INFORMATION TECHNOLOGY AND LIBRARY SERVICES : A STRUGGLE FOR HAPPY AND HEALTHY PARTNERSHIP[@]

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Abstract Explains the meaning and scope of modernisation of library services using Information Technology (IT), indicates the unlimited potential of IT in modernising library services, examines the relation of modernised services to productivity, performance, innovation, etc., identifies a wide gap between what has been said to be possible and feasible in the application of IT on services of Indian Libraries on one hand and achievements in application of IT in modernising library services on the other hand, explores various reasons for such a gap vis-a-vis ways of bridging the gap and overcoming the implimentation and operational difficulties like overexcitement, unclear goals, lack/ inadequacy of management support, resources, self-supporting approach, technology transfer, indegenisation of IT, technology assessment, IT skills in library personnel, and cooperation between IT specialists and library personnel, and under-utilisation of available IT, examines and presents different types oflibrary services under the broad cateogires bibliographic, document delivery, information and instruction services to identify the scope for application of IT together with lack of extensive and proper applications of IT during last two decades in the country, explores the reasons for lack of new and innovative applications of IT (except marginal and cosmetic applications) services, presents different factors which might cause changes and innovation in library and information services, discusses some anticipated new services and lastly concludes that there are not many significant and optimum applications of IT in library and information services except the external winds of IT which at some places helped achieving speed, efficiency and effectiveness in media and mode of library and information services and points out some prospective areas for improvement and modernisaton of library services using IT.

1. Introduction

Libraries are service institutions. Any positive change in services to meet the objectives of libraries alone can be considered as indication of progress. Such changes presupposes setting clear, unambigous and measurable objectives and systematic and periodic evaluation of the services rendered on the basis of the objectives. When we think of library and information services based on new technologies we are not much concerned with dramatic quantitative increase in services or introduction of substitute services with cosmetic changes. We are genuinely interested in seeing introduction of new services to meet requirements of users hitherto not met and qualitative and positive changes, if any, in the existing services.

A couple of decades ago a research scholar in a university in India might have devoted half or atleast a quarter of his productive career, time and energy to produce, probably, a handwritten thesis. Even two decades ago, though a scholar could afford a type-written thesis, he had to spend several hundred or even thousand hours in libraries to linearly search, browse, scan and take notes from relevant literature; revise drafts; correct typographical errors; learn and follow

standard citation and reference patterns, etc. Today, literature search is a matter of hours, preparing citations and references for thesis or report or paper in any of the standard formats (like that of MLA, Chicago, etc.) is another few hours with a flexibility to change formats as he wishes by stroke of a key, making notes and prolonged stay in libraries are skipped on several occasions with exclusive possession of xerox copies of articles, typing is only once not only for all successive drafts of thesis but also to take byeproducts like papers, proof reading is minimal and so on. The advantages of information technology (IT) in information work is multifaceted.

IT covers an array of media, tools and gadgets and the impact of which is felt in many areas of life including libraries. IT may reach libraries and their users in the form of technology or a product or a resource or a facility/ infrastructure or a service. As a fast growing and changing technology, IT is all-pervasive and even unique in some respects. IT industry itself is expanding enormously with neck to neck competition. Hoping that more about various components and versatalities of IT is dealt elsewhere by others, this paper restricts itself to problems and prospects of adoption, application and updation of IT

in modernising library services in Indian conditions based mainly on observations and personal experiences.

2. Modernisation of Library Services Using IT

Modernising library services, on the surface of it, means adopting modern methods, tools, techniques and gadgets in providing library services. But it is also implied that modernisation should bring in increase in efficiency, effectiveness, speed and reduction in cost per unit service or any combination of them in library services. Unfortunately, today, using computer in a library (or even getting information product printed through computer) has almost become synonymous to modernisation of library services. It is not rare to find examples of computer applications to library services where neither efficiency nor effectiveness is achieved but an inevitable and invisible increase in cost and delays are incurred. For example, against a couple of days or weeks delay for publishing mimeographed current awareness bulletins, computerised current awareness bulletins are taking couple of months in some libraries. In large majority of cases, the theoretical justifications for modernisation of library services with computer applications do not get critically reviewed, tested and evaluated after

implementation/operationalisation. On the other hand, many such implementations are heavily subsidised or labelled as experimental or pilot studies. Hardly, a handful of libraries would have reached the matured operational state of computerisation worth subjecting to review and evaluation.

Often, modernisation of library services is more of psychological, publicity oriented and prestigeous imitations rather than obsolute necessities. It is forgotten that modernisation using IT does not assure better result if traditional manual ways of providing library services are themselves defective, irrelevant and unsatisfactory. It has been fairly established that efficient information support and technical communication in an organisation are associated with high performance, productivity, innovation and even creativity (Frost and Whitely.1971; Hall and Ritchie,1975; Langrish, et. al., 1972; Nagpaul and Pruthi, 1979; Rothwell and Robertson, 1975; Shotwell, 1971). But it is not yet clear whether or not modernisation of library services is positively related to performance, productivity, innovation and creativity of ultimate benificiaries. A recent study (Lee and Treacy, 1988) on how IT can affect the ability of

individuals or organisations to innovate has found that IT enhanced innovation sigificantly by augmenting individual/ group capabilities through motivation support, resources support and information support. Among the three motivation support was found to be the strongest factor. However, adverse effect of IT on human values and habits cannot be ruled out. For example, possessing xerox copies of relevant reading material by a user may also result in complacency and a psychological satisfaction of having consulted them as against a traditional way of reading them within a library and making notes out of them. It is outside the scope of this paper to examine the ill-effects of IT on human values and whether or not modernisation through technology should conform to values. Ofcourse, creativity of library users may not depend on whether or not library services are provided using modern IT. Unlike nature, technology does not possess the virtues of being self-balancing, self-adjusting and self-cleansing. Further, modern technology has deprived man of the kind of work that he enjoys most, creative, useful work with hands and brains and given him plenty of work of a fragmented kind, most of which he does not enjoy at all (Schumacher, 1973).

The above narration should not be construed as arguements against modernisation of library services using IT but as reflections of some of the practical problems of applications of IT in this country. Modernisation of library services using IT should be based on needs and with the objective of incresing the quality of services.

3. Potentials of IT in Modernising Library Services

Information Technology is neither a single discipline nor a single technology, but a group of multidisciplinary and interdisciplinary technologies almost totally external to librarianship and exclusive achievement of advanced countries. Because of stiff competition, vast scope and innumerable applications, IT is highly dynamic and new developments of IT become quickly obsolete even before they are received, understood and implimented in developing and underdeveloped countries. For the same reasons it provides enormous scope for academic exercises of putforthing expert advises, projecting possibilities of modernisation and predicting future 'fantasies'. IT has virtually unlimited potential for variety of applications in libraries. It has overexcited many professionals. IT news from developed countries provide

enough ground for visualising ideals and even fantasies in modernising library services. It reminds a fantasy cum joke told by a school going kid that it might be possible in next ten centuries that after a medical check up, a doctor prescribes to a patient to buy a kidney in a medical shop and a pharmacist says 'if you buy two kidnies a heart is free'. Every body knows 'Man on Moon' was a fantasy few decades ago. But in case of librarianship, implementation of what is proposed or forecasted either do not take place within reasonable time frame like conveyor belt system, lending sytem based on magnetic strips, burglar's alarm, bar code/wand reader based lending and stock verification, CCTV coverage for theft detection, press button systems, paper less society concept, etc., or miserably fail (atleast partly) like costly dedicated online access experiments, integrated library and information retrieval packages, etc. for having ignored the proper evaluation of all alternatives as well as local constraints and conditions. There is a wide gap atleast in terms of time between academic or theoretical possibilities and fantasies and costly experience-gaining experiments on one hand and the practical implementation of them for reaching ultimate beneficiaries. In case of fast changing IT time gap

ie., delay in implementation is more risky and costly than other shortfalls.

4. Problems in Using IT in Libraries

IT has stupendous potential for modernising library services. There is wide gap between the possibilities and what has been achieved. We are all fairly aware of advancements of IT and the modernised library services of advanced countries, atleast through literature. We are also fairly convinced about need for and possibilities of modernising our library services using advanced IT. Yet large majority of our libraries are not able to modernise their services using state-of-the-art IT even after several years (or decades?) We need to examine the reasons for not being able to realise our thinking and aspirations in modernising library services using IT. Let us explore the reasons for such a gap with an eye on how to bridge such a gap.

4.1 Lack of Support and Resources from Authorities/Top Management

First of all, the authorities or the top management and users of libraries should have felt the need for using IT to modernise library services . It may be easy if

they are already exposed to modern library and information services or if they are by nature library and literature oriented academecians, researchers or managers having vision and appreciation for modernisation of their systems in general, or if they are easily accessible and amicable for selling the idea or educating them on issues. It may be enough in some circumstances, even if they just desire modernisation of library services. If services of a library are already unsatisfactory or not upto expectation, proposal to modernise them will meet with hostile environment. Reluctant clearing of proposal on principles without commitment to the objectives of modernisation and to provide required resources or with advise to manage within resources already provided for other purposes or for other departments or to seek resources from other external sources may not help much. Further pressurising on proposal to modernise library services may lead to resorting to typical 'committee approach' with some reluctant external experts on the committee leading to lot of paper work and taking off strength and life of proposal.

If management genuinely do not have enough resources for modernisation of library services and there are no ways of committing to required resources or

mobilisation of resources any piece meal grants for IT activities are waste as IT may become obsolete by the time it is implemented. Unless modernising library services using IT is done on turn-key-basis with stringent time targets it is not worth doing.

4.2 Unclear Goals, Over Excitement and Perpetual Experimental Approach

The present way of organisation of library services is, by and large, carried away by immense attraction of media like microforms, optical disks, tools and means like online-access, computers, etc and the goal has taken secondary position. Over decades experimental computerised services, online access, etc. are carried out without much of cumulation of experience or improvement in quality and quantity of services in the country. Evaluative findings and results of majority of these efforts are not made known public to achieve cumulative growth. Quite often, IT is broughtin to modernise library services without identifying the goal and without preparing the ground. There is a clear failure to match goals and objectives with required level and sophastication of IT. Mc Kee (1988) says that "education falls into the twin traps of getting carried away by techno-fantasy and getting excited

about technology for its own sake, rather than thinking of the basis of educational purpose". As an example one may examine the projections of earlier Five Year Plans like links of information centres and lateral integration of their databases, etc. Secondly network technology and resources sharing philosophies stress on avoiding duplication and they are at best considered as cost saving devices than increasing quality of services.

Technology should always be seen from the perspective of organisational purpose and no amount of technology can help us if we lack clear idea of what we are trying to accomplish and its importance. Modernised library services should be logical extensions of traditional services taking into account the receiptivity of the overall system of which library is a part and with a definite proposed target date for replacing the technology when it becomes obsolete without disturbing the system or services.

4.3 Lack of Longterm Self-supporting Approach to Library Services

Generally, information systems are paternalistic and not self-supporting. Looking at the giant information systems in developed countries it becomes clear that in

the long run all information systems should aim to become self-supporting. Atleast special services and those services offered outside the organisation/ system should be charged to generate sufficient resources. Otherwise the system degenerate without having sufficient justification in terms of cost-benefit analysis and the growth is difficult. It is peritnent to note here that advances in IT are increasing both the economic returns of developed countries and dependence of less developed countries on developed countries. For example, less developed countries have no proper plan for development of their own "databases" but keep paying for accessing databases, hiring/subscribing to databases on CD-ROM or magnetic tape as well as printed secondary journals.

4.4 Lack of Technology Transfer and Indegenisation of IT

Lack of attempt to transfer technology itself and indegenisation of the technology is one of the major reasons for our not being able to realise the full potential of IT in the library services. For every component, service and development we are forced to look towards developed countries or their representatives.

Unfortunately, a developing country like India has been importing many products and services of IT of different generations (and even obsolete ones !) without any attempt to start the necessary R&D within the country. The only exception to this may be in the area of development of computer software. Heavy penalty is being paid and going to be paid by us for this serious lapse in our long term plans, whether it is in the area of hardware gadgets or development of databases or running online services through networks.

It is unfortunate that development of (local) **bibliographic databases** which is fairly within means of important libraries is lagging behind in the country inspite of long term economic prospects of local databases. It is neither economical nor strategically sound to buy/hire a service or database or information product and even to subscribe to document supply from secondary and commercial sources where own arrangements can be made within the country. Eventhough buying an information service or product initially looks attrative and easy, it is derogatory in the long run and in the overall interest of country's self-reliance approach. Though initial cost is more for building collection, developing databanks and databases, it is

worth attempting in a phased way to develop own databanks and databases. Evenwhere it is essential for us to buy or hire an information service/product it should be bought with least of derogatory conditions and constraints such as recurring cost, compatibility/ suitability, subjecting to outside scrutiny and other conditions of lease so as to distribute and share the resources/ services among different subsystems.

4.5 Incomplete Exploration of Available Options and Lack of Technology Assessment

When we face a situation where we have to inevitably import the products of IT to modernise library services, whether it is a software or hardware or database, systematic efforts have rarely been made to identify key technologies and for a comparitive assessment of all available technologies and products against needs and requirements. Usually easy or free access/ availability like availability on Rupee payment dominate the decision. For example, free availability of CDS/ISIS software has already resulted in hundreds of libraries rushing to it without proper assessment of their software requirements and evaluation of other alternative softwares available. There is no single published or otherwise source and Technology Assessment Centre which examines appropriate technologies, finds

possible innovative new products and services, disseminates information about adoption of these imported technologies to Indian conditions, compares different options, monitors and reports the results of performance tests, reviews and evaluations of adoptions or implementations in the country. In the absence of such technology assessment centre, we are often wedded to either to dead-end or obsolete or incompatible technologies. I am yet to see a single comprehensive evaluation report of any of the technologies already talked in the country.

4.6 Under-Utilisation of Available Imported IT

As on today, tremendous under-utilisation of imported IT products, services, tools and means can be seen everywhere. I have recently received a computerised monthly list of acquisition of a library which is 8 months behind schedule and covers 1-2 year old documents. Such a list can only be of historic or academic interest. It is not difficult to find out places where computers are used like typewriters under the name of computerisation and lack of integrated approaches. If we look at the trends in information industry right from microfilm technology to advances in expert systems, baud rates and electronic document

delivery we have often bought 'sword' (instead of knife) and used it to cut apple and called it an 'experiment'.

4.7 Lack of Requisite Level of Working Knowledge and Skills of IT in Library Personnel

Mentally and technically preparing users and library staff at all levels for modernisation of library services through IT is most fundamental for the successful implementation of it. Regretfully, the general level of knowledge, skill and competence of library peronnel in IT is quite low with probable exception of few personnel worked in advanced instituions where ample opportunities are available to gain hands on experience.

Skills in IT 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 turnedout by library schools do not possess adequate skills and expertise even to confidently interact with IT specialists, provide their requirements, evaluate what is recommended by IT specialists. A BLR&DD sponsored project to examine the effects of new technology on the labour market and

demands for information services within the UK carried out by Technology Change Centre (Information Media & Technology, 1985) has concluded that the demand for tradtional skills is likely to tailoff and many of the traditional skills will not be required in the future except in small selective areas. The report identified some eleven categories of information jobs and our library schools in India can hardly cater to 2-3 categories of jobs. Another similar investigation on the forces of change in library schools in United States, Canada and the UK found decline in applications to library programs in universities due to lack of introducing students to technology (Erick, May/June 1989). Even those professionals who are already on job are severely handicapped if they do not have enough scope, opportunities and self-initiation to absorb and update the necessary skills, expertise and knowledge relating IT.

4.8 Difficulties of Hiring IT Specialists and Achieving Cooperation Between Library Personnel and IT Personnel

Finally, as IT is multidisciplinary and interdisciplinary technology, the team effort with highest degree of cooperation and coordination between

library personnel and IT specialists is necessary for effective utilisation of IT. Librarians have not been able to hire IT specialists. On the other hand, IT specialists are hiring librarians. This is a serious blow to profession. Further, even if a specialist is hired it has not only become difficult for librarian to have consistent support of specialist (like software engineer) but also to sustain the commitment and interest of specialists in using IT to modernise library services. The degree of such cooperation and coordination needed is reduced much in a turn-key project as well as adhoc hiring of specialists on specific aspects of IT work.

5. Impact of IT on Library and Information Services

Having analysed the potentials and problems of using IT in libraries, a look at what impact IT has on library services even if it is in a small cross section of libraries is worth.

Library services are broadly grouped in the following six categories: (1) Document delivery services (2) Bibliographic (or citation) services (3) Information (or reference or answer) services (4) Instruction services (5) Facilities services and

(6) Adjunct services (behind the screen-enabling activites like acquisition and technical services) (Orr, 1973 p321). Excluding the regular facilities and routine adjunct background services, we can examine the services of libraries under the heads Bibliographic services, Document delivery services, Information services and Instruction services.

5.1 Bibliographic Services

5.1.1 Current Awareness Services

Firstly, many of us have a ritual of publishing(?) list of additions and other current awareness bulletins. A large majority of them do not attract the potential users and they are not much used by either users or staff of the respective libraries. The current awareness services are mundane, less attractive, bulky and often obsolete and only add to 'information overload' of users. Tailoring them to smaller user groups, making them really 'current' and electronic or online, and creating a healthy competive spirit among users having similar interest through these current awareness services are necessary. One will be surprised to see many such lists carrying bibliographical details of six months to one year old acquisitions perhaps of two to three year old primary documents.

CD-ROM Databases with more versatile search softwares and current contents on floppies or on CD-ROM are the logical and efficient replacements of bulky and under-used secondary journals subscribed for last several decades. An innovative application of CD-ROM database is providing regularly (as and when updates are received) the contents (with abstracts) of costly and/or less relevant journals as well as those concelled for various reasons including budgetory constraints after searching by journal name.

At ISAC library, subscription to majority of secondary journals are replaced by CD-ROM databases and all inhouse current awareness bulletins are made available only as electronic CAS on LAN with over 125 terminals.

5.1.2 Retrospective Literature Search Services The abstracting and indexing journals with their quarterly, semiannual, yearly and some times even five yearly cumulations and varieties of indexes cost heavily in terms of subscription price, binding charges and storing space. On the other hand, budget crunch faced by most of the libraries is forcing them even to cancel subscription to some of the secondary journals. The arrival of CD-ROM versions of these tools in the market at this juncture with their

versatile searching, efficient retrieving & post-search processing facilities is a timely boon to libraries. CD-ROM databases are giving a good break in promoting the use of secondary journals. Despite effective substitutes offered by IT for costly and bulky secondary journals many libraries have not opted them yet. Some of those who subscribed to electronic databases have not made substantial changes in these services except saving time in compilation of lengthy bibliographies which may or may not be cost efficient.

Apart from the versatile search features, some of these softwares of CD-ROM databases allow customer accounting and security, search aids like thesaurus, several indexes including numerical and chemical indexes, automatic spelling variations as well as singular-plural versions, change disc options in single disc workstation, instantaneous display of library holdings information and many other features found in a typical online search facility.

Disregarding the different purposes for which information is sought by users and assuming that only the 'exhaustive approach' of academic and pure research nature is predominant, we believe and provide exhaustive bibliographies (i.e., 'everything' on the

earth) on a given topic eventhough users need and can afford only a short list of latest references. We wrongly believe that utility and professionality of a bibliography increases with its exhaustivity. Unfortunately this is one of the three criteria (the other two being pinpointedness and expeditiousness) to which we are wedded in our library schools. Most of the services are designed based on 'exhaustive approach' whereas users (particularly engineers) are more inclined to 'everyday approach'. Electronic databases are able to fulfil both approaches accurately and with least effort.

5.1.3 Public Access Catalogues

If only we attempt to see how our catalogues are used we would have discarded many parts of them like classified catalogue, author and title indexes to reports, etc.(Sridhar,1986) saving substantial time of professional manpower in preparing and filing these cards. But we have a great belief that all standard approaches will be used by users in accessing all types of documents. We will be surprised to know that in majority of the cases users prefer either to directly browse the shelves or to consult a professional colleague rather than using card catalogues and

consulting library staff. Some body has even made fun of us by telling that cataloguing has become handicraft in this country (McCarthy, 1975; Jones,1984, p29).

Well planned OPAC (Online Public Access Catalogue) of libraries can solve all the above problems and help better use of the services hitherto underutilised. OPAC can also provide many value added services like realisation of much talked networking of libraries, easing users having vague queries, accidental discovery of useful references, etc. ISAC Library has its OPAC on LAN for last couple of years enabling usres to search OPAC and interact with library from any of 125 terminals spread across the organisation.

CD-ROM as a cheap mass storage alternative, today provide many national bibliographies, and catalogues on it to economically down load the required data for library automation and also to carry out quick and authentic cataloguing. In addition, the OPAC of individual as well as groups of libraries became the source for cataloguing and retrospective conversion of data for many libraries. Many commercial establishments offer such OPACs for use by libraries. These CD-ROM products have greatly helped the users and libraries with excellent search softwares,

exhaustive and accurate coverage and improved catalogues. Libraries are benefited by economising in terms of data capture and entry including retrospective conversion of data, cataloguing and indexing activities, maintaining uniformity in class numbers and descriptors, easy reclassification and change of scheme, 'on-the-fly-processing' in circulation and having the information about holdings of other libraries. At the same instance, users have a more efficient, versatile, accurate, user friendly OPAC which often indicated how to locate them on shelves and availability in other libraries including spoken help, browsing shelf list, closed access racks and branch libraries, auto help screen and logged record of searches made. A cataloguer or a user can pose vague or incomplete queries to above databases to check full bibliographic details and availability. The Intelligent Catalogue of the Library Corporation applies inference techniques to search and recommend additional items to users. Laser Guide of General Research Corporation, as a unique browsing mode to scan 'closed' stacks and shelves of branch libraries, provides library's floor plans giving users a map and instructions to users to locate books. Le pac from Brodart Automation provides customised PC and CD-ROM

containing the library's unique card catalogue. In addition to offering advice, plenty of cross references are automatically presented and acccess can also be restricted to newest titles. Above all user can make and save notes as a search is in progress. These CD-ROM catalogues provide accurate and up to date authority lists.

5.1.4 Developing Local Databases

CD-ROM databases with provision to down load selected records and process and upload to other databases give ample scope for small libraries to develop their own local databases. As most of the databases follow standard formats and there are softwares which can easily process and import data from CD-ROM databases, the task of developing specialised databases is made simple, cheap and easy. Four such specialised databases covering last five years literature from about 70 core primary journals subscribed by the library with each database having over 6000 records are developed at ISAC Libarary.

5.1.5 Networking, Cooperation and Resource Sharing

The potential of CD-ROM databases for exchange of bibliographic data is enormous and such standardised

exchange of bibliographic data goes long way in helping libraries. Creation and production of authoritative bibliographic records of a nation and the national bibliography for international exchange, for cooperative systems, for use in individual libraries, for abstracting and indexing services, for use in online information-retrieval systems, for use in the book trade, etc., has been an issue bothering information professionals for quite sometime.

IT has also provided impetus to networking, cooperation and resource sharing. Some of the OPACs have a provision to indicate the names of the libraries holding a given document and provide an inter library loan option. For example, LePac of Brodart Automation with electronic mail coupled with complete database on CD-ROM can allow each member to search and execute inter library loan option. The operator stores loan requests and responses on a hard disc and sends them to the ILL Director for transmission at night to each participating library. The system receives responses and new requests and stores them in the mail queue. If a response does not arrive after a predetermined length of time, the ILL Director sends the request on to the next library in queue. The ILL Director collects and maintains records of

ILL and calling activity, errors, and exceptional conditions on the hard disc. It can store up to 50,000 requests, acknowledgements and related messages as well as track continuous statistics on up to 500 ILL option workstations. It has been reported that use of such CD-ROM PACs has substantially increased ILL transactions and circulation.

5.1.6 'Surrogate' Mode To 'Full Text' Mode of Service

We are fond of providing surrogate mode of service and traditionally reference mode and lending mode of service from libraries. We do not have any direct mode of service like that of circulating documents amongst potential users. Our authoritarian, custodian and audit-feared minds do not allow us to think of circulating journals, reports and other materials directly to the users concerned. Many full text databases and image scanning devices are offering exciting possibilites of putting users directly in touch with the primary dicuments at their workstations without adding stacks to the libraries.

5.2 Document Delivery Service

Document delivery services are crucial to libraries and are concerned with the capability of a library to

provide users with the items they need at the time they need. Capability indexes and satisfaction indexes of library effectiveness are some of the measures gaining increasing acceptance in evaluating a library. Capability measures both the service as well as the collection of a library. The satisfaction indexes tend to address delivery of services to fulfill the expressed demand. On the other hand, book availability factor is also concerned with the chances of an item owned by the library will be on the shelf when sought by the users. These capabilities of the library depend largely on facility, services, adjunct services and other background services as well as quality of manpower. There are all the indications and confidence that there will be a positive change in the document delivery services including increase in satisfaciton level of users or book availability factor if our libraries adopt the state of the art IT.

Project ADONIS, a joint effort by ten commercial publishers with trial document delivery service that supplies biomedical journals on CD-ROM on a weekly basis to 12 major document supply centres in Europe, USA, Mexico, Australia and Japan is yet another area where full-text CD-ROM databases played

significant role in providing service to libraries and their end-users. CD-ROM services of one library in a group of cooperating libraries can be more effectively and efficiently shared with other member libraries through FAX and E-Mail. National bibliographies on CD-ROM prove invaluable for library cooperation and inter library lending.

Collection development, management and evaluation are the central and most crucial functions of a librarian. CD-ROM databases have extensive applications in all the phases of collection development and evaluation including selection of documents, checking and enriching bibliographical details, pre-order searching, avoiding duplicate acquisition, direct import of data and even incorporating an automated acquisi-tion system with facilities to print purchase orders, order cards, catalogue cards, etc. For example, Bowker's Books in Print Plus consolidated seven printed publications of Bowker on one disc with 1.8 million records of more than 31,000 publishers with 18 search criteria, 10 browsable indexes, 11 output formats, facility to download, print purchase order and card catalogues. Books in print with Book Reviews plus in addition to

above facilities provides 1,23,000 book reviews with over 30,000 new reviews added each year to make book selection more meaningful. A prototype of Librarian's Inquiry Terminal (which is a library-based version of SMART catalogue of Delmar intended to help increase in sales in book stores), developed by Baker and Taylor and the Delmar Group, conceptualises a database combined with catalogue of books available, librarian's knowledge and review capabilities to give suggestions for books to buy and read, generate list of suggested titles based on books already read and enjoyed by users and users profiles. Here the intelligent interface is integrated with a CD-ROM PAC. The system uses touch screens and artificial intelligence techniques. After locating an item it shows the dust jacket, the table of contents and first page and provides information on the author as well as a review of the book. When it becomes available this will be an highly imaginative tool for acquisitions librarian for both collection development and collection evaluation.

Most of the CD-ROM databases provide comprehensive checklist for evaluation of collection. In CD MARC Bibliographic, while scrolling through the LC shelf

list, one can compare library's holdings against those of LC. CD-ROM search statistics can also be used to assess the weak and strong areas of the library's collection so that remedial measures can be taken.

Softwares like ONDISC and PROQUEST (V.4.30) provide extensive facility to monitor and record usage of CD-ROM databases. Apart from knowing how long a workstation or a database or a disc is used, average usage per day, total Boolean search done and total number of topics searached, one can also know the extent of use of a CD-ROM database by a given user or user department, the number of records viewed and downloaded for each journal title, etc. The possibility of generating journal usage report in an alphabetical order in systems like that of PROQUEST enable one to build a library specific rank list of journals for collectiion evaluation.

5.3 Information Services

Professionally and academically we are also proud of talking more about information services than other 'basic' services like document delivery service or instruction services. The success of information services depends largely on the effective use of IT and

the quality of manpower. As one cannot see any dramatic positive change in the skills, attitudes, knowledge and morale of library professionals nor wide spread application of IT the possibilities of providing better information services are still open.

IT has made it easy for libraries to provide many expanded information services to users. Keeping CD-ROM databases as bases, libraries can develop many interesting and useful information services to their customers. Specialised current awareness bulletins like recent conferences held with list of papers, theses submitted to various universities, institution or individual (author) oriented information, etc., can be easily generated and disseminated. One typical example apart from production of CAS and anticipatory bibliographies is SDI service. Hitherto SDI is a service rendered by only few libraries which had adequate facilities and manpower. CD-ROM databases have made it as simple as developing a profile in the form of a search query and storing the query in the PC for execution with every update of CD-ROM database received. ISAC Libaray has been able to provide SDI service to its users using CD-ROM databases for last two years.

Quite a good number of reference tools are now available in CD-ROM form with sophisticated search and retrieval softwares and multimedia information. Many CD-ROM reference tools combine more than one (at times as many as ten) printed tools in one database. Search logic such as Boolean, keyword, proximity, etc., with option to store queries, save searches, download hits on to discs for processing with word processing softwares, highlight words for looking up corresponding dictionary part, consulting 'path to article', placing 'book marks' to review, etc. are available in the CD-ROM reference tools. Like secondary journals, many reference tools are costly, often under-used, bulky to store and involve lot of time and efforts to search by end-users as well as library staff. Further, unlike bibliographic databases, most of the reference tools on CD-ROM are available for outright purchase. Reference tools on CD-ROM relieve users and library staff from arduous task of moving from rack to rack carrying heavy volumes and scratching their heads for complicated arrangements in printed volumes.

The original of Oxford English Dictionary (from Tri-Star Publishing), the Guinness disc of records

1990, The New Grolier's Academic American Encyclopedia, The McGraw-Hill Concise Encyclopedia of Science and Technology and the McGraw-Hill Dictionary of Scientific and Technical Terms (both in one), International Encyclopedia of Education (Pergamon Infoline), Bookshelf (from Microsoft and includes 10 reference tools), The CIA World of Factbook (information on 249 countries and territories), Newsbank's file of 700,000 news clippings, parts-master (NSA's database of over 12 million parts and products procured by the US Government) 47 volume National Directory of the US Postal service for Address Verification System from Information Design etc., are some reference tools available on CD-ROM. Instruction and service manuals, product catalogues, telephone directories, maps, charts, navigational systems, forms and regulations information, satellite imagery and other reference tools are also expected to be available on CD-ROM in the near future.

It may be noted that specialised application of CD-ROM enable integrated reference products with customised packaging of data, value added by including images, sound, etc., with textual data and

specialised single-applications systems. For example, Datatek offers Data Times, a customised CD-ROM databases (full text) of their newspapers clipping service and the Merriam Webster Dictionary is a visual dictionary with audio pronounciation for each word. The multimedia Encyclopedia contains that text as well as audio of historic speeches; stills of actual events set to music; symphonies heard while reading about the symphony and seeing sheet music; colour images which can be enlarged for closer analysis; motion sequences of migratory paths, animal and chemical behaviour; multiple language explanations of the same visual image; annotated text, etc. Hence reference tools on CD-ROM are much more than traditional printed books and provide service much higher in value and can be used with least interference by the reference librarian. CD-ROM has enormous potential to become an integral part of reference services in libraries. Because of ease of use and affordability, West has already made heavy use of this technology both for reference service and collection development. Time is not far away that reference librarians will spend more time at computer terminal than at reference desk. Further, with placement of CD-ROM systems, reference desks will

become busier than before not only for reference service but also to assist and train users in use of CD-ROM and for bibliographic instructions. In fact, CD-ROM itself is a good medium for learning, teaching and bibliographic instruction.

5.4 Instruction Services

We are owefully inadequate and bad in providing systematic and regular user instruction services particularly user-induction, user-orientation and user-education. We do not find even a single user-education module to proudly present to an average user. Some have imported AV programmes to show to their users. There is no local orientation to such programmes developed abroad. Majority of libraries do not have regular user-induction and orientation programmes except providing a copy of rules and regulations of the library.

Bibliographic instruction as part of user education aims at instructing or training users to make optimal use of information resources and save time in their literature search within specific subject disciplines.

CD-ROM is an excellent aid for bibliographic instruction. Many studies and surveys have revealed

that CD-ROM databases are more effective and less costly than the alternative methods for both learning and teaching bibliographic instructions and there is a dire need for end-user training to enable them to access needed information privately and independently.

Impact of IT on facility and adjunct services of libraries (not discussed in this paper) is in no way less significant than impact of IT on other services.

6. IT and Innovation in Library & Information Services

The largest single factor which has caused changes, if any, in the library and information services, is information technology including computer, telecommunication, storage and other related technologies. IT has made it possible to introduce few new services, revolutionalise many existing services by providing new media, by increasing speed of processing and retrieval, by overcoming distance and communication barriers and so on. Some of the areas of library and information services which can be effectively rendered with the help of IT are mentioned below.

Tailor Made Services : Provision of uniform or common service to all is found unsuitable in libraries particularly special libraries. IT enables libraries to

provide lot of need based tailor made services which are expected to increase the effectiveness of services.

Intensified Current Awareness Services : Provision of increased opportunity to browse latest literature in both core as well as related/ peripheral areas and carrying current awareness services (tailored to the need) to the workspots and laboratories of otherwise busy users is has become simple and easy with IT.

Extensive Provision for Browsing : Past research has repeatedly revealed that browsing is the most often used method to learn about new information. Libraries have to make extensive provision to enable their users to browse information sources which incidentally enable users to discover relevant information in an unplanned accidental way.

It is IT with remote browsing facilities and full text databases provide ample scope for browsing information by users.

Direct Mode of Service : It is high time that libraries evolve a more liberal policy of promoting the use of primary documents either in print or in electronic media without expecting users to visit library. IT has many options in this regard.

Inducting Non-users to Libraries : Use of a library

is by and large a minority affair. A small cross section of target user population normally use their 'primary' library. Libraries have not only to find ways and means of inducing and inducting the nonusers but also make use of IT to take library to the users.

User Orientation : There is a greater need for exhaustive orientation programmes to users of libraries (especially to new entrants and less frequent users) in using libraries as well as new systems and services based on IT. We need few modules of user-orientation programmes locally developed and tested for the purpose.

Organisation of Personal Information Systems : As a logical extension of user education, there is a need for imparting informal training to users of libraries in organising personal information systems consisting of references, notes, abstracts and documents in various forms like registers, notebooks, files, loose sheets, cards and desk diaries, etc.

Well organised personal information system facilitates and stimulates better and more intensive utilisation of accumulated information that in turn stimulates creative thinking and that lead to improved style of intellectual work of user. In other words,

personal information system prevents information once gained from being lost, intensifies the use of available information resources, improves organisation of knowledge, provides opportunity for creative use of information, allows for linking of facts and ideas and helps to discover hitherto unseen relations, associations and conclusions. Often, users consider personal collection/ libraries more important than institutional libraries. For all the concern librarians have lavished over management and automation of institutional collection and for all the expertise they have gained as a result, not much effort/interest is shown in personal information management (Dow, 1987,p30). Using the knowledge and experience of management of bibliographic environment, librarians can help their patrons in searching literature through online or CD-ROM databases and further processing of downloaded data through PC using several online utilities and offshelf softwares in addition to organising traditional personal collection. Wherever possible the personal and departmental systems should be integrated with the organised formal information systems.

7. Conclusion

The paper did not go in detail about prospects of various information technologies for modernising library services. Yet it may be stressed here that our prospects of having decentralised yet integrated or coordinated library systems will be made possible by communication technologies like data communication networks, digital fax machines, telecommunication satellite communication, etc. Our document outputs and publications could be more timely, efficient, elegant and appealing to users than ever before due to graphic arts technologies like laser printers, colour copiers, DTP, etc. On the front of mass-storage, mass-copying and retrieval technologies, it is pertinent to note a finding of a recent study by M/s.Coopers and Hybrand (Hendley, 1988,p17): "...of the information that enters an organisation in paper form, only 1% is coded and entered into computer systems, under 5% is converted to microfilm at some stage of its life and 94% remains in paper form throughout its life time. In addition, as the volume of transactions grows the volume of paper handled is rising at the rate of 25% per year". Thus inspite of many mass-storage devices like microforms, optical discs, etc., paper form continues to have a major share. But having

surrogates/ bibliographic databases and unconventional documents on these media may help in many ways.

We can modernise library services by making our **mundane current awareness services** really current, user directed, timely and intelligent without much additional data entry wherever computerised operations are in vogue. We can activise our **dormant library card catalogues** by providing uptodate OPAC and ornamental **abstracting and indexing** journals by subscribing to CD-ROM version or providing online access to these databases.

We have already been able to use computer for quite a few of our house keeping operations and information retrieval function in many libraries and information centres. But there is a lot to be done to improve and integrate them. **Information processing technologies** also offer increasingly more powerful tools like high resolution PCs, PSs, etc., A microcomputer based expert system for providing referral service on line with PLEXUS (of University of London) should not be far away if we desire and need it. We have to look for serendipitious insights with innovativeness and ingenuity in latest technologies like expert system, hypertext, workstation technology, optical storage media, OCR, ICR, network technology, etc.

There are no fundamental and philosophical changes in library services during last two decades. The winds of information technology have been blowing and making some changes in the existing services of libraries. The partnership of library services and IT is not all that happy. Appropriate use of IT by libraries with clear understanding of potentials and threats of IT is necessary.

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