT, Mumbai, and M. S University, Baroda for social sciences.

4.10. Miscellaneous

In view of the problem of loss of books in university libraries, it is suggested in the NPUL that the recommendations of ILA and the UGC Library Committee be implemented.

4.10.1 Comments

Loss of books is common but serious problem, and the suggestion given is welcome which needs immediate implementation. However, it is further suggested that meanwhil efforts be made by the professional staff to imbibe civic sense and highlight the importance of books among the users against theft, of course with the active help of the teaching faculty.

CONCLUSIONS

From the above discussion it may be said that the Report on National Policy on University Libraries prepared by the Association of Indian Universities seems to be comprehensive covering almost all the aspects of university libraries. This is not the only policy document, but even at the behest of the Government of India, a National Policy on Library and Information System was prepared in 1986, which also unfortunately remains unimplementged. The Planning Commission also set up Working Group on Libraries and Informatics for various plan periods, the latest being for the Ninth Plan which already has submitted its report. In this report for 1997-2002 the Working Group has lamented that even the general recommendations of the Eighth Plan Working Group have either been not implemented so far, or very little action has been taken in this regard.

On university libraries the report of the Ninth Plan Working Group states that these libraries have been providing traditional library services like lending, and reading from facilities.

It also suggests that these libraries need to be on "Information Super Highway" which would connect the entire world for dissemination and exchange of information.

If further recommends a 10% of the university budget as book budget in view of increasing cost of reading materials.

Further, it suggests that automation and modernization of university libraries should be speeded up, and databases be created using international standards., It also suggests that for generating funds, university libraries should start exploring the possibility of marketing of information productrs and services. At the end it can be said that the NPUL of the AIU be further amended in view of the new developments that have taken place, and also the comments and observations made above. However, more important is not the amendments and preparing a new policy document, but its whole hearted implementation. This will probably make the university libnrary as the heart of the university, and the intellectuals laboratory in the real sense of the term.

Let us all library and information professionals, in the last year of this action-filled century, give a clarion call to action so that we gear ourselves to the new challenges awaiting us next.

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NATIONAL POLICY ON LIBRARY OF INFORMATION SERVICES IN THE CONTEXT OF ELECTRONIC INFORMATION ERA

T. A. V. Murthy*

The national Task Force on Information Technology and Software Development set up by the office of the Prime Minister (Vide Notification No. 360/31/C/10/98-ES.11 dt. 22.5.98) submitted its first report entitled Information technology Action Plan, Part-I. The 108 recommendations contained in the report have since been accepted by the Government for implementation by various Ministers/Departments concerned. The recommendations as approved by the Cabinet have since been notified in Part-I, Section I of the Gazgette of India, Extraordinary dt. 25.7.98. In this context the task force has set up four working groups viz. On Citizen-IT Interface: Content Creation and Content Industry: IT Research, Design and Development: and IT Human Resource Development.

Some of the relevant aspects concerned with content creation are dealt with in this paper, as the author happens to be a member of this working group.

It is possible to save accomplishments of civilisation for posterity. We can even make them widely accessible to the masses of humanity. Libraries have always played a key role in this regard. Today's digital libraries (DL) because of advances in multi-media technology can encompass museums as well, and make this goal possible. This paper addresses–exploration of this new discipline, consider a set of representative projects, identify important challenges, investigate possibilities of integration and unification, and recommend more indepth involvement by the database community.

Content analysis in Digital Libraries relate to research and development. This endeavour is aimed at helping more people to benefit from growing collection of well organised information available. For centuries futurists have envisaged global access to world knowledge, but only since computers have been widely used for text manipulation have serious treatises attempted

* Librarian & Project Director, Indira Gandhi National Centre for the Arts, Janpath, New Delhi-110001

to sketch how this might work. With access to electronic resources facilitation by the rapid expantion of Internet in general and the web in particular, a revolutionary change in publishing is under way. On the other hand, from scholars point of view, many publishers see the digital libraries as a way to expand services, increase revenues, and help solve certain types of presentation problems. The need of the hour is creation of digital versions of the rapidly growing set of publications and make them available through interconnected computers.

In recent years, the demand for storing multi-media information has increased. With such databases comes the need for a richer set of search facilities that include keywords, sounds, examples, shape, colour, texture special structure and motion. Currently content-based retrieval of images being actively researched in the area of multi-media feature based image. Retrieval techniques have been discussed by Mehtre. Kang Wu and Narsimhalu have attempted an example image database, the computer-aided facial image inference and retrieval system positive results. There is a tremendous potential in the years ahead that the demand for storing multi-media information (such as text, image, audio and video) will grow rapidly. Currently the content based retrieval of images is being actively researched in the area of multi-media database systems. An image comprise colour, shape, texture and special features. With an increasing amount of image data being accumulated, there is a strong need for coherently organizing this information for effective use.

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