

Poona University.
Dept. of.
Library and Information Science.

Seminar on new trends in management of
libraries, Pune 1984 : [Papers].

Services - Optimization Poona
Uniques-Serial Manage

Organization and Library and Information Science

Seminar on New Trends in Management of Libraries

19-22 Dec. 1984

Wednesday, 19 Dec. 1984

09.30 - 10.30 Inaugural Session

Keynote Address : Dr. V.A. Kamath
Chairman, Library
Committee,
Nehru Centre, Bombay.

Presidential Address : Dr. V.G. Bhide
Vice-Chancellor
University of Poona.

10.30 - 11.30 Registration of Delegates.

11.30 - 13.00 1st Session : Principles of Librarianship
Papers : M.R. Riswadkar & Mrs. Sivani
Sengupta.
D.W. Shewde

Chairman : Dr. B. Anderson, Rapporteur : Dr. TAV Murthy

13.00 - 15.00 Lunch break

15.00 - 17.00 2nd Session : Collection Management

Papers : M.R. Chandran & T. Subramanyam
Dr. S.G. Mahajan
R.S. Singh, M.B. Patil, & N.B.
Dahibhate
A.C. Tikekar
Dr. Yogendra Dubey & Dr. J.B.
Subramanian.

Chairman : Shri N.B. Inamdar,

Rapporteur : Shri. M.V. Venugopal.

Thursday, 20 December 1984

09.30 - 11.00 3rd Session : Reader Services

Papers : M.A. Sattar

R. Satyanarayana & T.N. Rajan

Dr. TAV Murthy & B.K. Talwar

Chairman : Shri. K.S. Hingwe,

Rapporteur : Shri. PSG Kumar

11.00 - 11.30 Tea break.

11.30 - 13.00

4th Session :

Papers : V.N. Misra
 S.A. Pendse
 PSG Kumar ✓
 G.J. Narayana
 M.B. Konnur

Chairman : Prof. A.C. Tikekar, Rapporteur

13.00 - 15.00

Lunch break

15.00 - 16.30

Lecture Session by Dr. Us
 on Stress ManagementFriday, 21 December 1984

10.00 - 11.00

5th Session : Personnel Mana

Papers : Dr. B. Anderson
 G.J. Narayana
 Subhash Waghay ✓
 P.S. Swami
 S.R. Natu ✓
 S.A. Pendse ✓

11.00 - 11.30

Tea break

11.30 - 13.00

Continuation

Chairman : Shri. V.N. Misra. Rapporteur : Shri. D.V.

13.00 - 14.20

Lunch break

14.30 - 17.00

6th Session : Technology & Efficiency

Papers : Dr. V.A. Kamath
 Dr. I.K. Ravichandra Rao
 N.M. Malwad ✓

Chairman : Shri G.J. Jarayana. Rapporteur : Shri PSG

Saturday, 22 December 1984

10.30 - 12.30

Plenary Session

Chairman : Dr. B. Anderson. Rapporteur General :
 Shri. M.R. Riswadkar.

de. Services - Optimization through
Techniques-Serial Management on New (3)
es-Mechanization and Networks

Management T.A.V. Murthy,
ad, Library Services.

Phadke. Talwar
Senior Librarian
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GIPE-PUNE-205455

(The Promise of Computer based Information System has not yet been realized seriously in developing centres. Though, since 1970 there has been a significant trend among large libraries/Information Centres moving from manual system to an online. The need of the hour is to adopt, design develop systems what the users want. This paper highlights alternatives with particular reference to a prototype strategy which has some important advantages).

The paper suggests that the growing use of computers and communications technologies has serious long and short-term implications. Given the rapid convergence of computer/communications technologies and the substantial growth in the use of these technologies in Library & Information Centres, three questions - which must be squarely dealt with are :

- i) There a potential during the next decade for major economic discontinuities which may be caused by the use of these technologies and which would lead the major social problems? - The answer is obvious the potential does exist.
- ii) What likely social conflicts could be generated by the use of these technologies?
- iii) What must be done, and when, to alleviate these potential problems?

In attempting to answer these questions, we have no choice but to address the issues within the framework of the triangle-Technology, Economy and User. First, we must attempt to understand fully the potential of the new technologies to be able to recognise social and economic opportunities and threats. Second, we must examine the uses made of the

technologies within our economy to identify actual and potential sources of social conflicts. Third, we must examine the nature and magnitude of these social conflicts and threats to be able to develop appropriate solutions. Social and economic pressures have in turn forced the technologist to design the means of output in such a way that the final outcome in both economically feasible and socially acceptable. The user learns the responsibility for economic feasibility alone; society is left to its own devices to deal with the social impacts. The reasons become apparent when viewing the scope of work of today's computer technologists - the data processors. Entrepreneurial goals and expected user impact appear to form the foundation of the information systems design specification. Technology is viewed as the servant, not the master of information system development. Man and machine form an integrated information system. Data are used as an information resource, shared by many. Man and machine interactions are optimized, making use of the unique capabilities of both. Machines process, store and communicate data, characters, symbols, and other representations like bits, bytes and packets. Machines are superior to man in the repetitive processing of data in terms of speed, accuracy, reliability, and the ability to transfer data instantaneously over distances. Man is best in processing information. Man can both USE and CREATE information (knowledgeable, messages) by applying both quantitative and qualitative reasoning and by associating seemingly unconnected data of thoughts. Man can seek and FORMULATE goals by processing information from one medium into another, or COMMUNICATE information in the form of spoken or written messages or visual images perhaps the best illustrations of the ongoing transition in methodology are the changes encountered in the components of a typical Information system. The components of an Information system contains six elements to for optimization of existing situation and in order to introduce new lines for mechanization hardware-software-Data-Telecommunications services-systems design-End users.

Let us view the end user - who represents the coupling of the system with the outside world. We differentiate between two kinds of users. Direct end users (a management and staff) have a certain degree of control or influence over the

development and operation of the system and the system is designed for them. Indirect end users, the participants in the system (consumer, vendors, employees) have to interact directly with the system, but have little or no control over the development and operation of the system.

The task of processing of the serials is fairly complex. This is because of very large number of serials, with different periodicities, different suppliers, different lead times, different sub-subscription start dates, different discipline coverage, different languages, different procedures, etc. The situation is further complicated by the serials getting delayed, publishers refusing to acknowledge letters, etc. Accordingly, in many instances, considerable delay results in making the journal/serial available to the user. It also places a very heavy burden on the person responsible for the processing of serials, who has to maintain several indexes/files/registers/Kardexes, etc. Few experiments have already taken place on different computer systems in India and abroad. One of the way of handling such situation is through the prototype strategy, an initial and usually highly simplified prototype version of the system is designed implemented, tested and brought into operation (as enclosed in fig. 1). Based on the experience gained in the operation of the first prototype, a revised requirement is established, and a second prototype designed and implemented. The cycle is repeated as often as is necessary to achieve a satisfactory operational system, bearing in mind the possibility escalating cost of each subsequent cycle, it may well be that only one prototype is necessary before producing the final system.

With the prototype strategy, several investigations and studies are far less protracted. In devising the system, the analyst can often base their detailed interpretation on their own assumptions. The users for their part, knowing that these assumptions can be proved or disproved when prototype is put into operations, can be far bolder about accepting them than when faced with last chance to make up your mind on the detailed requirements, etc. This shows the greatest advantage of the prototype strategy - the generation of user confidence. Any information processing system must achieve both 'technical' and 'psychological' success.

This paper has exposed answers to a few of the many questions we have about modern reader services and utilization. Hopefully, future research will answer more. Research is continuing and we can expect to further refine our knowledge in this area. Perhaps one day it will be easier to build utilised systems. A Modular problem - oriented technique for developing data base system seems to be a way to meet changing requirements of Informatology.

We gratefully acknowledge the Director, Dean & Jt. Director (Edn) for their kind permission to us to participate in the seminar. We are also thankful to Prof. Mr. Riswadkar the Director of the seminar for his kind invitation to us.

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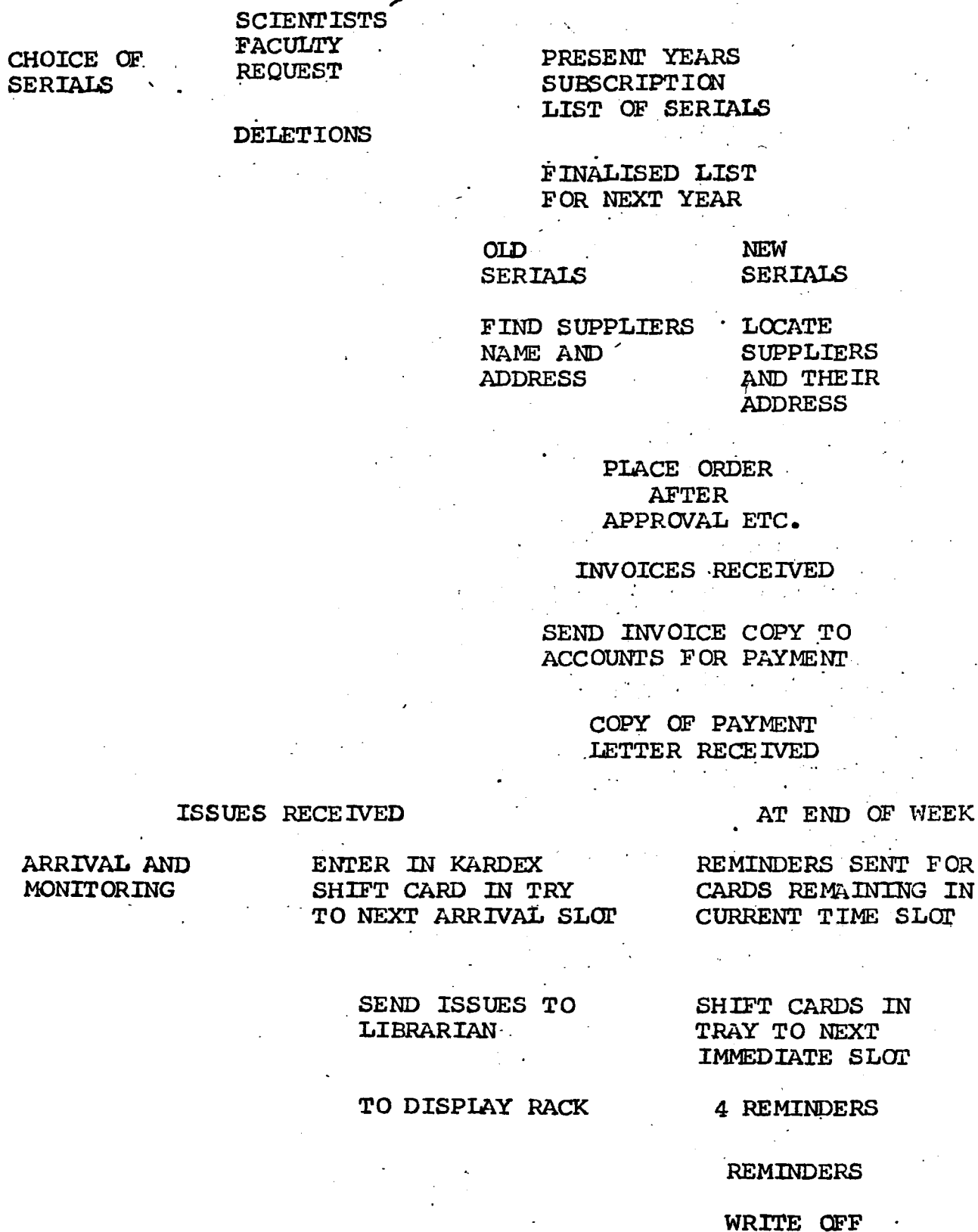


FIG.1. A prototype model flow chart.

Management of Serials

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Introduction

Serials are the most important and indispensable forms of literature for academic and research libraries because of their informal and research value. Arising out of the seventeenth century revolution in science, the transmission and dissemination of scholarly communication through serials has assumed pre-eminence today. Libraries play an important role in the dissemination of information communicated through serials by acquiring, maintaining and providing access to the information contained.

Many believe that serials are the primary cause of the crisis librarians are facing at present in respect of collection building and service priorities. Since the 1970's, subscription prices for standard scholarly journals have gone up manifold. The problem has become exacerbated because of the number of serials increasing at an astounding rate. As a result, librarians are caught between ever increasing number of serials and their rising costs. They are not only obliged to select a large number of serials from amongst a vast mass of them, but they have to spend more and more to retain what they have been already receiving and also for the new serials to satisfy the patrons' demands. In order to support the teaching and research programmes, our libraries heavily depend on serials from foreign sources, which are becoming dearer to us due to the declining value of our currency in subscription payment. The combination of expense and size of serial subscriptions deserve special attention from our librarians. Our libraries are faced with an unprecedented crisis, as the rising costs of subscriptions outrace the available resources including budgetary provisions. Never before have the librarians faced problems in managing the serials as they do today. Librarians are confronted with such management questions as how to cope with the rising costs of serials, their ever-increasing number and the reduced budgetary support. This paper focuses its discussion on these management problems and the probable solutions.

Definition of serials :

At the outset, it is important from their management point of view to know what we are referring to when we call a publication a "serial", and what are the essential characteristics that make a publication a 'serial'.

Taylor¹ has presented a comprehensive analysis of the definition of serials that helps us to understand the nature of serials and the elements of their incredible variety. A large number and variety of publications - scholarly journals, mass-and special interest consumer magazines, newspapers, newsletters, year books, almanacs, directories, periodic conference proceedings - all of these and more are in a sense, serial. Taylor² observes that they are so different in purpose, audience, content and publishing patterns from one another that it is difficult to emerge with any definition that will cover them all. In fact, there is no agreement on a definition, or even for that matter, a name.

According to Davison³, who represents the British tradition, the term "periodical" is all-pervasive. Osborn⁴ observes that in the U.S.A., the use of the term "serial" is common, and is more universal. While Davison⁵ argues that 'serial' is falling out of favour and the broad interpretation of "periodical" is growing, Osborn⁶ asserts that most reference tools refer to "serials" as "serials". The author also refers to AACR which use the term "serial". Davison⁷ cites examples of reference tools that use the term periodical, such as 'British Union Catalogue of Periodicals', Ulrich's international periodicals Directory. The author also mentions the use of the term "periodicals" in ISO's ISC/R8 for layout of periodicals, and American Standard Institutions : Periodicals - Format and Arrangement. Davison says that the term "periodical" is understood by the lay person and therefore, is preferable. Osborn⁸ argues that because lay people think they understand it, it should be avoided. "Periodical is associated with 'magazine', that is ambiguous when used as a comprehensive term, and therefore the library jargon "serial" is more exact and unmistakable.

Taylor⁹ has identified certain characteristics that make a publication a 'serial' - A serial is a publication reproduced

in more than one copy and more than one issue. It has a common name identifying the issues and dating or numbering to show the distinction and connection between one issue and another. It has no intended point of completion. The essential elements to the serial publication are :

1. Publication
2. Reproduction in more than one copy.
3. Appearance more than once
4. A name or title shared by the multiple copies and issues
5. A numbering or dating system
6. Indefinite appearance.

The definitions and characteristics identified above should help us to identify a class of material that can be distinguished from all other materials, involving a set of management issues peculiar to that class of material. Serials being a comprehensive term, usually encompasses a number of materials which are briefly outlined below for the sake of clarity of out understanding.

News-papers and News-letters

Scholarly Journals

Popular Journals

Critical Reviews

Almanacs and Year books.

This paper is concerned with scholarly journals, which are of great importance to academic librarians.

Management of Serials :

This paper does not intend to discuss the management of serials department or operating procedures. But it attempts to explore the kinds of management problems being faced by our libraries in regard to the serials collection development and maintenance, and the attention that needs to be directed to cope with such problems.

We start with certain hypotheses that :

1. Academic and research libraries in India depend heavily on foreign serials (say 80%) to cater to the needs of research and teaching.
2. Proliferation of serials, inflationary trend in serial costs, the declining value of our currency in money market are the factors adversely affecting the capacity of our libraries to buy serials.
3. With the budget already encumbered by on-going commitments via standing orders and subscription libraries can purchase fewer books and monographs.
4. Serials consume as much as 60% plus a 15% inflation allowance already spent without the library making a single additional purchase or placing a single new order.

The authors made a survey of the serials department of an university library for the purpose of this study. From amongst the serials acquired by the library, it was found that more than 78% of the serials acquired were from foreign sources. Of these 60% originated from the U.S.A. and 39% from Great Britain. Only 1 % of the serials were from U.S.S.R., Germany and Japan.

High Rise of Serial Costs :

An analysis of the price of serials originating from the U.S.A., made by Brown and Phillips¹⁰, shows the price rise trend for the years from 1977 to 1983. This analysis was based on 3,671 titles. It shows that the average subscription price of an American title was \$ 50.23 in 1983, a 12.1 % increase over last year's average price of \$ 44.80. Using 1977 as the base year, the index was 204.3.

Table I below ranks the 1983 average subscription price of some selected traditional subject categories and indicates percentages of increase over 1982 average prices and the average annual percentage of increase since 1977.

TABLE I

Category	Average subscription price 1983.	Percentage increase for 1982	Average Annual % increase since 1977
Chemistry & physics	\$ 207.94	16.9	14.2
Medicine	112.72	9.6	14.1
Mathematics etc.	97.26	10.5	12.9
Engineering	73.18	18.9	12.7
Zoology	70.74	15.8	13.3
Psychology	59.31	9.4	11.0
Sociology & Anthropology	40.54	11.4	12.8
Journalism & Communication	40.54	11.4	14.2
Business and Economics	35.67	9.2	11.5
Education	31.36	11.3	10.2
Law	29.66	7.7	9.3
Labour & Industrial Relations	29.22	18.2	17.3
Political Science	28.97	11.9	11.9
History	21.27	7.6	10.1
Agriculture	21.27	7.6	10.7
Literature & Language	21.19	9.3	10.2
Philosophy & Religion	20.21	12.8	10.9

The steady upward trend in the price of serials in the international market in which we must buy, has amounted to at least a doubling in the past six years. Since our budget for purchases does not get as much enhancement as to cope with the price rise, the purchasing power of our libraries has dropped considerably.

From the figures obtained from the library (Table II) it was discovered that when the price of serials went up faster than the library budget for books and serials, an increasing proportion of money was spent on serials and a decreasing proportion on books. The subscription budget for serials increased four times from 1974-75 to 1982-83 for approximately

the same number of serials (i.e. Rs. 5,80,518 in 1974-75 to Rs. 19,90,000 in 1982-83; 54% in 1974-75 to 79.6 % in 1982-83)

TABLE II

Year	No. of periodicals received.	Total expenditure on books/periodicals.	Amount spent on periodicals	Percentage of periodicals subscription
1974-75	2,889	Rs. 10,75,000	Rs. 5,80,518	54.7
1979-80	2,889	18,35,500	11,66,000	
1980-81	2,890	20,25,000	12,80,000	
1981-82	2,890	22,50,000	16,87,000	
1982-83	2,890	25,00,000	19,90,000	79.6

Faced with the problem of rising costs of serials, the library sought larger increases in order to keep up with the commitments. The figures given in Table II indicate that despite more than two-fold increase in budget from 1974-75 to 1982-83, i.e. from Rs. 10.75 lakhs to Rs. 25.00 lakhs, the library's book purchasing power declined considerably.

79.6 % of the total book budget was consumed by serials in 1982-83 as compared to 54 % spent on the same number of serials subscription in the year 1974. Besides consuming a large percentage of the book budget, serials were allocated 15 % inflation allowance each year, without the library making a single additional purchase or placing a single new order.

Declining value of Rupee :

The declining value of rupee in the international money market aggravates our problem. The following conversion rate of our currency in international money market indicates the declining value of our currency :-

<u>Foreign Currency</u>	<u>1979</u>	<u>1980</u>	<u>1981</u>	<u>1982</u>	<u>1983</u>	<u>1984</u>
US \$	8.70	8.70	8.70	9.90 10.10	10.50 11.00	11.20
British £	17.60	18.40		17.70	16.30	16.30

The purchasing power of rupee against US \$ has declined approximately by 77.6 % in 6 years.

Serial Explosion :

Serial Explosion :

Serial publication is growing at a frightening rate from which we are obliged to purchase to satisfy the demand of our patrons. According to the study made by Fry and White¹¹ new scholarly journals were being created at a rate of 3.9 % a year, that is, 403 of 2459 journals studied were born during the period covering their study (1967-73). They concluded that 2 % ceased during that period, leaving a net growth in journals of 2 %. They also found an increase in the number of pages published by most journals.

The growth rate is indicated by comparing the two most recent additions of Ulrich's International Periodicals Directory. One must, however, remember that Ulrich lists many other periodicals besides scholarly journals. The 22nd edition (1983) of Ulrich's International Periodical Directory contains information on some 64,800 periodicals published throughout the world. More than 40,000 entries from the 21st edition (1982) have been updated¹².

The 16th edition (1975) of the Directory included entries for 57,000 imprint periodicals published throughout the world. Thus in 8 years (1973-83), 7800 titles of periodicals have been added¹³.

Rationalizing the serials collection management :

Attempts have been made since long to rationalize the selection criteria of serials. Library literature is replete with bibliometric studies trying to discern the pattern of the literature use based on the analysis of cited references in order to provide a rationale of selecting the most used serials and other materials. For a long time, bibliometric studies and bibliometric methods captivated library profession as some thing that was able to provide a definite tool for policy decisions. However, the usefulness of bibliometrics and bibliometric studies began to be questioned in the real world situations. According to Taylor¹⁴, 'each library is different and its community is different', As Harry Kri¹⁵ has observed "A library must serve the local groups of authors, not a subject field. Thus a librarian need to know what is being used and cited

by those who publish in a particular set of journals". He adds "In this regard, it should be noted that the literature of a speciality must be distinguished from the literature of interest to workers in that speciality."

The above statement lays emphasis on the actual library use studies. No one, however, can question that libraries have a compelling obligation to the study of actual use of their own libraries. Such studies may provide criteria for serials selection decisions. Librarians are confronted with three questions in regard to serial selections decisions¹⁶.

- i) Decisions to continue or discontinue a particular title;
- ii) The decision to begin or not to begin a subscription to a particular title;
- iii) The decision whether or not to weed out a particular title.

Need for use Studies :

Thus decision criteria require that librarians must make actual use studies of serials in their library. A library with a small collection of materials, say 50 or 100 subscriptions, may not find it difficult to manage. In a large academic or research library with a number of departmental/faculty libraries, the decisions regarding serials are difficult. In industrially advanced countries librarians has responded to the need for rationalizing the serial collection development by conducting the actual use studies and by developing criteria based on those studies. Many important studies have been made in particular, by Trusewell,¹⁷ Buckland¹⁸, Fussler and Simon¹⁹, and Morse²⁰. Although these studies mainly concentrated on book use, they showed a remarkably identical pattern i.e. 20 % of the collection accounts for 80 % of the use. These studies, however, have had little effect upon the serial collection development policies and practices in the absence of any workable methodologies and hypotheses to be followed by all kinds of libraries. However unlike these studies, a study conducted at the University of Pittsburgh by Allen Kent and his associates²¹ is a land mark, as Axford²² has said, that it has challenged the traditional concept and prevailing belief

among librarians and scholars, that problems confronting libraries today in regard to the collection development can or should be solved simply by massive increase in their budgets. In spite of the criticism this study draw, it undoubtedly alerts the library profession to the need for use studies for rationalizing policies and procedures based on actual use of library materials. It does propose helpful procedures for librarians who need to make decisions in regard to the collection development, maintenance, and weeding. The study used different methods for books and journals. Book use was computed directly from the machine readable file of circulation transaction. Journal use study was made by placing observers in departmental libraries who watched people using the journals and interviewed them concerning their status and purposes.

The purpose of the Pittsburgh study was to develop means for determining the extent to which library materials (books/monographs and journals) are used. The study projected the use of about 95 % of all journals atleast twice during the year, but only 60 % were used 25 times or more and only 10 % were used 100 times or more a year. Costs averaged 4.45 per use (approximately Rs. 45/-). It espoused the "use equals value" concept. The general conclusion of the study was that a large number of books and journals in academic libraries are never or rarely used. From the result of this study and other studies, certain common points emerge :

- (1) A few library books and serials account for most of the use and other items are used very little.
- (2) The most recent books and serials are more likely to circulate than older ones, and therefore, those that are not being read now are not likely to be read in the future.
- (3) Unused books and serials can be put in storage or discarded with very little effect on the way the library is used²³.

The studies however, present two problems :

- (1) How can one know before it is subscribed that a certain serial will not be used, and
- (ii) Is it really bad that many serials are not used?

The serials that will never be used are a waste of library's money, but there seems to be no sure way to predict which serials will turn out to be the most used ones.

Certain selection criteria must be carefully worked out. It might be feasible to place all journals in four categories: high use-low cost, high use-high cost, low use-low cost and low-use- high cost titles. If this were done, it would be easy (according to the authors of the University of Pittsburgh study) to eliminate the low use-high cost titles, retain the high use-low cost ones, and study further the high use-high cost and low use - low cost titles. If judgement of value, either by faculty or by the librarian, can also be attached to the journals, then the titles with high value, but low use can be promoted to see if use increases. When costly, valuable, but underused journals stay underused, the difficult decision on retention will have to be made. Then the library will have to decide whether it collects for present users only or for potential future users as well²⁴.

The assumption that an unused serial is value-less is not necessarily true either. A serial that was used once in 50 years may have fulfilled its purpose as much as a serial that circulates 40 times a year. If a library can afford to supply space and maintenance to serials of potential value, which have not been used for years, the library gains by retaining them. However, libraries faced with severe budget cuts and space problems and rising costs of serials, will have to decide what the library's future role will be - a major resource library to serve the potential needs or a library serving most or much of its user's immediate needs with a fewer unique resources. In any case, libraries with excellent collection and facilities acquiring materials for long-range research and teaching needs, still will need to rely on other libraries for materials not owned, to cater to the immediate needs of their patrons. This holds good equally for libraries which may not have to acquire the resources for the purpose of serving the immediate needs of most of their users but rely on other libraries for materials not owned.

In any case, the declining ability of libraries to buy all the serials needed, brings home the need for

cooperation among academic and research libraries. Inter-library loan will be an important adjunct to library cooperation. An important aspect of library cooperation is the emergence of an attitude towards the library service that will depend on a combination of local library resources and access to other libraries through such loans. Library cooperation will lead to resource sharing network of academic libraries.

Criteria for Interlibrary Cooperation :

Interlibrary cooperation must have the following prerequisites :

- (1) The Librarians must change their attitude from a "self-contained, isolated, bureaucratically run document empire" to a node in the network of the accumulated facilities in the region of country.
- (2) All librarians must develop and maintain an attitude of flexibility and cooperation.
- (3) Library cooperation must lead to library resource sharing network.
- (4) Develop models promoting intermediate rapid but gradual approach to development for interlibrary cooperation.
- (5) Each library must realize its responsibility to the network and assume its appropriate share of responsibility, respecting its primary responsibilities to its own patrons and parent institution.
- (6) Low cost, non-capital-intensive, but inventive use of resources for technological change.

Criteria for developing a library resource sharing network :

Certain criteria must be followed for planning cooperation among academic libraries for the purpose of resource sharing :-

1. Guarantee access to all useful serials to fulfil the patrons immediate needs.
2. Local collection and service policies be revised to reflect the programme of cooperation.

3. Operational costs of individual libraries be stabilized or better reduced.
4. Development of suitable finding apparatus to provide access to information about serials' holdings in remote locations.
5. Sharing of ideas about programmes and collection development.
6. Statement of objectives and mission of the network.
7. A common serial selection programme.
8. Streamlining the library procedure.
9. Appropriate budgetary provision for developing a cooperative endeavour in serials.

One important point emerges : Can cooperation succeed without centralization of some operations and services? It can be assumed that theoretically at least; cooperation is one aspect of-and may lead to-centralization. Therefore, theoretically, the development of a network with a central headquarters is assumed here. The following criteria for developing a network for resource sharing may be followed²⁵ :

Geographical proximity.

Type of institution.

Size of institution.

Source of funding.

Size of budget.

Network technology.

How of Library Cooperation :

For the purpose of developing a network for sharing serials, the following four basic operations (a) acquisition, (b) cataloguing and processing, (c) storage and (d) delivery of services, are to be examined²⁶.

(a) Acquisition :

Generally, acquisition encompasses all those procedures involving selection decisions, ordering, and receiving materials. Selection decision involves developing of

policies and procedures regarding serial selection programme, handling of specific request for titles not in the collection and the criteria for the decisions to acquire serials.

(i) Serials selection programme :

The following criteria for selection programme for serials should be taken into consideration :-

1. Analysis of the community needs to be served by the library.
2. Budgeting provision, the curriculum and the past practice.
3. The nature of service to be rendered by the collection.
4. Priorities for the user groups.
5. Defining the objectives of the collection development programme in harmony with those of the objectives of the individual libraries.
6. Developing a coordinated selection policy.

It will be helpful that each individual library must atleast develop its own core collection of serials. The decisions regarding core collection should be based on the area of specialization of the college and the university. The curriculum and the research programme of the parent institution will be the main factors for building a core collection of serials.

(ii) Developing a Union catalogue of serials :

In the process of selection decision, a library should need to know whether or not other member libraries have the title available rather than purchasing it itself. In this process, the first step is searching. In order to facilitate searching, a union catalogue of serials will be needed. With the help of the union catalogue, a library can determine if other member libraries have acquired or are buying the required serial titles. The union catalogue of serials of the member libraries of the network will also serve as a tool to access serial information in the holdings of other libraries.

(iii) Acquisition processing :

It will be economical for member libraries to go into the bulk or batch ordering by mutual agreement leading to a centralized ordering centre. A centralised ordering centre for the network will be beneficial in several respects :

1. Centralized order record.
2. It will be easy to identify and avoid unnecessary duplicate titles.
3. It is possible to develop standardized form of serial purchasing.
4. Centralized ordering might reduce the costs of serial acquisitions.
5. A centralized or union on-order/in process order file.
6. A common serial selection programme.
7. A specific optimum network collection.

(h) Cataloguing and Processing :

Individual libraries follow different procedures for cataloguing which will create differences. Certain local autonomies may have to be sacrificed if a network wishes to develop cooperation or centralized cataloguing and processing. A uniform system will permit users of the network to access effectively the holdings of other libraries.

Autonomous classification can create serious, if not impossible, problems for resource sharing. Therefore, there will be a need for cooperating libraries to adopt a common classification. For an effective sharing of serials, the network members should develop the following criteria.:

1. Centralized cataloguing and classification of serials.
2. Use of a standardized form of cataloguing and classification system for all members.
3. A union shelf list.
4. A union catalogue.
5. Temporary file of such serial titles needing original cataloguing.

(c) Storage :

The storage decisions can be based on the following criteria :

1. Whether to discard a serial title.
2. To microfilm it.
3. To store it.

These decisions need to be based on the following considerations :-

1. Minimum use of serial titles.
2. The cost to store them.
3. Available space in both the library and the storage area for network members.
4. Accessibility of the storage area.

Libraries in the network must develop a common storage for titles for which it is not cost-beneficial to maintain in their respective individual libraries. The common storage collection will involve the following decisions :

1. Actual selection of serials title for common storage.
2. Changing of the existing library records.
3. Physical moving of the serials into storage.
4. Building costs of storage.
5. New markings to be given for a common storage shelf arrangement.
6. Geographical proximity of the member libraries with that of storage library.

The following factors must be taken into consideration for a common storage facility :-

1. A union catalogue of stored serial titles.
2. A network agreement on the use of priorities of stored serials by all the member libraries.
3. A clearly stated policy on the amount of time spent in retrieving a title from the storage.
4. Costs involved in the storage, maintenance and services of the serial titles in the storage library.

(d) Delivery of Services :

A network may develop a more sophisticated system of inter-library loan among members. Any serial title needed for the purposes of study, instruction, information, or research may be requested on loan or in photocopy from another library.

The leading library should have the privilege of deciding in each case whether a particular item should or should not be provided, and whether the original or a copy should be sent.

Another way in which inter-library loan can be expanded is to arrange for the loaning of serials in bulk, to support seminars, tutorials or research projects in areas outside a college or university curriculum.

In brief, delivery service should have the following criteria :

1. Bibliographic access to the locations of serials
2. Arrangements to provide physical access to the serials
3. Developing a network delivery system
4. A common circulation system
5. A common library card.

The network may develop and use a common delivery method such as trucks going from one library to another in the area.

Summary and Conclusions :

The model proposed above is based on the premise that at present, such a system has to be built primarily without computers and related advanced hard-and soft-ware technologies and tele-communication facilities. It is true that considerable attention has been paid to the development of computer-based information network in this country; yet, up to the present time, the information network and information technology have not made much progress.

Mention may be made here of the on-line data transmission demonstration projects successfully arranged during September, 1976 at the Tata Institute of Fundamental Research,

Bombay with the computer in ESRIN, Frascati, Rome and in Hotel Ashoka, New Delhi, during early March 1981, on the occasion of the 'Informati Cas Symposium' and the Annual convention of the Computer Society of India. On-line information access to the European space agency's computer in Frascati, Rome, from remote terminals installed in National Aeronautical Laboratory, Bangalore, via telephone and satellite links was also demonstrated in March 1981. The National Informatics Centre, New Delhi, had also conducted computer communication experiments interconnecting its minicomputer located at Ahmedabad and the main frame computer at Delhi via the Indian Communications satellite, APPLE under the Apple Utilization Programme of the Indian Space Research Organisation.

BHEL, Hyderabad has also been accessing data base available on the Dialog system in California, USA, in an on-line mode using the International Telex network.

The spectacular growth and merger of computer and communications technologies and their integration with related technologies such as printing, photography and micrographics have resulted in the networking of local and regional information system across national and international barriers. The concept of shared library and information resources is becoming a reality in the west because computer-based systems have made it possible for libraries to communicate with each other about their collection development policies, acquisition decisions, catalogue production, circulation information and other relevant data for support services. In these times of restrictive budgets and spiralling costs, buying and sharing agreements and inter-library lending and cooperation among a group of libraries can be facilitated by networking of libraries and telecommunication facilities. It is incumbent on the library management to plan now for staff and resource allocation in this wider context. The building of one library collection cannot, therefore, be the sine qua non for a library management any longer. Many cooperative networks and state-wide information organizations in the USA have floundered because of personal, political and technical reasons. With the main focus on service and cooperation, the library management in India must take up this challenge seriously.

Information networks are complex mechanisms, and the scale and complexity is different from just a computer system.

The information network resembles a human nervous system where the sensitive parts would be libraries and information centres. As receptors, they should be highly responsive to stimulation from users when they request information. The typical information network is open to stimulation from various sources, as teletype terminal and display terminals of fast speed, located in libraries and information centres. These terminals are connected to the machine-readable bibliographic data base, centrally stored in one or more computers, serving as memory in the nervous system, by means of telecommunication systems capable of transmitting digital data.

As data communication is a key factor to effective library resource sharing, it is a prerequisite to the development of a computerized information network system. For an effective communication between a computer terminal and the host computer that stores machine-readable data base, communication facilities of the following capabilities will be required.

Channel Capacity :

Three classes of data communication facilities are used: narrow band, voice band, and wide band, each having different channel capacities. The band width of each of the facilities, is a measure of its signal carrying capacity in hertz (one hertz - one cycle per second). Therefore, in general, the broader the band, the greater the signal transmission rate (usually expressed in bits per second). Examples of a typical data rate requirement are :-

1. Data rate of user presenting a query to a search system 100 bits per second.
2. Data rate of systems reply to query - 300 bits per second to 1200 bits per second.
3. Instant cathode ray tube can display data - 1 million bits per second.

All electronic transmission can occur in either the analog or the digital mode. The telephone lines which transmit data from computer terminal and computer and vice-versa are usually meant to transmit only the human voice, operating mostly in the analog mode - that is in a continuous up-and-down pattern. Computers and computer terminals operate in digital mode - that is, in discrete bits separated by

intervals. The telephone lines in the USA and other industrially advanced countries transmit data both in analog and digital mode. The telephone lines in India operate in analog mode only and offer a transmission spectrum of less than 1 K hertz. Therefore, we cannot plan a library network unless we have developed communication networks capable of effectively transmitting digitally encoded data and messages over long distances. The real problem is to develop these telecommunications facilities effectively and economically.

Since at this point of time, it is not feasible to concentrate on a computerized on-line library network, the above model with a centralized centre has been proposed. The centralized centre may be envisaged as a regional periodical centre. The centre may use microforms as both an information storage and latter also as transfer medium. In fact, there is a distinct trend in the west towards a hybrid system which couple the information manipulation capabilities of the computer with the storage capabilities of microforms. Two examples are the computer driven microform information retrieval (computer Assisted Retrieval) and computer output microfilm, better known by its acronym , COM.

The regional periodical centre should be developed by creating a central collection of the most used periodicals in microform. The microforms are the cheapest to produce and store.

When on-line capabilities will be developed - the computer assisted retrieval (CAR), a newer application of computer and microform, can be used. The CAR system combines computer indexing and retrieving microimages from the microform 'memory'. Micropoint system, introduced in 1978²⁷, serves as an example of CAR. The proposed regional periodical centre should be non-circulating and non-lending. All requests should be filled by making photocopies. Member libraries should send interlibrary loan request to the centre by mail until an on-line facility is available. The centre should make photocopies of the requested periodical articles and send them by mail.

Attempt should be made to abstract and index all the periodicals included in the holdings of the regional periodical centre and that of the member libraries. Abstracts and indexes should be stored in microimages, in microfilms, so that when on-line retrieval capability is developed in the country, these may serve as data base for on-line retrieval system.

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Management as Profession and Commitment

Human relations will be useful to everyone, whether he or she is the head of a huge multinational organisation, a shop keeper with one assistant, a doctor with 2 partners or a public library with 60 staff and 20,000 users. Human relations is a very vital part in Management, because without it you can never get anything done. Working satisfactorily with people is not a part of Management job, it is the entire job. With reference to a Library Management, it is a library Manager's job because working with book stocks, accession, lending activity, reference and information and everything else in an organised library can only be done through people.

The roots of the disciplines of Management go back 150 years, but Management as a function, management as a distinct work, management as a descriptive and area of study - these are all products of this Century. With this growing stress on the needs of Management techniques, libraries and information units have become increasingly involved in Management practices, as pressures from the bodies financing them and from their user groups have impelled them to adopt to changing needs and resources. As a result of this more and more number of libraries and the librarians are concerned to find the answers to the following questions:

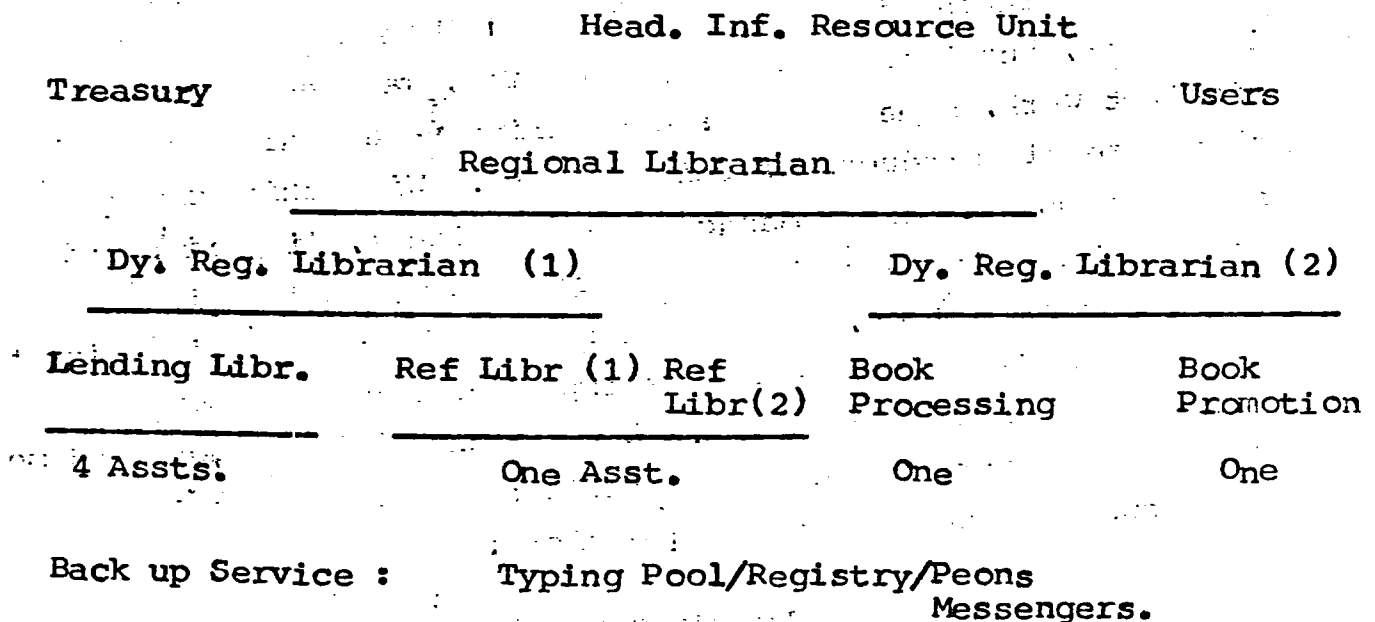
- (1) How can we evaluate our operations and services, so as to be able to justify our work to achieve our objectives and to check we are responding to our user needs?
- (2) How can we improve our performance by making optimum use of funding materials, accommodation, and staff?
- (3) How can we create a positive approach to change staff?

- (4) How can we develop more systematic, cost-effective work methods?
- (5) How can we ensure that staff development and organizational development take place, even when there may be periods of stagnation or recession, with low staff turnover and limited funds?

All above the questions include a reference to staff, which indicate a far reaching effect, that a staff management can have in a library or, information unit.

Staffing Structures :

As an example to this staffing structure given below is a Sample of the organogram of the British Deputy High Commission, British Council Division, Bombay.



The above structure is devised to provide effective services and give job satisfaction. The division has been made between professional and non-professional staff to make the most economical use of the staff knowledge and skill in an era which has so many restraints on resources. In trying to solve some of the staffing problems, the librarian has devised a number of strategies, influenced by the new emphasis on user needs and developmental new services. The team approach is perhaps the most significant and the most common in a surrogate public library system.

One of the most striking changes in staff development has been deskilling of many library housekeeping jobs, due to the introduction of automatic systems in circulation and acquisitions and cataloguing. Acquisitions and issue systems are the most obvious areas where computers have taken over the drudgery but many libraries are now moving towards an integrated systems approach, where acquisitions, cataloguing and circulation of stock are based on computer manipulation of a common record or unit entry of each item of stock.

The division responsibility of Personnel Management in Library Science can broadly be divided into the following stages for convenience :

1. The working environment
2. Motivation at work
3. Manpower planning
4. Job description and personnel specification
5. Recruitment and selection of staff
6. Staff appraisal
7. Staff training and development

We have discussed the working environment briefly above.

Motivation at Work : As explained below through the Management cycle figure, one would notice the place of motivating staff in the general management of a library or a section of a library.

Planning
(aims, objectives & Policies)

Controlling
(evaluating &
Monitoring)

Organising Resources
(people, money,
materials, accommo-
dation)

Motivating Staff

Motivating staff is a complex and delicate business and pervades all phases of staff management from job analysis and description to staff selection, appraisal and training. Motivation theories are necessary for providing job satisfaction and alleviating dissatisfaction and would help maintaining consistency with getting the work done efficiently and effectively.

Basically most of the individuals would prefer not to be involved in their jobs and to induce them motivation is of prime importance. In most of the library operations motivation is derived from the nature of the task to be carried out, the qualification and the skills and attitudes of the persons responsible, the nature of the other people in the library, and the management climate. Motivation of staff depends on the supervisor who are expected to know what different groups of people need from their work.

Maslow's Hierarchy

Self Actualisation
fulfilling one's potential

Esteem or Ego Needs
e.g. success, self respect

Social Needs or Belongingness
Needs
e.g. identification, affection
friendly contrast

Safety Needs
e.g. security, order

Physical needs
e.g. food, shelter,
material life support

The message conveyed through the Maslow's Hierarchy for the Managers about social needs, is that a sense of identity in a pre-requisite for a job satisfaction, and if the deployment of staff does not provide, workers are likely to form their own informal groups.

"Theory "Y" " Employees are capable of assuming responsibility and of supporting the goals of the organization. It is the responsibility of the management to provide the right candidates

in which people can fulfil themselves, and satisfy their higher level needs for esteem, recognition and achievement.

The work of Maslow, McGregor and other proponents of this approach to motivation theory provides a whole range of useful background information, on the factors underlined people's attitudes and behaviour at work. Plate and Stone, in their survey of job satisfaction among American librarians say :

"Libraries, despite their apparent homogeneity differ considerably with regard to their organizational history, leadership, climate and even goals and objectives. Library procedures vary from library to library and so must personnel practices and supervisory styles... library managers must therefore be skilled in the adaptation of existing principles of motivation to local requirements."

<u>Aims of employer</u>	<u>Aims of employee</u>
Work specificity	Work flexibility
output	input
uniformity	individuality
performance (what one does)	personal qualities (what one is)

Manpower Planning Man power planning which covers a wide range of jobs designed to ensure a balance between the supply and demand for library and information workers both quantitatively and qualitatively. It really concerns the kind of people needed to run libraries, as much as with the numbers of staff needed at each level, from library assistants to senior management. Manpower planning is necessary since it encourages library organizations to plan the future staffing structures, to take account of changes in service and technology, rather than making ad hoc arrangements as problems arise. It also helps determine recruitment levels on rational basis, training needs in relation to required skills and costing of labour.

Job Description and Personnel Specification Staff are the life-blood of any library or information service, and effective recruiting and training can make all the difference between a

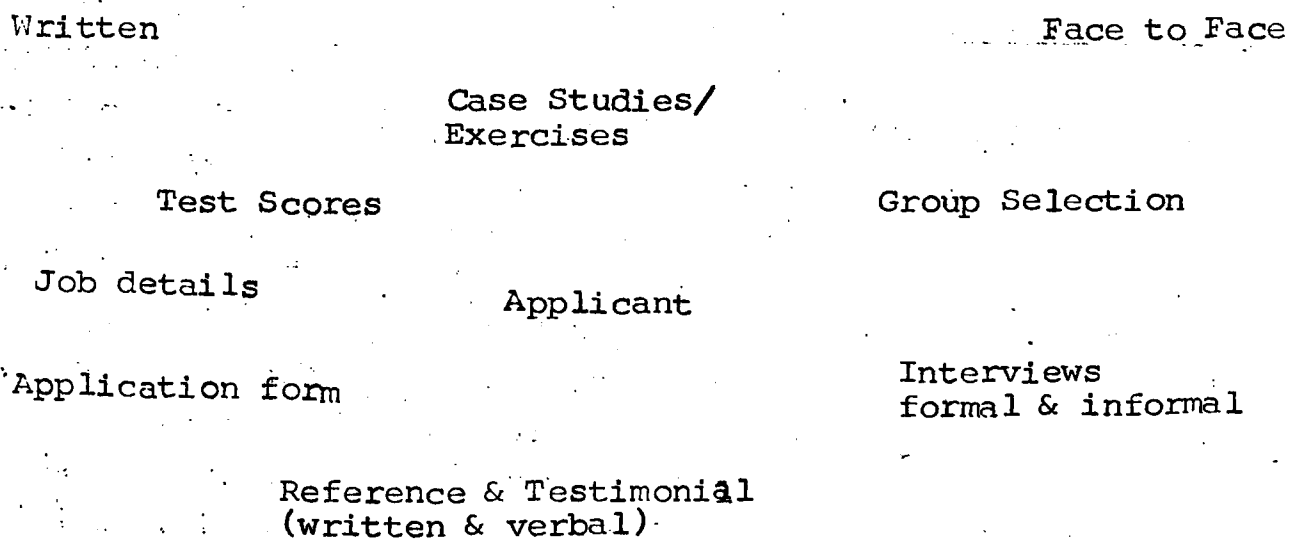
poor service and a high quality service, even, or especially in times of limited finances :-

Main Stages :

Job Analysis
 Job Evaluation
 Job Description
 Personal Specifications
 Selection Methods
 Staff Appraisal
 Training & Development

Recruitment & Selection of Staff :

Once it is decided on the requirements of person for a particular post, then the task of any selector is to discover to what extent these these attributes are present in the candidate. The diagram given below would help to illustrate a number of ideas that are central to a discussion of selection. As important as any is the idea that information is being obtained throughout the process by both, by the interviewer and the interviewee.



Staff Training and Development :

This also is an essential part and should also become an ongoing programme. To start with analysis of job description and specifications for the knowledge, skills and attitudes

required of the deficiencies which exist for training to be effective it must be viewed as an essential element in the management cycle and should be dependent on the needs of the communities which libraries serve and to fulfil their needs by utilisation of new skills and technologies.

Conclusion :

Many librarians manage very well without being able to label or analyze what they are doing. Their approach is usually on instinct. Most of what we have discussed above has been derived from the work of people who have tried to apply management ideas to improve the management of libraries and other organisations. These ideas should be a good beginning for many librarians and students of librarianship.

Personnel Management and its application to
academic libraries.

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(Abstract)

[Describes in brief the objectives, scope, functions of Personnel Management and principles of Personnel Management. Analyses the present situation of Academic Libraries in Maharashtra and suggests that Personnel Management will certainly enrich the field of library management.]

Library is an organization created to produce Library Service. The Library Service can be produced through properly selected personnel. All the aspects related to personnel are scientifically tackled by proper Personnel Management. Hence at the outset it is essential to describe in brief the area of study, scope, functions and principles of Personnel Management.

Whenever staff is to be appointed and maintained aspects such as selection, training, conditions of work, rules and regulations and methods of remuneration are involved and these, according to modern Management, are termed as 'personnel matters' and the management of these aspects is labelled as 'Personnel Management'. The Personnel Management is relatively new as a specialist part of management activity. Like most other specializations it has developed sophisticated techniques and practices along with its own vocabulary. The methods of modern personnel management may look complex; yet its objective is simple. According to K.C. Lawrence, its objective is "to obtain maximum return from the human resource employed within an organization."

Men and women are employed because they have skills knowledge, energy, initiative and capacity to learn and develop. The success of Personnel Management depends upon the maximum utilization of talents of personnel for achieving the objectives of the organization. One important point must be made clear here that the word Personnel does not only indicate the labour force of the organization but the total human resources including the senior persons working at any level.

(2)

Employing personnel involves costs which are to be calculated carefully by cost accounting department. The cost employing persons are day by day rising and therefore must be kept within limit. This necessitated an emergence of a new profession of Personnel Managers, which specializes in identifying, obtaining and retaining right type of people at economical costs.

The functions of Personnel Management are described here briefly :

1) Human Resource Planning

Human Resource Planning means to determine the number and type of employees required by organization. This work involves collection and analysis of information in order to forecast requirements of human resources. The policy decision whether to employ an external staff or to develop the staff through current employment is taken by the employers where the role of the Personnel Department is that of an adviser.

2) Job Analysis

Job analysis involves the process of identifying the duties, activities, responsibilities associated with a job and the knowledge, skills, experience and qualities required to perform the job.

3) Recruiting

This function attracts qualified applicants to the organization to fill the vacancies, by advertising in the newspapers, contacting the employment pools and the professional schools.

4) Selection

The most qualified persons from among the applicants are selected by suitably developed selection processes such as written tests, group discussions, interview, test on the job etc.

5) Orientation

Orientation is the first step toward helping a new employee adjust to the new job.

6) Training and Development

The training and development function gives employees the skills and knowledge to perform effectively in their jobs. The training programmes are also organized for experienced employees whose jobs are undergoing change.

7) Career Planning

This is a recent personnel function which assess the individual employees' potential for growth and advancement in the organization. This function provides opportunities to the employees to grow in their jobs or to advance in their career.

8) Compensation and Benefits

The Personnel Managers provide a rational method for determining how much employees should be paid for performing certain jobs, in the form of pay and benefits.

9) Safety and Health Programmes

These are important particularly in the hazardous industries like mining.

10) Labour Relations

The labour relations refers to the interaction with the employees who are represented by their labour union. The unions interact with the employer for improvement of wages, working conditions and other welfare activities.

11) Employee Record-keeping

The oldest and most basic personnel function is keeping the record of the employees. The record includes application forms, appointment letters, employment history, seniority list, salary scale, earnings etc.

Principles of Personnel Management

The modern Personnel Management follows the following principles as guidelines for action :

- a) Deal with people as complete individuals : Employees are hired because they possess skill and knowledge. However, their co-operation and interactions largely depend upon their personal feelings, cultural and social attitudes and ethical norms.
- b) Build programme with due consideration for how employees react to them. The employee's feelings should be judged before a programme is launched.
- c) Make employees feel worthwhile and related : 'Men do not live by bread alone' is a saying that applies to personnel. People work for pay but not for pay alone, they need recognition, they feel kinship with fellow workers.

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- d) Establish fair levels of wages, hours and working conditions.
- e) Supply employees with relevant information : Communication on matters of mutual interest help building up the feeling of oneness.
- f) Do not under-estimate the intelligence or strength of the people.

After discussing in brief the substance of Personnel Management, let us try to explore the possibility of adopting and applying the objectives, functions and principles to academic libraries in Maharashtra.

In Maharashtra, there are high school libraries, college libraries and university libraries. Excepting those high schools and colleges which are established on a self supporting basis these academic institutions are governed by Education Act, University Acts. Various rules and regulations made by the government of Maharashtra for employing the personnel for libraries of these institutions. The U.G.C. recommended scales and qualifications are also applicable to the college and university libraries' professional staff. The staffing pattern for school libraries and College Libraries have been prescribed by the government.

The formula for appointing the library staff for high school libraries is as follows :

<u>S.No.</u>	<u>Students' strength in School</u>	<u>Librarian & Staff</u>	<u>Qualifications</u>
1.	Less than 1,000	Nil	-
2.	between 1,000 & 1,500	One part-time Librarian	S.S.C. & Certificate in Library.Science.
3.	1,500 or above	One Full-time Librarian	-do-

The staff formula for college libraries is based on the students' strength in the college. Important parameters like collection of the library, services and shifts have not been given any consideration.

The following table will show the number and type of staff sanctioned by the government for colleges :

Strength	Librarian	Asstt. Librarian	Jr. Clerk	Attendants	Total
Upto 250	1	Nil	Nil	-	1
251 to 500	1	Nil	Nil	1	2
501 to 750	1	Nil	Nil	2	3
751 to 1000	1	Nil	Nil	3	4
1001 to 1250	1	Nil	1	3	5
1251 to 1500	1	Nil	1	4	6
1501 to 1750	1	Nil	1	5	7
1751 to 2000	1	Nil	1	6	8
2001 to 2250	1	1	1	7	10
2251 to 2500	1	1	2	7	11
2501 to 2750	1	1	2	8	12
2751 to 3000	1	1	2	9	13

The formula clearly shows that the government assumes that the most important supporting staff in the Colleges is the peons.

The professional staff of the university libraries also is sanctioned by the government and universities are discouraged to increase any staff.

The salary scales, benefits, safety and health programmes of the academic library staff are fixed up by the government.

It is clear that the 'personnel matters' of the academic libraries have been a province of the government authorities and they cannot perceive these matters from the view-point of Personnel Management.

The principles, functions and techniques of the personnel management are based on objective scientific theories and experiments, which must be adopted by the library professionals, who are in fact the managers of the modern library services.

In the present situation the library professionals should learn, modify and adopt the personnel management to the library situations and present their scientifically based demands before the government.

The library schools also review their courses in the light of personnel management.

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The personnel management will certainly enrich the field of library management and help the librarians to solve their personnel problems.

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MEASUREMENT, EVALUATION & ECONOMICS OF LIBRARY SERVICES

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(Mentions the concept of 'evaluation' and as to how the performance is measured and evaluated against the set objectives. Gives the basic objectives of library given by Prof F W Lancaster on the basis of Dr Ranganathan's Five Laws. Also elaborates in detail the concepts of performance, performance criteria measurement, levels of evaluation, effectiveness, cost-effectiveness, cost-benefitness measures of evaluation, economics of library service, costs (capital, maintenance, Developmental), and economics of system design. In conclusion mentions the need for such studies).

MEASUREMENT & EVALUATION

Evaluation is determining the value of a system or a service on the basis of its performance. The performance is first to be measured and then evaluated in comparison with a set of objectives. For evaluation we need:

- 1 Tools for measurement; and
- 2 Specific and clear objectives.

Evaluation of library and information services is usually regarded as difficult because, most of the systems have no clearly defined, upto date, and well thought out objectives. Further more, we lack suitable tools for measurement.

OBJECTIVES

Various individuals and groups have laid-down numerous objectives-social, political, economic, etc for various types of libraries over the years. These will guide the various activities, as well as, help us to evaluate the performance. Prof F W Lancaster (1) ingeniously derived some of the basic objectives of a library from Ranganathan's five laws of library science:

<u>Law</u>	<u>Deduced objective</u>
1 Books are for use	Library as an interface between users and documents
2 Every reader his book	accessibility
3 Every book its reader	exposure
4 Save the time of the reader	response time
5 Library is a growing organism	Planning for the future.

PERFORMANCE

In order to achieve the basic objectives, a system is designed and implemented. While implementing, We try to observe and measure the performance of the system.

Performance Criteria

Evans and Borko (2) after an extensive study identified six Criteria as a measure of performance of a system. These are: 1 Accessibility; 2 Cost; 3 User satisfaction; 4 Response time; 5 Cost-benefit ratio; and 6 Use. However, Prof F W Lancaster (1 .p8) observed this list as 'somewhat unsatisfactory', because it represents a number of different levels of performance evaluation. According to him response time and accessibility are really user satisfaction, while user satisfaction is presumably the major factor determining extent of use. Likewise the cost-benefit ratio presumably, indicates some relationship between cost of library services and user satisfaction with these services.

Measurement

When we say measurement, it may be qualitative, or quantitative, or a combination of the two. In measurement, we have to use certain basic statistical methods to derive data-both qualitative and quantitative.

EVALUATION

According to Prof Lancaster the evaluation can be at two levels. The first level which is called 'Macroevaluation' and the second level termed as 'Microevaluation'.

Macroevaluation

"Measurement of amount of exposure. May simply be in quantitative terms, with no explanation of why this amount of exposure is achieved, with no attempt to identify failures in service, and with no identification of ways in which exposure might be increased" .

Microevaluation

"Diagnostic. Goes beyond simple quantitative measurement and attempts to determine why a particular level of exposure is achieved (ie the factors affecting library performance) and what might be done to increase exposure in the future" (1 .p14).

Levels of Evaluation

To quote Lancaster again, it is possible to evaluate any type of service at three possible levels: effectiveness, cost-effectiveness and cost-benefit.

Effectiveness

Effectiveness must be measured in terms of how well a service satisfied the demands placed upon it by its users. Such an evaluation can be subjective (eg, conducted by gathering opinions via questionnaires or interviews), objective (eg, the measurement of success in quantitative terms), or a combination of the two (1 . p1).

Cost-effectiveness

Here a system's efficiency is measured in terms of the cost. If it is among the various manual systems, the study will reveal the levels of efficiency of the systems in relation to the cost inputs. When it is comparison of a manual and a mechanized system, the mechanized system is regarded cost-effective if it performs either at the same level of effectiveness as the manual system but at reduced cost, or at a higher level of effectiveness at a cost comparable to that of a manual system. But, frequently the automated systems have the capabilities that are almost impossible for the manual systems to provide. Such systems can only be evaluated in terms of cost-benefitness (1 .p273).

Cost-benefitness

Cost-benefit studies attempt to determine whether the expenses of providing a service is justified by the benefits derived from it. It may presumably reveal some relationship between cost and user satisfactor. Unfortunately, there are no readily available quantitative measures which will forecast the cost-benefitness in information systems. The standard measures such as use, document exposure, etc, are not satisfactory measures of customer benefit (3). The introduction of a service or the continuation of an existing service, inspite of it being beneficial, is governed by the cost. If the costs are at prohibitive level, it has to be considered carefully whether to introduce the new service or to continue an existing service.

Measures of Evaluation

Effectiveness:

- 1 Accuracy;
- 2 Volume of transaction;
- 3 Speed; etc.

Cost-Effectiveness:

- 1 Manpower costs;
- 2 Material costs;
- 3 Durability, etc.

Cost-Benefitness:

- 1 Rapidity;
- 2 Exhaustiveness;
- 3 Precision; etc.

ECONOMICS OF LIBRARY SERVICE

The financial constraints have been preventing the libraries and information centres to introduce new services and some times withdrawing the existing ones to the disadvantage of the clientele. The economics of library operations have been changing dramatically in the last several years. Libraries which hitherto never thought of costs in relation service have been compelled to look to cost-effectiveness and cost-benefitness.

Costs

There are various cost factors to be considered within a context of alternative methods for accomplishing specific tasks. We can broadly categorize them into:

- 1 Capital costs;
- 2 Maintenance costs; and
- 3 Developmental costs.

Capital Costs

- 1 Equipment;
- 2 Building; etc.

Maintenance Costs

These again can broadly be divided into two types:

- 1 Operational; and
- 2 Optional.

Operational covers

- a Personnel;
- b Power;
- c Contractor services;
- d Material
- e Contingencies; etc.

Optional covers

- a Training people;
- b User education;
- c Marketing;
- d Publicity; etc.

Developmental costs

These include:

- 1 Updating the system;
- 2 System improvement;
- 3 Additional services; etc.

Economics of System Design

Each system should be designed in such a way that it will be beneficial and effective. The following factors should be considered in designing (such) a system:

- 1 Analysing a system into its components;
- 2 Cost of performance of each component;
- 3 Option between various alternatives to have an 'optimal' system;
- 4 Compatibility with other systems;
- 5 Inputting & error control;
- 6 File organization;
- 7 Searching & terminology control; and
- 8 Evaluation costs.

CONCLUSION

Cost-effectiveness of operations or cost-benefit studies are seldom carried out in our libraries. No librarian felt the need of such studies so long as the systems remained manual. When it came to computerization people felt the need for cost, cost-benefit, and cost-effectiveness studies, because of the high costs of hardware, software and operation. It is highly essential to compare the costs of manual and mechanised services and identify the components which are cost-effective and cost-beneficial. Further such studies will also help to convince the top-management, the need for mechanization.

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EFFICIENCY THROUGH TECHNOLOGY IN MANAGEMENT OF LIBRARIES AND INFORMATION CENTRES.

(3)

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"A technological vision alone is hopelessly incomplete, that librarians and information people must at all costs avoid the planning disasters that narrow-thinking, well-meaning experts have scattered so liberally around us, and that they can take a positive lead not only in developing libraries and information services for the future society but in helping to shape the society". (4)

0. INTRODUCTION

It is a basic characteristic of man's nature to explore his environment and to enjoy its benefits as well as to face its hazards either alone or in a collective venture. In the later part of the twentieth century this exploration and consequently this involvement have assumed giant proportions and the efficiency of the scientific attitude and approach have multiplied the credits as well as debits, the promises as well as dangers. At this time, it is the collective venture that calls on every people, every community, every enterprise and every individual to be involved in one way or other. Naturally, then the librarians and information scientists are not mere spectators, they are as involved as other professionals, in the collective venture of exploring the environment.

In fact, the subject of information science clearly shows how it has undergone transformation in its scope and contents with changing technological environment. Information science has now become an interdisciplinary subject and draws its sustenance and its strength from various subject fields such as printing, publishing, micrography, reprography, computer science, communications and tele-communications, translation, terminology, psychology, behavioural science, etc. apart from the well known philosophical and logical base for the bibliographic classification.

Today's environment is greatly influenced by technology and its every day new developments, specifically in electronic technology. Fortunately for us, till today, all technological developments are produced and claimed for the major objective of servicing the society by increasing human abilities. Considering efficiency, in its simple broad sense, 'as the ratio of useful work performed to the total energy expended', in this paper I will try to analyse and answer the following questions: How technology helps the management of library and information service centres? Does

the application and use of technology improve efficiency? What technology has contributed by way of new concepts, new methods, new approaches, new equipment and instruments? Has this contribution improved the management of library and information centres? Can we pin-point these improvements? Can we measure the improved efficiency through technology?

I. TECHNOLOGICAL DEVELOPMENTS

After invention of writing the following major technological developments can be identified as those influencing the management of library and information service centres:

- i) Printing - The first major technological development is printing. It increased the man's ability to store, share and communicate experiences and knowledge.
- ii) Steam and Electric Power Generation : The application of steam and electric power generation in nineteenth century brought a real revolution in communication technology. It not only helped speedier publication of books and journals but also to help them cross the local geographical boundaries with faster means of transport.
- iii) Electronic Technology : The electronic mass media was considered phenomena in social, political and cultural situations and lead to the communication study of various situations, contexts and channels.
- iv) Mass Radio Communication after World War-I and Mass Television Communication after World War-II
- v) Electronic Computing Devices.
- vi) Reprography and Micrography : It helped to store and manage volumes of documents.
- vii) Marriage of Computers with Tele-communications and Satellite Communications : This made possible the information network of libraries and information centres. These technologies were further refined and improved by later technological developments such as chip technology, mini computers, micro processors, word processors, interactive terminals, intelligent terminals, computer graphics, faster peripheral devices, software developments, etc.

Out of these developments, computer technology is the most sophisticated technology ever invented by man. Computers with their ability to accept enormous amount of data, to manipulate and process the data with very fast speed and to generate mountains of statistics and reports have influenced almost every endeavour of man today.

Computers have been applied to almost every standard library housekeeping function, such as acquisitions, circulation control, book catalogue production, serials control, developing reference tools, etc., and information services such as automatic indexing and abstracting, current awareness services, selective dissemination of information, on-line retrieval, thesaurus construction and maintenance, user studies, feed back studies, etc. But the point of consideration, here is, whether computer application has improved efficiency.

To illustrate the point, let me consider more specifically a case study - How computer technology helps the management of Library & Information Services, (L & IS) of Bhabha Atomic Research Centre (BARC).

2. A CASE STUDY

The L & IS uses computer for information processing, largely to announce the latest publications in the field of nuclear science and technology and to cater to the specific information needs by providing the INIS/SDI service and retrospective searches.

The efficiency achieved through these computerised information services, is rather difficult to quantify. There are various methods to know that the services rendered have been useful. As professionals, our task is to provide the right information to the right user, but we really do not know whether the information provided is actually used by the user. In other words, one can take the horse to the water but cannot make it drink.

2.1 What is our Job and has Computerisation Made it More Efficient?

Our job as professional information scientists includes the following functions :

- To identify scientific literature of potential use
- To acquire and organise it
- To examine the information needs of users, and the environment in which they operate
- To interpret, analyse and evaluate the scientific literature to be able to provide useful information.

In short, from the universe of available literature, we acquire that which we think will be relevant to our user's immediate and potential use. We supply it on demand or standing requests. We do conduct user surveys and establish direct contacts with our users, to improve our own effectiveness in rendering service.

The computerised services have made us able to serve more accurately, precisely, and expeditiously. A specific search would have taken months, if done manually but with the aid of computer, through INIS/SDI and

retrospective searches, we are able to provide information now in a few days. Further, had it been an on-line facility we could have provided information almost instantaneously.

2.3 Who are Our Users and has Computerisation Made Them More Alert and Information Conscious?

The BARC is a research and development organisation and the users of our information services are scientist and engineers. Information requirements in such a research and development organization are concerned with a specialised specific subject field.

The computerisation of our information services has made our users more alert and information conscious. The feedback and other studies indicate this effect.

2.4 Feed-back and Other Indications that Suggest Efficiency in User Services

Along with each computer print-out sent to the INIS/SDI user, we enclose a feedback form. We request the user to fill in the form and return it to us. We regularly and promptly receive the feedback from the users. As our feedback is based on a qualitative approach, we request users to mark such statements as :

- | | |
|--|---|
| 1. I find the INIS-SDI list | <u>Satisfactory</u>
Non satisfactory |
| 2. I find the number of relevant documents | <u>Satisfactory</u>
Non satisfactory |
| | <u>a few</u>
none |

This approach is simple and less time-consuming from user's point of view and hence we receive almost the same number of feedback forms that we send out. This feedback, obviously, will not satisfy many of the information scientists who would like to evaluate on the basis of quantitative approach. However, we feel that in a busy scientific community, like our users, it is just sufficient to know whether the service is of any use or not, and this is best achieved by the simple approach.

The 450 users of the INIS/SDI users have informed that service is satisfactory and in certain cases, where there are a few relevant documents, retrieved, they have suggested modifications to their queries.

With this, the use of documents, particularly the technical reports and periodical articles has increased. The increase in the number of requests for xerox copies of articles in periodicals, procuring new documents, inter-library loans, etc. are some of the other indications suggesting the efficiency in user services.

The INIS/SDI service has also increased the contacts between the information scientists and the users, as in query formulation we request the users to help us in precisely identifying their subject interests.

In summary, we can say that the impact of computer technology in management of information services in BARC is as follows :

- (i) To enable the information scientists to know what are the information needs of the users.
 - (ii) To verify what they need is available in L&IS; otherwise to procure the same.
 - (iii) To improve services and new facilities in the L&IS.
 - (iv) To bring to the notice of the users, through current awareness services and retrospective searches, what he would have otherwise missed.
 - (v) To achieve economy in time, money and methods.
 - (vi) To encourage the user to feel that he is the most important component of the L&IS and to take active part in its improvement.
- and last but not the least
- (vii) To stimulate and orient the L&IS user:
 - (a) for the optimum use of the facilities and services offered by the L&IS
 - (b) for continued use
 - (c) for maximum possible use of the enormous amount of information contained in its ever-increasing collection of documents in the Central Library and the Depository Library.

2.5 Has Computerisation made the L&IS staff More Efficient?

In a special library, which is accustomed to conducting personalised bibliographic searches, availability of machine-readable data base and computerised SDI service based on it, drastically reduce the drudgery and tedium involved, while making the process much faster and more comprehensive. The L&IS, which was compiling subject bibliographies through its 'Bibliographic Unit', now makes use of retrospective search lists on any specific inter-disciplinary subject area within the field of nuclear science and technology. Thus, we are now able to compile bibliographies on more complex subjects in the shortest possible time. Once a list of bibliographic references - with or without abstracts is made available to user, the library staff is normally called upon to assist the users in acquiring full-text copies of some of the documents, in procuring the documents, if not available in library and in making inter-library loan requests. It is thus natural that work-load on circulation counter also increases.

The computerised information services also generate more work for non-professionals such as for separating computer print-out for each user, cutting, assembling and finally dispatching it. Many a times, it is our observation that it takes much less time to run a query and get the corresponding computer print-out than to dispatch it to the user.

The image of L&IS staff both in their own eyes and in the eyes of their users is enhanced due to following factors :

(i) As the success of computerisation depends on accurate input, various standards have been evolved. The library staff once used to this type of accuracy, normally carries the experience to other professional activities.

(ii) As the computer has taken much of the responsibility for literature search, the information scientist has more opportunities for face-to-face relationships with users.

(iii) As there is recognition among the users that computerised services make it possible to provide substantially better services.

The ability to provide new and better services to a greater number of users is not only gratifying to the L&IS but satisfying to its users. The overall result is to greatly enhance the utility, value and prestige of the L&IS within the community it serves.

The findings of the case study are summarised in the chart. (5)

3. COMPUTERS AND MANAGERIAL DECISION MAKING

Some of the management techniques where use of computer is essential are listed in Table 2.

Faster and less expensive digital computers are human energy saving devices, capable of dealing with an enormous quantity of data and of making every complex computations. Computer efficiency in performance and usage has improved and will improve, the cost of operating such systems has decreased and will decrease. Moreover, the techniques developed to communicate with computers will develop so rapidly that very soon managers will 'talk' to an input apparatus, inquiring about data or computed results, and will receive an immediate output response. With 'real-time, time-sharing' computer systems, executives can already interrogate and work quantitatively expressed problems by transmitting original data via a keyboard console. The computed answer is immediately returned to the inquirer usually by means of an automatically typed message at the same device. Many of these secluded terminals each working independently, can be connected to a computer by utilizing the

IMPACT OF COMPUTER TECHNOLOGY ON L & IS, BARC.

"The speed and the comprehensiveness of computerised information services, particularly, the on-line interactive services tend to escalate user expectations of the library as a whole to sometimes unrealistic levels. Users seem to think that the library is automated in everything, and they are very demanding about getting faster photocopies, printed journals, and interlibrary loans so that they can take immediate advantage of the bibliographic citations produced by the computer search."

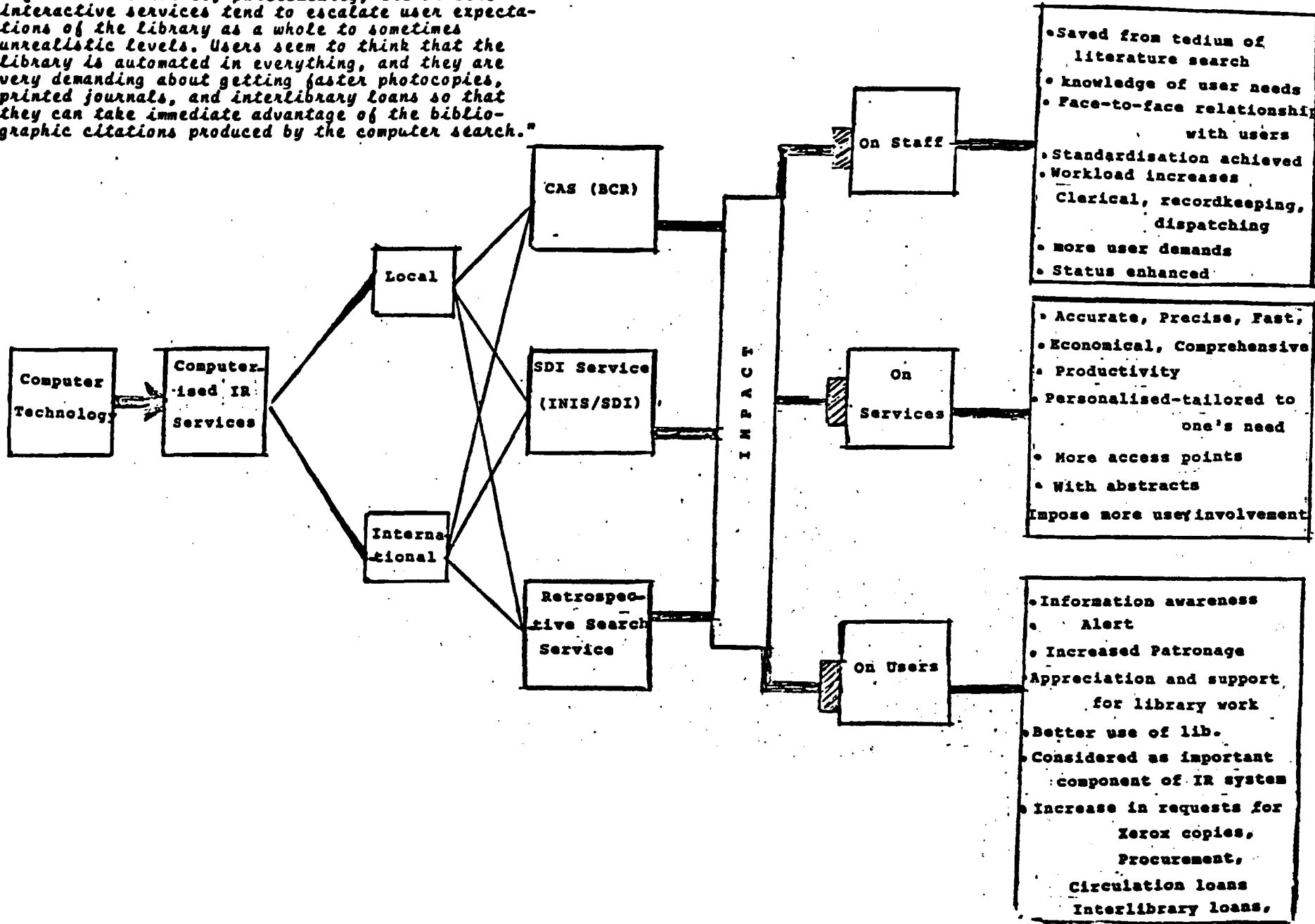


TABLE I
CONTRIBUTIONS OF TECHNOLOGY - A LIST OF SOME
MAJOR CONCEPTS AND METHODS IN INFORMATION SCIENCE

<u>Technology</u>	<u>Contributions to Library and Information Science</u>
Computer	KWIC and its other variations SDI, CAS Automatic Indexing and Abstracting Citation Indexing Thesaurus and its maintenance Machine - readable catalogue (MARC and its variations) Machine-readable data bases Direct and inverted files Date Base Management Recall/Relevance Ratio Bibliometrics On-line retrieval International information systems (Though conceived earlier the systems were possible only due to computer technology) World Information System for Science & Technology Resource - sharing Networks PERT, CPM, Systems approach, operations research Graphics
Micrography & Repography	Microforms of storage, eg. microcards, microfilms, microfiche, ultrafiche Clearing-house and document supply Serials control - back files of serials publication Xerox and other copying methods Plain paper copier Archival storage Microform Readers COM
Communications	Information communication channels Marriage with computers Keyboard telephone linked to computer Home information service, Video text On-line information systems and Information Networks
Printing & Publishing	Computer aided Photocomposition, Electronic transmission of information Paperless Society

TABLE 2

**LIST OF SOME MANAGEMENT TECHNIQUES WHERE USE OF
COMPUTERS IS ESSENTIAL**

<u>Management Technique</u>	<u>Brief Description</u>
PERT	Program Evaluation and Review Technique was developed in 1958 by the US Navy and a group of consultants. PERT is a technique for dealing with uncertainty in the performance time of activities. It uses a network monitored by statistics and computers to detail complex parallel and sequential job combinations.
CPM	Critical Path Method was developed soon after PERT by DuFont Corporation. CPM is based on average times of performance in activities. In order to handle events and activities more effectively, PERT and CPM technique are combined.
Resource Appraisal	Essentially a financial technique. Impact of inflation forces management to consider resources of the organization more widely.
Budgetary Control	A financial technique. The concepts of budgetting are a necessary part of any manager's role and have had a strong influence on library management.
Inventory Control	Control of complete stock of different items the library has at any given time.
Decision making Models	A technique which provides variety of approaches to solve a problem.
Forecasting Methods	It involves data collection, data selection and reduction, choice of the forecasting model, simulation, evaluation and forecasts with conditions. Library is a complex system whose behaviour is based on three basic parameters - users, documents and the librarians. Forecasting method in library system may be used for financial planning, assessment of user needs, collection planning, manpower planning and space planning. Data that can be collected and analysed is available in records circulation records, reference data, number of documents published, users and their occupational aspects - from annual reports, etc.
User Studies	In the library and information system the user is of paramount importance. User satisfaction is the main objective of the system. With the use of computers, information can be retrieved in the area of understanding and predicting user behaviour.

existing telephone cable network. The immediate response obtained from the computer gives the operator the impression that the electronic machine is running exclusively for him, even if several hundred terminals are simultaneously connected with the central processor. This is extremely fast way of obtaining returns from the machine.

The every day refinements in sophisticated technology of computers, not only that concerned with the hardware and the memory size, but with the software as well and the concept of utilizing stored programs in a real time mode, have greatly extended the utilisation of computers.

It is a clear picture of the future that each manager will have at home a computer terminal which will become as indispensable a part of his life as the telephone is today. A person will utilize computers any time he feels the necessity to know something, to transmit or record facts and values, or to make any type of computation.

A manager can retrieve from the computer memory information and data referring to a complex business or industrial problem that he has to solve. By collecting new facts or new insights, he can increase in number, or improve in quality, at any time, the existing backlog of data already stored in memory. The computer can be instructed to systematize those elements, summarize them, make statistical or mathematical computations, and so on, in order to provide the decision maker with a revised and always current set of pertinent original data and for semifinished computational findings. When the manager considers that the time for decision has come, he can receive from memory all the computerized results and enter them in an 'operations research decision-making model', obtaining a objective final solution to his problem. This approach can be applied to any type of managerial quantifiable problem. The managerial decision-making process is already heavily oriented toward the objective solution of problems using mathematical or deterministic models, or by performing simulations of any possible business situation. A great variety of standing-by computer subroutines and normative models will be available to every manager who needs to find an optional solution to a problem, business, industrial, social or whatever character it may have. Consequently the skill of reasoning and of utilizing personal judgement, interpretation of facts, and of consequent responsibility of deciding will pass from subjective to the highly objective i.e. computerized or scientific approach. No matter what the problem is, the first attempt made by a responsible executive to solve it will be to utilize an existing computer programme.

However, computers will never eliminate human personality or managerial decision making responsibility, neither now nor in the near or distant future. Computers will always be tools in the service of man, who is indeed a clever creature - in fact, he developed computer. (1)

4. CONCLUSIONS

Efficiency through technology has been achieved in the following aspects :

(i) Storage capacity : Enormous amount of data can be stored on various magnetic media. For example, half inch in width and one inch in length magnetic tape can store 7200 characters of information. Thus one magnetic tape of 2400 ft. in length can store about 200 million characters of information. One disc pack can store about 300 megabytes of information. Larger capacity storage devices are being developed. Chip technology has revolutionised the concept of storage capacity. Large scale integrated (LSI) chip is a thin slice of silicon on which electronic circuits involving thousands of components is processed. It consumes less power, takes lesser space, works much better and faster. The chip has made an ant capable of carrying information load that a man couldn't even hold in a circuit board. The VLSI has further improved compactness and miniaturisation.

Micrography has also helped in improving storage capacity. With high optical resolution equipment it is possible to have 32 + 1 volumes of Encyclopaedia Britannica on one single microfiche. Laser technology is expected to reduce the space required to store information.

(ii) Processing capability : Computers capable of processing one million instructions in one second are being improved to process one billion instructions in one second. Speedier manipulations is characteristic of computers.

(iii) Consistency, accuracy and reliability.

(iv) Exhaustiveness : A large number of data bases containing several million document references can be searched for a particular information query and the answers can be retrieved, screen and printed using on-line information systems.

(v) Cost : The cost of computers is decreasing very fast. In 1960, a medium-size computer was priced at \$30,000. Today the price is \$3,000. In 1974, one megabyte of memory cost \$32,000. In 1979 the same capacity of memory cost about \$1 and in the 1980's the cost is projected to be \$0.10. Integrated circuit costs have dropped down 10,000 times in the past fifteen years.

There are many technological developments which are meant to improve efficiency in all human activities. It is not possible to cover all of them here. However, a few of them are mentioned: Advent of terminal for report generation, editing, Word processor for text editing and also to serve

as intelligent terminal to a large computer, mini and micro computers, portable terminals, video disc technology, electronic representation of information, video conferencing, television linked to computer, satellite communication and many others.

Technological developments solve many of our problems efficiently but also pose certain problems, new ones, probably not known earlier. It is something like a new drug is invented, marketed and administered to overcome a particular disease. The drug does overcome the disease but it introduces some side effects.

For example, the new developments in communications bring forward the issues of access, localism and the political and legal aspects of informatica. The following elements are of major importance :

- (i) Absence of censorship
- (ii) Guarantee of individual and social privacy
- (iii) Freedom of information legislation concerning information held by public agencies, archives, etc.
- (iv) National legislation concerning copyright and other proprietary rights.
- (v) Regulations on issues such as general availability, reliability, accuracy, completeness, and dissemination of information.
- (vi) Special regulations on commercial sponsorship of information services dealing with aspects like undisclosed mixing of objective information and commercial promotion. (3)

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Management of Human Resources in Libraries

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(Synopsis)

□ If librarians call themselves professionals, libraries and information centres should be treated as professional service enterprises. Management principles should be employed wherever possible to improve our skills and productivity. Human resources are the focal point in the service enterprise like ours. Hence long-term strategic planning and short-term operational planning, goal-setting, optimization of resources, training, setting standard practices, and expert supervision and leadership are some of the points to be taken into account. 7

Introduction

We start our introduction to library science with a triangle of interaction among the readers, the reading material and the librarian, i.e. service to readers. Any organization or enterprise is made up of three important elements, viz. money, material and people. It is people - the human element - that is often responsible for success of an organization. We have enlisted several libraries for our reference or resource sharing, etc. However, with common purpose and comparable finances, we often find that one library is more popular or judged more efficient than the other. This may be due to satisfied, productive and devoted working force in one library while the other has a disgruntled, unproductive group of people. In other words, the human element determines the degree of success enjoyed by the organization.

We say, we are professionals and our services are professional. Let us treat our library or the information centre as a professional service enterprise. This is an era

of automation, industrialization and mass production. A lot of management techniques, systems and practices are designed to meet the needs of industrial enterprise. However, the core elements ^{are the human elements.} 'People are our most valuable resources' - This is a common statement in several speeches, but management of these resources is a difficult task. By management we aim at optimisation of resources for the benefit of the organization, i.e. the library, the users and for us- the librarians. The concept of growth and productivity becomes complicated with introduction of human element in the matrix.

I will consider here a few points in order to improve our productivity. We have heard of management theories. In theory 'X' there is overemphasis on procedures, while theory 'Y', which may integrate individual and organizational goals, presupposes extremely loose supervision and may be unreasonably idealistic. Management by objectives (MBO) places the emphasis on results. MBO gives the employee the objective of a project, the decision making data needed, the limits within which to operate and the freedom to operate within these limits. MBO assumes that the employee has been properly selected and trained and is informed that he or she will be responsible for achieving the desired results. MBO approach includes necessary external discipline and control. The basic philosophy of management in short is the understanding of realistic atmosphere - a philosophy that recognizes that organizations exist to accomplish personal as well as organizational objectives.

Strategy for growth

We say that library is a growing organization, but this organization should have a strategy for growth consisting of goals. Goals are necessary for progress and to measure success or results. In product oriented business, people know what their goal is. Mostly it is a game of money and there is a convenient way of keeping the score - the financial statement. In our professional services, there is a problem that we are less clear in understanding

the goals and the system of measurement of achievement may not be perfect. Setting strategic goals for library services is a complex but not an impossible task. Our goals can be :

- (1) increasing or maintaining or decreasing size,
- (2) developing greater professional knowledge of individual librarians, (3) extending scope of library services beyond the assumed premises, (4) evolving or adopting new technologies and perhaps finally (5) selecting the services and the clientele or readers on which to concentrate. These goals are parallel and inter dependent. Our emphasis would not be on any financial achievement, but on excellence in service, higher and higher level of professional expertise and knowledge.

To initiate strategic planning, we equip ourselves with (1) resource analysis - financial, material and human, (2) environment analysis and (3) creative thinking. We may plan to extend library facilities to a wider class of readers as well as for in-depth studies. We may involve ourselves in sharing resources with other libraries. We may desire to acquire a computer for our library. All these plans are a result of strategic or long-term planning. And based on this strategic plan we have to prepare our annual operational plan as well as manpower development plan. The primary element of success in a professional service enterprise is the effective use of human resources. This involves (1) employment of correct number of people with appropriate professional knowledge at appropriate levels and (2) optimum use of this knowledge to achieve goals of the enterprise. The annual operational plan is a short-term plan in nature and deals directly with people and time. We have to identify work areas, e.g. in acquisition, classification, cataloguing, book-processing as well as indexing, abstracting and information dissemination sections. At the same time we should also prepare job description sheets for every professional and non-professional position. Every job has a definite requirement while every individual employed has definite qualities and qualifications. The task is to match the job and the individual. The job

(4)

discription can be done in two ways, viz. the things to be accomplished and the human attributes to get these things done.

When we talk of things to be accomplished, we have to set annual goals for individuals linked with annual operational plans and expect progress reports every month. Setting goals and demanding progress reports is necessary for job evaluation, accountability and delegation of responsibility. Goals should first be set for the overall library, then for each of the result areas, and where practical for each project group or each professional individual. Usually the time cycle for budgets, accounting systems and operational plans is one year. It is also logical in educational institutions and for accounting purposes. After these manpower planning aspects have been evolved, there may be a need to develop more traditional aspects of operational planning such as annual financial budgets, timetables, milestones and schedules, all of which are helpful in accomplishing goals.

Training

While preparing job descriptions and matching them with the qualities and qualifications of existing staff, we come to know that some individuals need to be equipped with additional training. Training also becomes necessary in order to improve productivity and quality of work. Volume of work is always increasing and we come across bottlenecks. Many of our operations are repetitive and we have to find out the best way of doing them. Certain operations are complex and require a variety of knowledge and skill. Over a period of time, accuracy or quality seem to be slipping. We have to determine in what respects we lack and prescribe individualized developments to fill out the gaps. Training programmes can be organized within the organization or individuals can be deputed for courses.

Preparation of Standard Practice Manual

We prepare Authority File for our cataloguers in order to maintain consistency. Likewise, we can standardize many of our activities and routine of every section and provide guidelines for work in the SPM.

Supervision and Leadership

The key for improving productivity and bringing out the best of every subordinate lies in skillful supervision, and dynamic and effective leadership provided by higher authorities. Whatever fine qualities of character, temperament, abilities and interest - the subordinates may exhibit, expert supervision and leadership becomes necessary for motivating them, morale boosting and maintaining healthy relationship - within the organization and outside. One should be able to make decisions when needed - should set specific attainable objectives and be able to tell who is to do what and when and sometimes show how to do a specific job - should check performance during and at the end of work programme - should develop subordinates - should concern himself with what is right and not who is right - should develop good public relations.

Within the limits of this paper, I have attempted to draw your attention towards the necessity of professional outlook in human resources development and have suggested a few avenues to explore.

Libraries Have to be Paid For

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(Abstract)

┌ In the light of one of the principles deduced by Donald Urquhart, the paper examines some of the services provided by the University of Poona Library and states that these services are required to be paid for either by the readers themselves or by the organisation. ┘

From the ancient times when libraries did exist in the world in one form or another till the present one, when libraries are designated in a variety of ways such as information centres, resource media centres, databanks etc., the basic function of libraries has remained throughout unchanged : to provide service to readers. It is true that, in due course of time, the nature of library services has changed from simply permitting 'readers' to read on the library premises or permitting them to borrow books from the libraries to providing 'users' or 'clientele' with SDI services, photocopying or translation facilities etc. What Donald Urquhart claims is that whether library services belong to one category or another, all of them are required to be paid for.

By this, Urquhart does not necessarily mean that in all types of libraries all users have to pay directly for each and every service they get as they do when they go to a market place for purchasing some articles. If readers are not paying directly for the library services they get, the organisation which provides these services has to pay for it. This is but natural. Because, for providing services to readers, libraries have to acquire books and other material, process them, preserve them and make them available to readers; libraries also need staff and buildings. So, each item has its own cost. Library service consists of inputs and each input has to be paid for.

To illustrate the point that for getting library services, users do not pay directly, let us take an example of five states in India viz. Andhra Pradesh, Maharashtra, Mysore, Tamil Nadu and West Bengal, where library legislation has been enacted. These state governments provide certain amounts from their exchequer to provide 'free' public library service to the citizens in their states. The amount is apportioned from the revenue collected by the state government.

In the remaining part of the paper, an attempt is made to explain some of the services provided to users by the Poona University Library and to show that these services are paid either by the users of the library or by the organization itself. Being an academic institution, the clientele of the library mostly consist of students (post-graduate as well as research students) and faculty. The administrative staff of the university forms part of the regular clientele and outsiders are also permitted to use the library. Every post-graduate student is required to pay Rs. 50/- as library fee (alongwith other fees). Research students (M. Phil and Ph.D. students) do not pay 'library fees', as these are included in their tuition fees. Outsiders have to pay Rs. 5/- each per year to avail library facilities. All students and outsiders can borrow books from the library against a certain amount of deposit. Faculty members and administrative staff are not required to pay for library facilities including borrowing of books.

The only service for which all readers, irrespective of their categories, are required to pay directly is the photocopying service. The university library has recently started to provide this service to readers. Readers are required to pay sixty paise per exposure of the material. The point that readers are required to pay some charges for getting this service can be justified by the fact that for providing this service the University has spent a large amount for purchase of a xerox machine and other necessary accessories. The University Library is also required to have the recurring expenditure such as amount spent on purchase of paper and other material needed for providing the services; maintenance charges (including electricity and the salary of the staff member carrying out the job). Thus, this new service necessitated

investment, recurring cost and provision for depreciation. It proves that library service costs.

There are certain other services for which readers do not pay directly but at the same time, the University is required to bear some expenditure. Two examples can be quoted :

(1) extending library hours for the users and (2) borrowing material for users from other libraries on an inter-library loan basis.

(1) Extending Library hours for users :

Being an academic library, the reading room of the University is kept open from 8.00 a.m. to 9.00 p.m. on all working days and from 11.00 a.m. to 6.00 p.m. on all Sundays and holidays. So far as the working of the reading room on holidays and Sundays is concerned, the library staff members working on these days are given either the compensatory leave or extra payment. To meet the expenditure on extra payment to the staff members, the university library makes a budgetary provision in its annual budget. When library staff are signed off on compensatory leave, the Library loses man hours of work. When extra payment is made to them, it cuts into the library budget. In either case, it costs to provide service.

(2) Borrowing material for users from other Libraries :

Because of 'information explosion' and because of the limited budgetary provision, no library has remained an island. All libraries have to borrow material from other libraries on an inter library loan basis. The Poona University Library is not an exception to this. Every year, on an average, 150 books (including bound volumes of periodicals, theses and dissertations) are borrowed from libraries outside Pune. Though the lending libraries do not levy any charge for this service, postage is involved and who pays is immaterial. The service is paid for all the same. One concrete example will prove the point. Last year, the University Library spent Rs. 1,500/- on postage for returning books it borrowed from other libraries. This was only one way postage. It means that the lending libraries spent as

much. The long and the short is that for making 150 books available to users, several libraries collectively spent Rs. 3,000/- plus the staff time involved. Libraries certainly have to be paid for.

One more service deserves due attention, viz. reservation of books. Being an academic library, the number of copies of any book (especially text books) available in the library is not sufficient to cope with the demands from readers. Readers (mostly students), naturally, have to reserve the needed books for which they use reservation slips. Everyday, about 25 requests for reservation are received in the Library. The author is aware that at least one library in the city charges Re. 1/- per book to be reserved. What the author wants to stress is that the library is also required to spend some amount to get the reservation slips printed and post an assistant on this job etc. Any new service or any improvement in an existing service requires investment, whose benefits are not tangible.

In this brief paper, the author has made an attempt to show how one has to agree with Urquhart that libraries have to be paid for.

SERIALS MANAGEMENT

- (Issues and Practical Considerations)

by

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1. Serials constitute a major and significant part of the resources of academic and research libraries. Without them no library can serve its clientele and fulfil its objectives well. Peculiar in nature, serials command special treatment with regard to their acquisition, records, maintenance and use. For the purpose of this paper only the publications issued at intervals, generally regular, each issue being numbered consecutively and dated, with no pre-determined end to the sequence of publication are considered, and monograph series issued in numbered volumes, directories, annuals and yearbooks are excluded. The theme is discussed in the light of the situations faced by academic and research libraries in India.

2. Knowledge of kinds and types of serials is necessary to identify, understand and tackle the various problems associated with their procurement, records etc. The types, though not very precise and mutually exclusive, are indicated by different names Viz., magazines, periodicals and journals; weeklies, monthlies, quarterlies etc., annuals and bulletins; letters and reviews. They are also categorised as scholarly and popular; primary and secondary; indexing and abstracting.

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The broad division - foreign and domestic - does not provide the Library with the adequate knowledge of the nature of all serials. Further grouping of them, therefore, is necessary. It may be like those published by professional bodies and learned societies, Govt. Depts., Universities and Research Institutes and certain well-known book publishers. This information helps in tracking down the vagaries of such publications and choosing a proper course of action.

3. Selection and Acquisition of Serials is seldom done after ascertaining their actual use in the Library. In fact considerations other than the actual use mostly govern the additions and deletions. Availability, and for that matter, non-availability of funds, naturally, is the prime consideration. Donald Davinson remarks that "Librarians appear unwilling, unless forced by economic circumstance, to take a hard and sober look at their periodicals acquisition policies and to endeavour to make vigorous appraisals of the material they are invited to buy" (1). The finances for journals come from Institute's own funds and they always fall short of the requirements. The increasing number of serials and steep rise in their subscription rates erode the budgetary provisions every year. This eventually leads to abrupt discontinuation of subscriptions resulting into a weak collection of incomplete files with appalling gaps.

Unfortunately the concept of resource sharing in respect of journals is more discussed than practised.

It is, therefore, necessary to identify 'Core' journal requirements right from the beginning and make sustained efforts to continue them, of course, by increasing proportionately the budgetary provision every year, so as to cover additional expenditure on enhanced rates. Taking into consideration the nature of academic research, stock of complete backfiles of core journals brightens the image of the Library and inspires confidence among research scholars. If the lists of core journals are prepared by subject experts the factor of 'actual use' will not dominate much the selection of journals. The core journals should consist of both primary and secondary publications so as to meet all types of needs of - researchers.

The mode of acquisition through exchange and gratis should not be adopted in case of core journals unless the arrangement of getting them through exchange or gratis is well conceived and planned. Supply on gratis is always left to the mercy of senders and exchanges, if not monitored by the library, result into deadlocks. Due to the present poor communication systems and ineffective reprographic services it is advisable to keep core journals out of the scope of resource-sharing plans.

If the Library succeeds in obtaining and maintaining the complete back files of core journals despite financial constraints etc. it is in a position to meet (2/3) two third of the requirements of research scholars. These include i) opportunity to scan regularly the significant periodical literature of their interest, both primary and secondary, and ii) actual availability of specific articles from core journals in the library, both current and retrospective.

After providing for core journals requirements the issue of the remaining (1/3) one third of the needs of peripheral and interdisciplinary nature may be taken up. Those who can draw up a list of core journals can easily supplement it by that of peripheral, interdisciplinary and remotely related periodicals. Library co-operation can well be evoked and funds position examined before finalising such a list. It would be better if one library in a given area is granted a status of 'Regional Library' for the purpose, and given a suitable financial assistance to equip it well in this behalf so as to avoid a wide scatter of these serials causing inconvenience to researchers.

4. Procurement of serials is a very complex process. It recurs every year. It involves a number of parties directly and indirectly and hence for its success depends on many factors beyond the control of the library. Advance payment

of subscription amounts attracts fulfilment of audit requirements. The Journal Section of the Library, therefore, is required to be engaged throughout the year in the procurement process.

The modes of procurement differ from place to place and library to library. The problems of procurement of foreign serials are different from those of Indian serials. Procuring foreign journals directly from respective publishers or through subscription agencies abroad entails a well groomed section in the library itself fully conversant with these transactions involving bank formalities related to foreign exchange. For want of such a secretarial support many libraries prefer to procure their requirements through Indian Subscription Agencies. It is indeed a sad reflection on the Trade that most of the Agents fail to maintain their credibility continuously for a few years. There are several cases of subscription amounts paid in advance not transmitted further. The non-supply or irregular supply due to late transmission is a common malady. The libraries are, therefore, prone to change their subscription Agents now and then and face new problems. In fairness it should also be pointed out that some libraries themselves contribute to this undesirable situation by not playing their role effectively, leaving everything to their agents. The following are the

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practical tips for efficient procurement of foreign serials.

- 1) Procurement from Publishers abroad should be made only when the library has a definite budgetary provision for the purpose and a good secretarial support capable of handling these transactions independently.
- 2) Instead of approaching respective publishers it is convenient at times to engage foreign subscription agents. It may, however, be noted that unlike Indian Agents they charge additional service charges for each and every serial subscription.

Both of these modes of procurement burden the Library with the work of financial transactions and other follow up. It is, of course, worthwhile to handle directly the membership subscriptions so as to establish a direct contact of the library and avail of several concessions implied in them.

- 3) Those libraries which subscribe through 'Indian Subscription Agents' mostly depend on such agencies located at metropolitan cities. While selecting them their standing, large resources and adequate know-how should invariably be taken into consideration. Some of them agree to pay the subscriptions on behalf of their clients earlier and claim them later producing all relevant documents. It would be advisable to engage more than one such Agents so as to introduce element

of competition and dispense with the monopoly of Agents showing signs of sluggishness and deterioration in service. Last year's performance should determine their continuation for the next year. Temptations and enticements of concessions other than those offered by the publishers should be resisted as far as possible, because they are more tactical than real.

4) In case of Indian serials procurement directly from the Publishers is more facilitating. It affords first hand information useful for obtaining the serials regularly.

5. Records and Follow up should be considered together as the earlier facilitates the latter. Though journals are subscribed well in time their regular supply is not ensured unless proper records are maintained and consistent follow up is made. The following are the common ills with regard to fresh and renewal subscriptions.

- i) Non-execution of orders,
- ii) Non-commencement of supply,
- iii) Supply of wrong journal or volume,
- iv) Irregular supply and
- v) Non-receipts of issues/numbers.

In order to detect the wrong it is necessary to keep all the relevant details together in such a way as to be available readily when required. There are several systems of recording :

Book, Card and automated. A mention of Three Card System of Dr. S. R. Ranganathan may be made here so as to stress the need for multi-dimensional records indicating precisely various particulars expeditiously. The proformas of the record accompanying visible gadgets like Visadex are always very broad and hence do not assist the Library much in its follow up work. The requirements in this behalf change with the type of the Library and users. In academic and research libraries, for instance, current and retrospective search is made at one and the same time and hence details unfolding all such information should be included on the specially devised card.

The peculiar nature of purchase of serials viz. Pay in advance in full at one time and receive the material in parts later on throughout the year entails an alert follow up. The following measures keep these transactions under the control of the Library :

- 1) Anticipating procedural delays under and beyond control , complete work of selection of a) Journals, b) mode of procurement and c) Agents and place orders atleast three clear months earlier than the date of commencement of the supply.
- 2) While placing renewal orders examine whether the previous year's supply has been commenced. If not, defer the renewal order till the matter is set right.

3) Depending on the periodicity intimate non receipts directly to the Publishers regularly before the stipulated time after publication expires. This avoids extra expenditure on purchasing non-receipts later on.

4) Knowledge of the publication behind schedule or cessation (they are quite a few) avoids unnecessary payments and correspondence over them. Only the consistent direct follow up helps knowing it.

6. Display and Use are the end result of all work related to serials, and hence display should be considered as a strategy for attracting users. Donald Davinson has enlisted the following as principal strategies of display :

- "1. Display alongside related subjects on the book shelves
2. Display in a separate sequence or sequences but close to the related subjects in a book sequence
3. Display in a classified sequence parallel to the book sequence but in another part of the room as a separate display feature
4. Display in an alphabetic sequence according to the titles of the periodicals
5. Display in a separate periodicals room, the sequence of periodicals being either alphabetic by title or in subject groups"(2)

In order to facilitate the academic and research activities it is essential to make available all - the current issues, current volumes and back files of all the serials in one designated section: Serials Section. Once such a section is envisaged its proper planning is possible. If for want of sufficient space the above three are situated away from each other, they cause a great inconvenience to the researchers and slow down their study and research. A well-planned Serials Section is an asset to the academic and research library. Eventually such a designated section could develop fully with reading space, reprographic facilities and referral service in respect of serial literature. The effectiveness of the library services much depends on the organization of its Serials Section.

7. Concluding Remarks : In the management of serials the role of the library is very important. The Serials Section should be an independent well-planned and organized section assisted by professional staff, well-conversant with the various types of work pertaining to the serials. It is imperative to examine closely every aspect of the serials work, maintain statistics regarding their use : consultations, home issues, reprographic requests etc., so as to understand the trends of needs of users and tone-up the management accordingly from time to time.

References: (1) Davinson Donald. The Periodicals Collection. 2nd ed. London. 1978. p. 164.

(2) Ibid., p. 213.

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PROGRAMME PLANNING AND BUDGETING SYSTEM
FOR UNIVERSITY LIBRARIES

G.J.Narayana*

The paper discusses the salient features of PPBS and its applicability to university libraries in our country.

Introduction

Programme Planning and Budgeting System (PPBS) was first introduced by Charles Hitch in 1961 in the Department of Defence of the U.S. Government when Robert McNamara was the Secretary of Defence. This was when the traditional budgeting method failed to provide proper control over allocation, expenditure and fulfilment of objectives in the unwieldy and complex functioning of the Department of Defence. The PPBS brought in the features of 'performance budget', 'program budget', accountability and also a more effective use of resources. Its success soon extended its application in most federal departments and agencies, state and local governments and industry in the U.S. It has been applied outside the industry in areas such as education, health and library management. In our country it has not been tried at least in libraries.

What is PPBS?

According to Hitch and McKean(1) it is a method for using resources more effectively. It follows a system approach that enables managers to think and plan well into the future, delineate objectives, analyse costs and benefits of existing programmes, and find better and cheaper ways to accomplish objectives, (2). Main stay of this approach are the programmes.

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Basic Elements of PPDS

The principal components of programme budgeting as stated by Bradley (3) are : a structure which categorizes the activities of an organization by their objectives and the programmes for obtaining them; the use of formal analysis systematically to examine the costs and gains of programmes and their alternatives; and control and reporting devices for implementing policy decisions and measuring progress toward their achievement.

Novick (4) has further defined the basic concepts of a programme budget as follows :

Objectives : the organization's aims or purpose which collectively define its *raison d'être*. They may be stated initially in broad and relatively abstract terms, as for example, when we say that the objective of a university library programme is to provide support for instruction and research in its parent institution. However, such an objective is too remote from the organization's specific activities to be useful for formulating or evaluating programmes. Such an objective must be translated into lower level objectives that can be stated in sufficiently concrete terms to be operational.

Programme : the sets of activities or programme packages undertaken to accomplish objectives. The programme generally has an identifiable end product. (Some programmes may be undertaken in support of others; if so, they have identifiable intermediate products). Several programmes may be associated with an objective, in which case they may be identified with distinct sub-objectives, or with complementary, but separable means for accomplishing the objective.

Resources : the goods and services consumed by programme activities. They may be thought of as the inputs required to produce each programme's end product. Programme Cost is the monetary value of resources identified with a programme.

Effectiveness: a measure of the degree to which programmes accomplish their objectives. It is related to Benefit, which is a measure of the utility to be derived from each programme.

Other important characteristics of a PPB system are :

Extended time horizon. Generally the programme budget and associated analyses should cover at least a five-year period or longer.

Planning, not forecasting. The aim is to examine the cost and benefit implications of relevant alternative courses of action for the future. It should not be thought of as a static extrapolation of a programme.

Comparability rather than accuracy. The main consideration in an analysis of programme costs and benefits is comparability. Absolute accuracy is not attainable. Consistency of treatment of different alternatives is more important. Less attention to detail and more emphasis on variables that have impact on programme consequences is desirable.

Full costing of programmes and programme alternatives. This is required if needed consistency in estimates is to be achieved.

Programme memoranda. They provide the communication between the analysts within a programme area and the analytical staff which serve the decision-making group.

Programme Structuring

For development of programmes, first it is necessary to analyse the activities and functions into basic elements that are designed to fulfil the objectives of the library. Based on these activities elements separate programmes are developed for each element. This analysis can vary depending on the analyser. What is important is not the differences in the pattern of categorization but categorized activities and elements should be amenable to programme structuring.

Given below are two models of analysis - one by Hamburg (3) which can be used in any managerial planning and budgeting structure and the other by Mason (5) developed for information services.

Hamburg's Model for Programme Packages. In this, the library activities have been identified to fall into seventeen activities grouped under six major functions as follows :

Providing physical facilities

1. Provision of building area
2. Provision of user furnishings
3. Maintenance of facilities

Providing access to documents within the library

4. Selection of documents
5. Acquisition of documents
6. Processing of documents
7. Control of document location and use
8. Facilitation of document use
9. Maintenance and weeding of documents

Providing access to documents in other libraries

10. Access to documents in other libraries

Providing aids to identify and locate documents and conveying information

11. Provision of aids to locate documents within our library
12. Provision of aids either to identify existing documents or to locate them in other libraries
13. Personal assistance for document identification and location and for conveying information

Promoting Library use

- 14 Publications, advertisements and exhibits
- 15 Personal communication with members of population being served

Planning, administration and support

- 16 Planning and administration
- 17 Support activities

Mason's Approach to programmes Building. The activities are classified by Mason under two categories, namely, operational activities and service activities. The programmes are developed for each of the major activities and services as shown below:

Operational activities

- 1.0 Acquisition of materials
- 2.0 Preparation of indexes
- 3.0 Stock control and maintenance
- 4.0 Services and systems (Evaluation and research)

Service activities

- 5.0 Current awareness
- 6.0 Information retrieval
- 7.0 Reference and loan
- 8.0 Supply and distribution
- 9.0 Training and advisory

Each of these programmes is made up of a number of elements. The following is an example of an operational programme:

Programme code	Element code	
1.0		Acquisition of materials
	1.1	Books and pamphlets
	1.2	Periodicals
	1.3	Information retrieval publications
	1.4	Information retrieval service
	1.5	Reports
	1.6	Patents

An example of a service programme is:

Programme code	Element code	
5.0		Current awareness
	5.1	S.D.I
	5.2	Bulletins
	5.3	Circulation
	5.4	Clippings

Analysis of Procedures

The programmes and their elements determined, the next step is to analyse the procedure or work relating to each element. The purpose of such analysis is to indicate the objective of each element and the method of accomplishing that objective. It also enables evaluation of alternative procedures and cost determination. The following is an example given by Mason:

Element 1:1	Acquisition of books and pamphlets.
OBJECTIVE:	To acquire, by purchase or otherwise, and to record the receipt of the books, pamphlets, government publications, trade literature, standards, etc. needed to support or provide the requisite information, reference and loan services.
PROCEDURE:	Bibliographical details of the required publication are verified; the appropriate bookseller or other agent is selected; an order is typed and despatched. On receipt the publication is checked; receipt is recorded; and the invoice checked and passed for payment.

Mason opines that though a detailed analysis of the systems is desirable at times, is not strictly required for PPBS.

The above examples indicate analysis and grouping of activities from which programmes are structured. Each programme should be related to the cost. When the two are integrated it forms a Programme Budget.

Cost Estimation

Following the analysis, the cost is estimated for all the elements in a programme. Estimating cost for operational activities is easier than for that of services and service activities. The estimate must take into account both prime cost and overhead cost. Some activities may consume only a part time of supervisory and managerial level staff. In such cases proportionate cost is taken. In arriving at the cost it is essential to calculate separately the staff cost, the material cost and the maintenance cost for each element. The programme cost is obtained by adding the cost of each element that go to make the programme. For a university library the major cost items are those of staff cost and the cost of information materials such as books, periodicals etc. The capital expenditure is spread over the service life of the equipment. Working out unit cost affords comparison and simplifies calculation.

Programme Budget

A programme budget is not just structuring the programmes and allocating the necessary funds based on the cost estimate. The basic idea is to make the effective use of resources. Efficiency, cost-effectiveness, and cost-benefit analysis are the major considerations. After the cost has been estimated for the programmes the next important step is the allocation of funds in a manner that the programmes are accomplished at least cost. Various alternatives available for accomplishing the objectives of each element in the programme is carefully considered from the angle of cost. The alternative which meets the programme requirements and the available resources is selected. Herein comes the application of the cost-benefit-analysis. Assessment of the benefit is not that easy in the case of a university library as the benefits are not quantifiable. However, one can make use of the various performance evaluation techniques discussed by Du Mont(7). The criteria of evaluation selected may be library goals, proxy or surrogate goals, environmental criteria, behavioural criteria, structural criteria, users study and systems approach. Hamburg () has suggested measuring library performance using the criteria of document exposure. Document-exposure can be measured by employing exposure counts, item-use-days and exposure time.

Problems in Applying PPBS

Since effectiveness of library output is not easily quantifiable and measuring the fulfilment of objectives is dependent on value judgement using PPBS is not easy. Introduction of PPBS calls for analytical data pertaining to each of the element, the collection of which is time consuming and costly. Since PPBS follows system approach and planning the estimate of cost for the plan period may go astray. Programmes need to be reviewed periodically which calls for continuous feed back information on the operation of programmes. As no university in the country seems to be following the PPBS to adopt the system only in the library is likely to create some complications, apart from possible objections from the university authorities.

Application of the PPBS requires an analytical approach and ability to understand and make use of some of the management techniques such as mathematical analyses, operational research network techniques, computer use and work study.

Comparison Between Traditional Budget and PPBS The following table compares the effective features of the traditional budget and PPBS.

<u>Traditional Budget</u>	<u>Systems(PPB) Budget</u>	<u>MbO</u>
1. Allocation based on independent functions/fixed heads. Task oriented.	Allocation based on programmes designed to achieve objectives. Mission oriented	Budget related to independent functions/fixed heads
2. Emphasis is on input, not accountability	Emphasis is on output, accountability is a prime feature	Emphasis is on output accountability is a prime feature (not based on budget)
3. Allocation based on previous year's figures, is incremental and fragmented	Forms part of a plan, hence continuity	Traditional budgeting but part of a plan

4	Plenty of scope for manoeuvrability, employment of strategies & tactics	Scope for manoeuvre ability is limited	Traditional budgeting but part of a plan
5	Consideration of alternatives does not form a part	Consideration of alternatives is a prime factor	Does not form an in-built factor
6	Effective utilization of resources not ensured	Cost-effectiveness and cost-benefit analysis is applied at every stage to ensure effective utilization of resources.	-do-
7	Easy to prepare	Difficult to prepare, careful analysis of all factors and data for each is required element	Easy to prepare
8	Is an instrument of expenditure	An instrument for bringing desired change in goals	Is a style of management
9	Favours partizans such as agencies, departments and groups	Favours central budget agencies allocators	-

Relevance to our University Libraries

Though it may be difficult to apply the PPBS in our university libraries due to environmental constraints some of its basic features can be usefully employed. At least, it will provide a rational approach to solving many of the university library problems created by limited funds, escalating cost of reading materials, increase in the number of students, staff and disciplines and space problem. PPBS may be enable the librarian to ponder over some of the basic issues confronting our universities such as objective of university education, role of university library, various alternatives available to the library manager, and cost consciousness.

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Urquhart's Principles vis-a-vis Ranganathan's Laws

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(Abstract)

[The paper is a search for parallels between Urquhart's Principles and Ranganathan's Laws. The author believes that Ranganathan anticipated fifty years ago many of the present-day ideas in librarianship.]

An attempt has been made in the following paper to examine some of the 'Principles' of librarianship as stated by Dr. Donald Urquhart in his Principles of librarianship¹. The temptation of examining these 'principles', in the light of the 'principles', 'canons' and the 'Laws' of library science as given by S.R. Ranganathan is irresistible.

Urquhart was responsible in creating the National Lending Library for Science and Technology about twenty five years ago. This task was assigned to a 'non-librarian' and still he had done a remarkable job. The library profession in England gave him due recognition for his excellent work. He was elected the President of the Library Association for the year 1972. In 1974, when he retired as the Director General of the British Library Lending Division, three universities honoured him with the honorary D.Sc.

After retiring from Boston Spa, he found time to organise his ideas which guided him in making decisions at the NLL. He was sure that these ideas could be applicable to all libraries and information services. In the course of writing the book he makes a very critical statement. He says, 'I am also clear that many librarians do not apply most of these ideas and library schools do not pay sufficient attention to them².' Urquhart desires to examine this question and looks upon the publication of his book as an experiment and wants to examine the reactions as an

experimental scientist. This seminar, I think, offers an excellent opportunity to examine his ideas.

Urquhart expresses his ideas in the form of 'Principles' and explains them in his book. According to Urquhart, a principle is a guide to action and that it should not apply only to one library or one type of library. As he points out, "Ideally the principles of librarianship should apply to all sorts of libraries and they should not be changed by the passage of time or technological developments. As a principle is a guide to action, it should be of value in deciding what to do in the face of new situations and new developments³". Urquhart expresses his fear that many librarians will not accept the principles and he is confident that many of them will not change their ideas even after reading his book ! It is felt worthwhile to examine whether his principles are really unacceptable to librarians.

Shiyali Ramamrita Ranganathan, like Urquhart, may be looked upon as one who 'strayed' into the field of library science. Ranganathan started his career as a lecturer in mathematics and after working for six years as a lecturer he was selected as the librarian of the Madras University Library and was sent to England for training in librarianship in the year 1924. After completing his studies at the School of Librarianship, University of London, Ranganathan returned to India the next year. After observing the working of many European and Indian libraries he formulated his Laws of Library Science and published them in the form of a book. 'The Five Laws of Library Science'⁴, his first book on Library Science was published in the year 1931. During the subsequent years, he formulated his 'canons' and 'principles'. In order to be specific, as regards the terms like 'laws' 'canons' and 'Principles' he has followed the following convention.

Law - In the context of a major discipline such as Library Science.

Canon - In the context of divisions of the first order of the major discipline such as book selection, classification and cataloguing.

Principle - In the context of divisions of the second or later order of the major discipline such as Facet Sequence in classification etc.⁵

In the context of this paper it was necessary to bring out the clear demarcation of the various terms used by Ranganathan and by Urquhart because what Urquhart mentions as a 'Principle', Ranganathan may refer to as either a law, or canon or principle. Let us consider Urquhart's principle: 'Libraries are for users'. Ranganathan's first law 'Books are for use' comes very near to this principle. By libraries we mean the contents of the library. Ranganathan uses the conventional term 'books'. It could be replaced by 'items of information' or 'information' itself. Urquhart goes a step further and points out that the users should be satisfied. Ranganathan's second law 'Every reader his/her book' which can be paraphrased as 'Every reader his/her information' includes the aspect of user's satisfaction.

In connection with the first principle Urquhart states the following principle.

Users must be provided with guides so that they can select the records which may interest them.

Principle 4 brings the library catalogue into the picture. Ranganathan's third law 'Every book its reader' makes it necessary to provide a guide to the location of the document on the shelf. An upto date and readily available library catalogue facilitates quick selection and location of the documents in the library.

According to Urquhart, 'libraries have to be paid for.' According to this principle, providing library service to the users needs money and the organization which makes money available expects something in return. Though these returns will not be in the form of financial returns, librarians are expected to atleast reduce the costs of the services and maintain the same effectiveness or increase the effectiveness without increasing the cost. It is observed that Ranganathan was fully aware of this cost-effectiveness and the spirit of the Law of Parsimony formulated by him always expects the library staff to accept that alternative among the available alternatives, which will exercise overall economy of man-power, money, material, time etc.⁶

If we take the example of cataloguing, in order to exercise economy in cataloguing expenditure, Ranganathan recommends pre-natal technical work whereby a book is classified and catalogued before it is published. With the help of a mathematical formula Ranganathan advocates that 79% saving can be exercised if prenatal classification and cataloguing is carried out at the national level.⁷

Another principle which Urquhart states and which has direct connection with the economic aspect of all library operations is 'Best is the enemy of the good'. Urquhart points out that in the pursuit of attaining the ideal in any library operation, it is ignored that it is likely to result in the delays in library service and thus the best becomes the enemy of the good. It is true that the practising librarians have to keep speed of library service above everything else, but as far as the training of librarians is concerned, library schools always attempt to train the students to achieve the best. However, they are also taught to adjust themselves to the prevailing situations if such a need arises, thereby modifying the 'best' into the practical requirement. If, for example, we consider the case of cataloguing, in the library science class the students are trained to satisfy all the requirements of a particular code of cataloguing.

However, at the same time they are taught to practice 'limited cataloguing' thereby cutting down the cost of cataloguing. Ranganathan was aware of this need and to meet this situation he has formulated his 'canon of context' according to which instead of formulating rules requiring elaborate cataloguing and then asking the librarians to practice limited cataloguing a catalogue code is expected to draft its rules in the context of

1. The nature of cataloguing features of the book prevalent in the mode of book production.
2. The nature of the organization of libraries prevalent in regard to the mode and quality of library service and
3. Coming into the existence of published bibliographies particularly bibliographical periodicals. This canon further expects the cataloguing code to amend its rules from time to time to keep pace with changes in the context.⁸

Another principle which Urquhart puts forth is 'The staff of the library should work as a team'. This is one of the important principles of management. In order to obtain maximum output of work from the staff, they must have a feeling of comradeship and each staff member must be assured that he is an important person in the organization. This also brings another principle of Urquhart into the picture 'A librarian's post is not a sinecure for a scholar-librarian's task is often to facilitate the work of many scholars'.

This principle rightly points out that the librarian should not consider himself to be above everybody else and shut himself up into the ivory tower leaving all library activities to his subordinates. He should consider himself as a leader of the team and take active part in the process of giving service to the users who will include many scholars. As a social need, we can not depend on the occasional sprouting of scholarship but have to cultivate

and foster scholarship and the library staff can play a dominant role in this noble task by giving quick and efficient library service to the users.

Ranganathan was aware of this situation. While discussing the implications of the fifth law of library science 'Library is a growing organism', he states that as library grows, the library staff would also grow in number. As long as the number of staff in any library is small, it is easier to develop and maintain the team spirit but as the number increases, the task of maintaining team spirit becomes more and more difficult. In order to overcome this difficulty Ranganathan suggests the formation of the staff council. The formation and the functioning of the staff council is described by him as follows :

'The council may be made up of the librarian, the heads of sections and one representative of each section. The staff council may advise the librarian -

1. in the systematization of the work of the sections with due regard to efficiency and economy of material, energy and time;
2. in solving problems involving intersectional relationship;
3. in developing the book resources of the library in a harmonious manner;
4. in devising methods for improving the service to the public and
5. in organizing extension work of all kinds.⁹

Ranganathan feels that such a council will develop good comradeship and esprit de corps among the members of the staff and develop the spirit of the hive among them.

The principle 'No library is an island' has been accepted by the entire library community, rather circumstances have forced them to accept the situation. Due to limited financial resources it is impossible for any library to be

self-sufficient in its requirements particularly in the age of information explosion and every library has to depend upon some other library, some time. This very principle is at the root of library cooperation which includes many cooperative projects undertaken and practised to-day. The concept of 'networks' owes its existence to this principle. Ranganathan's awareness of the problem can be seen from the following words which he records in the context of the functions of the State Central Library. 'The State Central Library may, with advantage, interest itself also in cooperative cataloguing as the Library of Congress does; it may endeavour to publish bibliographical aids from time to time; it may be possible for it to so influence the publishing world as to improve the bibliographical standard of book production; it may, as the Social Education Department of the Government of Soviet Russia does, collect data regarding the supply and demand of books and endeavour to promote necessary publications to create for EVERY PERSON HIS OR HER BOOK; it may also help, in various ways, the maintenance of proper standards of Library service and be a sort of clearance house for library ideas for the whole province',¹⁰.

Eventhough Ranganathan is silent on the acquisition of the documents, the concept of interdependance of libraries is clearly evident.

The purpose of my paper is to indicate that many of the 'principles' put forth by Urquhart have already been put forth, discussed and either partially or fully practised by many librarians in the past. The study of all the eighteen principles put forth by Urquhart would have been ideal but restriction of time and space prevents such a study and therefore only a few principles have been discussed. By comparing Urquhart's principles with those of Ranganathan. I do not intend to suggest that it was Ranganathan who suggested these principles for the first time - whether it is really so could become a topic for another paper. In the course of my study as a student of library science and later working as a teacher in the Department of Library and

Information Science in the University of Poona, I had an opportunity of studying Ranganathan's works and I thought it fit to bring out Ranganathan's contribution towards the subject discussed by Urquhart in his book.

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APPENDIXTHE PRINCIPLES OF LIBRARIANSHIP - SUMMARY

- 1) Libraries are for users.
- 2) The failures of an information supply system to satisfy its users are, as a rule, not obvious.
- 3) Supply creates demand.
- 4) Users must be provided with guides so that they can select the records which may interest them.
- 5) Libraries must be able to provide adequate access to the records users may wish to consult.
- 6) Libraries have to be paid for.
- 7) Libraries, both individually and collectively, must have regard to cost-effectiveness.
- 8) Information cannot be valued as a rule in monetary terms.
- 9) Libraries must have regard to the law of diminishing returns.
- 10) The best is the enemy of the good.
- 11) Unit costs for a particular activity should decrease as the magnitude of the activity increases.
- 12) No library is an island.
- 13) Objective data about users' requirements should be used in planning developments of libraries.
- 14) In considering the use of new techniques and systems, it is necessary to look at the future, not the past.
- 15) The staff of a library should work as a team.
- 16) A librarian's post is not a sinecure for a scholar - a librarian's task is often to facilitate the work of many scholars.
- 17) Libraries can be valuable to society.
- 18) Librarianship is an experimental science.

N.B. : In this summary, the term 'library' includes 'information service'.

MLISc Studies at the University of Poona
in the light of Urquhart's Principles

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(Abstract)

∟ The paper discusses how library research is viewed by its critics, takes the parameters of research as suggested by them and applies these to the master's work done in the department of the University of Poona to see how far it conforms to these essentials. ∟

Dr. Urquhart does not seem prepared to accept as true research what at present passes for research in librarianship. His observation, of course, refers to the British work in the field. He, however, does not seem to have any objection to term it as investigation. It is not the purpose of this paper to either agree or disagree with Dr. Urquhart; it is to examine, as disinterestedly as possible, our own work as 'educators' in the light of this view. It is not likely to cause any harm to the profession either, if some of its members agree with him. On the contrary, the greater the number of those who acquiesce in his view the better will be the future of librarianship. A well documented study on research in librarianship already exists (1). The two investigators, on scientifically examining the development of library science education in the U.S. and Canada from Dewey to the mid-1970's, reached, inter alia, the following devastating conclusion:

Science demands definition. Research demands definition. Scholarship demands definition. Problems demand definition. (Practically every thing demands definition). There is no evidence in any literature of library science which indicates that library science educators feel the intellectual imperative to define. On the contrary, the meagre amount of work they have done in this area has been a complete failure.

It would be a folly to regard these investigators' report as mere polemic. There is no harm in accepting their sincerity which is discernible in the following statement appearing in the preface to their report:

At no point in our work have we entertained the intention of disrespect to any contributor to library science education and its literature in the past or present.

At least Urquhart is kind and gentle in treating research in librarianship. If the two North Americans believe that library science can be made a scientific profession, Urquhart already calls it an experimental science. Obviously, by experimental science he means a science capable of admitting application of experimentation and measurement as two essential components of any worthwhile study in it. In his view, librarianship is also an inexact science. Essentially his prime concern is with four basic concepts, viz. scientific method, objective data, numeracy and cost-effectiveness. Use of some or all of these is necessary for finding right solutions to library questions.

It is fair to present a contrary view with regard to the necessity of some of these essentials, particularly numeracy. Urquhart is a physicist and for him numeracy is all important and indispensable. He wants librarians, for most of them are humanists, to appreciate the importance of numeracy. However, Lancaster (2) has different ideas in this respect. He is of the view that the librarian should be literate and not necessarily numerate, for he has to communicate with his patrons where literacy, rather than numeracy, counts. This apart, it is in the interest of librarians in this age of technology and sophisticated library service to be numerate. Numeracy came into operation in librarianship with the publication of Bradford's Documentation in 1948. Its inroad into the field can be traced back to 1927 when Gross and Gross (3) published the result of their citation analysis.

To the actual investigative studies, the concept of cost-effectiveness is not applicable, as it does not form part of the total design for such studies, though it may be their subject. It therefore follows that all investigative studies must be completed using a scientific method, objective data and, wherever necessary, numeracy.

The present authors thought it a worthwhile exercise to examine how these components and Urquhart's principles operate

in the MLISc studies completed in their department. In a way, this is self evaluation. The following areas were selected for this exercise :

<u>Areas</u>	<u>No. of studies</u>
Management of libraries	1
Evaluation of services	1
Assessment of information sources	2
Use and User studies	2
Resource sharing	2

This categorisation is based on the major area of thrust in these studies; actually at once they can fall into more than one area.

Management :

Rasal (4) confined his study in space management to Poona University's Jayakar Library. His main concern was to foresee, using the techniques of futuristic studies, the problem of space that may confront the managers of the library 20 years hence and suggest alternatives. His data were objective in the sense these were collected from the records and actual measurements which cannot be faulted. All the more important is Rasal's use of quantification in his work. Using trend extrapolation technique he attempted to calculate the possible future growth of the library in terms of shelf space, public catalogue and reading areas. The futuribles or alternatives suggested by him may not appeal to all. They cannot, however, be dismissed peremptorily out of hand.

Evaluation of Services :

Sengupta (5), in her evaluation study examined the English literature collection in the University Library to assess the extent of its adequacy. It was also her purpose to study how balanced and active the collection was and whether it responded effectively to the teaching and research programmes of the English department.

She checked the collection against standard bibliographies (e.g. Cambridge and Bateson's Guide). Also included in these standard tools was the list of most cited authors by Eugene Garfield (appearing in Library Quarterly, 50, 1, 1980). However,

standard these bibliographies may be, they are based on value judgment and could, therefore, be termed as subjective in approach. The only exception was Garfield's listing based on A & HCI. Citations in Ph.D. dissertations in English literature were also checked against the holdings to find out the library's failure to meet user needs. Maurice Line (6) observes that "a survey of unsatisfied needs is perhaps the only way we can arrive at any hard figures of our inadequacies." Sengupta's study achieved this, though in a small measure.

Finally the desiderata arrived at was circulated among the local libraries, as it would have been too much for a single library to acquire the whole. Here then Urquhart's principle that "no library is an island" is needed.

Assessment of Information Sources :

Kane (7) attempted to assess information sources for film libraries. Her purpose was to provide a tool for selection of appropriate information sources. Envisaged as a bibliographical guide for film libraries, Kane's work stands as a good example of the fulfilment of Urquhart's principle that "users must be provided with guides so that they can select records which may interest them."

Shukla (8) studied the coverage of immunology literature in three well known abstracting services, viz. CA, BA and EM, with a view to determining overlap, time lag, subject slant and Indian contribution to the literature of immunology. He wanted to ascertain if there is any justification in acquiring more than one service in one and the same subject field. Using Bradford bibliograph he finally arrived at a list of 50 core journals (covering 57.38% literature) in immunology to help research scholars and librarians at institutions in India where research in the subject takes place. Shukla used objective data and numeracy to arrive at more reliable conclusions and appeared to be mindful of the two following principles :

- a. Users must be provided with guides, and
- b. Libraries must provide adequate access to the records users may wish to consult.

Use and User Studies :

There are two works that can be put under this category. Following the classification of user research provided by Kunz and others (9), while one of these is a use study, the other is a user study.

Patil (10) studied the pattern of literature use by the scientists at the National Chemical Laboratory through a citation analysis using their three years' literary production. Patil obviously used objective data to determine the "unsatisfied needs" and to "arrive at hard figures of (the library's) inadequacies". This was the first real attempt at the department to use numeracy in investigative studies. The results of Patil's work seem to have influenced the formulation of collection development policies which will facilitate greater use of the available money and space (see Singh and others). Several of his suggestions now appear to have been accepted. For example, periodic reviews for alterations in the subscription list, translation facilities, compact storage and conversion to microforms. Cost factor and time lag were never far from Patil's mind. If cost-effectiveness is achieved, according to Urquhart, by providing increased services at the existing cost or the existing services at decreased cost, Patil's concern was certainly that very thing.

Unlike Patil's, Dalvi's (11) was a user study. While Patil examined the use the scientists at NCL made of the literature, Dalvi assessed their information needs using the combined technique of questionnaire and interview. Both were thus concerned with the information behaviour of their own user community, the difference, however, being that Dalvi's data indicated the verbal behaviour rather than the actual behaviour. In other words, the data she collected were, to use Urquhart's categorization, subjective. But that need not minimise the importance of her work. She could nevertheless find out the user preference for particular information channels and the adequacy or otherwise of the information facility in providing access to these channels. Granting all known shortcomings of the questionnaire technique, Dalvi's questionnaire was structured, very meticulously prepared with several weighted alternatives, based upon some of the best available models and finally strengthened by interviews.

Both these studies are complementary to each other and they have several merits.

Resource Sharing :

There are again two studies falling in the area of resource sharing. The guiding principle for both these studies was that every library, instead of being an island (12th Principle), should come forward with available resources to share them with other libraries.

Kapadia (12) examined the two relevant reports on the feasibility of establishing a local library system, which, if established, would guarantee increased service at the existing costs. Identifying the components of resource sharing, on the basis of literary evidence, and with reference to earlier attempts in this regard, Kapadia arrived at a working model for an academic library system for Pune, which would ensure "adequate access to the records users may wish to consult."

Tamberwade (13) was prompted to undertake his study by the existence in this state of four agricultural universities. Since the central grant for libraries is provided on the state basis, this gets divided into four libraries. Unless these four libraries come forward to avoid duplication and enhance access, all of them are likely to remain poor in respect of resources. Tamberwade ascertained the existing duplication of serial literature and also identified the non-availability of several indispensable serial titles and came out with an alternative to improve the present undesirable situation. His work also shows appreciation of Urquhart's fifth principle that libraries must provide adequate access to the records users may wish to consult.

This self-evaluation undertaken by the authors proved self-satisfying.

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Collection Management in University Libraries

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(Abstract)

[The authors discuss the problem of dwindling shelf space often consumed by low use and unused material in University libraries. They plead for accepting newer concepts of 'steady-state library' and 'zero-growth library' in the collection management in University libraries.]

The problem of shortage of space and the role of microforms in space management in libraries were already discussed during the Seminar organised by Sri Venkateswara University Library at Tirupati in August 1984 and the seminar felt that microforms are not a real solution to the space problem in libraries. The present seminar has rightly taken up the problems of growing collections in the university libraries and the alternatives. The ensuing XXX All India Library Conference at Jaipur is also going to discuss collection development. All these indicate how much serious thought is being given to the space problem and the collection management by the Indian libraries. The discussion in the present paper is limited to monograph collection only.

The Fifth Law of Library Science, "Library is a growing organism", implies that as time passes the users, the number of documents in the library, the library staff and the service to the users will increase. It also implies that the above organs of library service will develop according to the changing environment by modifications and replacements.

University libraries in India add, on an average, six to ten thousand volumes per year to their existing collection. Thus, the university libraries which are twenty or more years old have reached a stage to pause for a while and think about their growing collection and problems associated with it, such as difficulty in retrieval of documents, shortage of shelving space, need for extension to existing library buildings, back log

in binding. It is found that the solution to continuous additions to the library collection and shortage of shelving space lies not merely in the provision of additional space, but in pruning the collection by separating obsolete, low used and untouched books. If these types of books are allowed to continue along with the other collection, they will be a hindrance in the use of the library's active collection. Disposing or otherwise organising such books forms an important aspect of collection management.

A university library combines in itself the functions of a research library, an academic library and a public library at large. It is a public library in the sense that it has literature on all branches of knowledge since they are taught in the university and thus the users are general readers. It is an academic library since it has in its collection books that support curriculum course work and learning. It is a research library in the sense that it has collection supporting the research work undertaken by the research students and faculty.

Thus the University library collection should cover research, curriculum and recreative needs of its users. It will have different levels of works needed. It is the responsibility of the library to acquire and organise literature on all these aspects of knowledge. This responsibility speaks of the nature, size and use of collection.

The library should acquire multiple copies of text books for the use of students in support of classroom teaching. For this a university library should maintain a separate text book collection. But what is to be done with these multiple copies when there is a change in their edition and change in the syllabi? Also, as these text books are heavily used, can they be retired or discarded after definite times of issue? As long as there are no definite guidelines to retire these multiple and outdated copies of text books with the changing curriculum needs, they become a burden on the library shelves.

Informative and recreative literature also is subjected to heavy use and gets wornout quickly. They are to be replaced by new copies and the old copies are to be discarded. There should be no objection on the part of the administration to discard such volumes.

Same is not the case with regards to research literature. Research literature cannot be expected to be heavily used as curriculum based text books or popular literature. Hence works acquired for the research purpose have to remain on the shelves for a reasonably long time until they prove themselves not useful at all. Even then, works of research use should be relegated to the far end of the library for storing for any future need. They cannot be discarded as in the case of other two types of literature.

Besides the use, relegation and discarding of the above stated literature, there remains still a percentage of library holdings which are completely unused or untouched over a long period, say 5 or 10 years, since the time of their acquisition. There are also works which were used very rarely. Works of this nature pose problems to the librarian, as they occupy precious shelf space. If the works do not find readers, such items should be got examined by faculty members or competent library staff and decision has to be taken as to what could be discarded and what could be relegated to library store. In the absence of discarding or relegation to store, there will be an unwieldy growth of library collection and will very much hinder the access to useful works and thus cause shortage of shelf space for new additions.

Here it is appropriate to discuss the problems of discarding and relegation. Somehow either the administration or the librarian is not ready to discard the obsolete and wornout collection. Our value system is such that the librarians do not want to part with their collection at any time. The librarians still feel that their large collection is sacrosanct even though part of the collection is no more worthy of use. This attitude should be changed. The administration should also be convinced that discarding wornout and obsolete works is as important as acquiring new books.

Research studies have shown that relegation to store is not as economical as it seems to be in terms of additional storage and procedural costs. Yet relegation to store low used books should be seriously thought of by the university librarians. In India cooperative storage still remains an ideal. Especially

in a small town like Tirupati, cooperative storage is a far cry. Even resource sharing is only a much talked about concept in India, except the practice of inter-library loan in a limited way.

Some philanthropists donate books to the library in multiple copies and sometimes books not worthy of adding to the collection. Libraries can neither dispose them nor add them to the collection.

Another variety of books which pose problems to the librarians is old editions of reference volumes such as encyclopaedias, year books, directories, etc. A library of 20 or more years old will have normally two or three editions of encyclopaedias, for example, Encyclopaedia Britannica, McGraw-Hill Encyclopaedia of Science and Technology, and year books such as Europa Yearbook, Commonwealth Universities Yearbook, Indian Universities Handbook. Works of this type occupy considerable shelf space and it is to be considered whether these volumes should be preserved indefinitely in the library or to be discarded.

Concepts such as 'Zero-growth Library', 'Self-renewal Library', 'Steady-State Library' are not favoured by most of the library patrons abroad, and they are a debatable issue. These concepts are rather untouched in Indian situation as our libraries have not reached such optimum size of collection.

In conclusion, it is proposed for consideration in the Seminar :

- i) to provide guidelines to discard replaceable copies of books after a certain amount of use;
- ii) to impress upon the university authorities that discarding is as important as acquisition to control the unwieldy growth of collection; and
- iii) to accept the idea of 'relegation to store' inside or outside the library of the low used books.

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COLLECTION MANAGEMENT IN A UNIVERSITY LIBRARY :
SOME ASPECTS :

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Weeding out Policy :

Point No. 1 : A number of books, periodicals, unpublished theses, dissertations and other materials are added to university libraries by way of purchase, exchange, gratis every year. Due to the financial assistance by the U.G.C. during the last six Five-Year Plans the collections in the university libraries have been increased considerably.

Point No. 2 : Question arises whether this growth will be unending. The Atkinson Committee (UGC, U.K.) has submitted its report on "Capital provision for university libraries" and has come out with the concept of self-renewing library. The Committee has explained the concept of self-renewal in the following terms¹ :

We therefore tried to develop as an alternative the concept of a "self-renewing" library in which new accessions would be relieved by the withdrawal of obsolete or unconsulted material to other stores. Some excess of new accessions must be accepted because the amount of material published world-wide has been increasing year by year, and a proportion of each year's acquisitions will in any case be needed for permanent retention. In connexion with this concept we have considered the scope for meeting requirements by the use of microform and by inter-library borrowing and local co-operation; we have also compared the relative advantages of providing for the external storage of books on a local, regional or national basis. Finally we have given thought to the manner in which the revised norms at which we have arrived

should be expressed and used in assessing the scale of future building projects and their projects and their priorities. Our aim throughout has been not simply to reduce costs but to contribute as effectively as we could to the development and improvement of library services to meet changing needs.

Point No. 3 : The Atkinson Committee has focussed attention on a very vital problem in university libraries, that of putting limitation on the growth of collections.

The collection can be limited by the following means or measures :

1. Not acquiring materials which are not immediately required by the users.
2. Avoidance of duplication of resources in the libraries of the region, or within a group of libraries belonging to a single parent body.
3. Donating books which are not required by the library to other institutions where these may be more useful.
4. Weeding out the unused / unwanted items from time to time.

Point No. 4 : Problems arising while weeding out

(A) Text Books : It has been experienced that it is necessary to acquire, multiple copies of text-books, recommended books prescribed for various courses of studies.

It has been further observed that during the last two decades, the courses are being restructured frequently and the text-books which had been prescribed earlier are substituted by other titles. Ordinarily, multiple copies of text-books are purchased in most of the academic libraries even of the latest editions.

It is, therefore, necessary to decide whether all the copies of all the editions of the text-books prescribed from time to time be permanently preserved in the library.

Alternatively, it is proposed that the books which have become obsolete and which are no longer prescribed as text-books be weeded out from the library. To achieve this goal, the norms and procedures for weeding out such publications be drafted by all university libraries in India.

The Jayakar Library has taken a move in this direction and has come out with the following principles.

- 1) Surplus copies of old editions of Text Books be weeded out on the condition that at least 2 copies of every edition are preserved as record copies.
- 2) The procedure for disposal of surplus copies may be decided by the Chairman, Library Committee.
- 3) Surplus copies of dissertations submitted to M.D., M.S., M.E., D.P.H. and other courses be weeded out from the Jayakar Library and the procedure for disposal of these surplus copies may be decided by the Chairman, Library Committee. (It is suggested that only one copy of the dissertations submitted to various courses be preserved in the Jayakar Library and the 2nd copy may be donated to the College / Department / Institution concerned).
- 4) Surplus copies of books other than Text Books and recommended books be weeded out from the Jayakar Library.

The following questions arise for deciding the procedure for weeding out such books :

- Q.1. What books should be taken out as obsolete ?
- Q.2. Who is to decide the obsolescence of books ?
(whether opinions of students, or teachers or of library staff members are to be considered).
- Q.3. Procedure to be laid down for disposing of the collection.
- Q.4. Whether such books should be donated to other libraries.

(4)

- Q.5. Who should decide the names of libraries to whom these books are to be donated ?
- Q.6. How many books should be donated to one library ?
- Q.7. Procedure to be followed for removing the entries of such publications from library records.

(B) Unpublished Theses and Dissertations :

(B 1) Theses :

About four copies of theses and dissertations are submitted by the candidates to the university. After the declaration of the result, these copies are sent to the university library for preservation. Now-a-days term-papers are also submitted at the Master's level in the courses of Law, Management etc.

Questions for consideration :

- 1) Whether all copies of theses and dissertations should be preserved permanently in the university library or only one copy be preserved for consultation.
- 2) Whether a second copy should also be preserved in the university library for lending outside the library to meet the requests of scholars from other universities.
- 3) Some theses are later on printed with some modifications and alterations as suggested by the referees. In such cases, whether the original copies of the theses should be preserved. It has been experienced that while printing the theses, some of the portions in the original unpublished versions are omitted such as nature and scope of the study, review of earlier literature, notes, bibliography etc.
- 4) It is necessary to give an associated book note in the catalogue record of the unpublished theses mentioning the bibliographical details of the printed version.

(B 2.) Dissertations :

Dissertations are submitted for M.D., M.S., M.B.A., M.S.W., M.P.M., M.E., M.Lib.Sc. and other

post-graduate courses of the university. Ordinarily, four copies of these dissertations are submitted.

Following questions need consideration :

- Q.1. How many copies of the dissertations should be preserved in a library ?
- Q.2. What is the life of a dissertation, e.g. whether the dissertations submitted 25 years ago are useful at present ?

The following proposals have been made to the Poona University authorities in this regard :

- 1) As soon as the result of a candidate is declared one copy of the thesis / dissertation be returned to the candidate.
- 2) One copy of each of the theses / dissertations be sent to the university library for preservation.
- 3) The third copy should be sent to the University Department / Institutions where the research was carried out.
- 4) Whether the fourth copy, if available, will be preserved in the University library or donated to National Institutions like Social Science Documentation Centre or INSDOC where such theses / dissertations are preserved as a national depositary collection. The Central Institute of Indian Languages at Mysore has undertaken a project of micro-filming of theses in Linguistics. Similarly the SSDC has also undertaken a project of preservation of one copy each of the theses in the field of Social Sciences in India.

(C) Books beyond repair :

It is noticed that after constant use or due to deterioration of the condition of the paper (reduction of humidity in paper etc.), some of the books need special binding.

- 1) One way is to get such books bound with special binding such as lamination which is too expensive. Alternatively, they may be converted to microform.

(6)

- 2) The question arises whether such books should be preserved permanently in the library. If yes, what should be the modus operandi of preservation of such books.
- 3) It is proposed that if a reprint of such a publication is published, the reprint copy should be purchased by the Library and the old edition / copy may be weeded out.

(D) Question Papers :

The question papers are required by the students for their studies as well as for preparation for the examinations. Such question papers are acquired and preserved in libraries.

The following questions need consideration :

- Q.1. Whether all these question papers be preserved permanently in the library or in the archives of the university, and how many copies ?
- Q.2. It is proposed that copies of the question papers be preserved only for a period of 5/10 years and be weeded out after the expiry of this period. This proposal has been accepted by the University of Poona.
- Q.3. Question banks have been designed for various subjects. In these circumstances, it is necessary to reconsider the policy of preserving question papers.

(E) Old Editions of Books :

Publications in the regional languages are in great demand by the students / scholars. (For example, Marathi books). The paper used for printing the quality of printing and the quality of binding of these books are poor. Due to heavy handling, some of the pages are lost. These are rebound very often. Some of these are reprinted or later editions are brought out by the publishers.

The following problems may be considered :

- Q.1. Whether the old editions be weeded out from the library ?
- Q.2. What should be the mode of preserving the earlier editions ?

-oOo-

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INAGURAL ADDRESS

By Dr. V.A. Kamath
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Mr. Vice-Chancellor, Dr. Mahajan, Mr. Riswadkar, participants
in the Seminar and Ladies & Gentlemen,

At the very outset, I would like to offer my sincerest thanks to the Vice-Chancellor for his kind invitation to me to be the Chief Guest at this U.G.C. sponsored 'National Seminar on New Trends in Management of Libraries'. I am also thankful to Shri M.R. Riswadkar, the Director of the Seminar, for inviting me to deliver a talk on 'Technology and Efficiency' in respect of Library Management which is one of the topics of the Seminar.

I would like to begin my address on a brief personal note. Three decades back (December 1, 1954 to be exact) when I left the glamorous field of science and entered the field of library and information science, which hardly attracted scientists at that time, the main consideration that prompted me to do so, was an intense desire to give my very best to promote library and information culture and activities in this country which were at a very low ebb. There was little realisation, at that time, even at the highest Governmental level, that information is a vital resource essential for national development in every field. No doubt, the Scientific Policy Resolution adopted by our Parliament on March 4, 1958 does set out some aims such as "Encouraging individual initiative for the acquisition and dissemination of knowledge as well as discovery of new knowledge". Unfortunately, even today we do not have a National Library and Information Policy in spite of the efforts of individuals like me, some institutions, organisations and professional associations to prevail upon the Government of India to set forth such a policy which would certainly catalise activities in this crucial field and accelerate, in particular, scientific and technological advances in the country. There were, of course, some bright patches in the otherwise dismal library and information scenario. The late Professor S.R. Ranganathan, the colossus among the librarians this country

has produced, with his crusading zeal, gave considerable impetus to library movement in this country and his many original contributions and innovative ideas put the country on the international plane in the field. The establishment of the Indian National Scientific Documentation Centre (INSDOC) by CSIR at Delhi in 1952 with UNESCO's technical collaboration, the Documentation Research and Training Centre (DRTC) at Bangalore in 1962 as a constituent unit of the Indian Statistical Institute, Calcutta and the creation of the Documentation Sectional Committee, EC2, in 1947 in the Indian Standards Institution, Delhi, were mainly due to his foresight and efforts. It is not possible for me to catalogue in my short address all his contributions and also those of many less known personalities in the field.

What is the present Indian scenario? This country has now over 60,000 libraries of all description, according to "India 1984", a publication of the Ministry of Information and Broadcasting, Government of India. This is certainly not an impressive figure considering the size, population and the number of cities, towns and villages we have, which number over 5,00,000. If we consider their total holdings, budgets, services, professional staff and management practices, the picture is hardly heartening. At the apex of our libraries is the National Library, Calcutta, founded in 1903, which has a holding of over 2 million books, manuscripts and other kinds of publications. This library, however, suffers badly in comparison with the national libraries of the advanced countries such as the U.S.A., the U.S.S.R., the U.K., France, F.R.G., Japan and so on not only in respect of the size of the holdings, but also the range of the services, and management practices. For a comparison, the Library of Congress, Washington, U.S.A., has over 70 million books, manuscripts, reports, etc., and is the largest library in the world. The State Lenin Library, Moscow, U.S.S.R., is a close second. We have also the National Science Library run by INSDOC, now housed in a new, magnificent building, which functions mainly as a reference library and document supply centre with a holding of over 4,500 current scientific and technical journals, but it is a poor cousin of the Lending Division of the British Library which has over 55,000 current journals and handles

annually over 3 million requests for copies of documents from all over the world, including the United States, as against some 20,000 requests received by INSDOC annually.

There are, no doubt, some bright spots in the National Library & Information scenario. We have a number of large, well-managed & service-oriented special libraries in fields such as nuclear science and technology, space science and technology, agriculture, medical science, standards, social sciences, besides some excellent university libraries, e.g. Library of Poona University.

An encouraging development is the emergence of national information systems e.g. National Information System for Science and Technology (NISSAT) started in May 1977 by The Department of Science and Technology; National Informatics Centre (NIC) of the Department of Electronics started soon after NISSAT; Environmental Information System (ENVIS) started in 1982 by the Department of Environment. Some more discipline and mission-oriented information networks are likely to come into existence in due course.

Another welcome activity is the resource-sharing among libraries, initiated about 8 years ago by four leading scientific libraries in Bombay in which presently some 18 libraries are participating. This activity is now slowly catching up in some big cities, e.g. Delhi, Lucknow, Hyderabad and Bangalore. Incidentally, it is rather paradoxical that resource-sharing among libraries is most extensive and popular in the U.S.A. which is the most affluent and technologically most advanced country in the world and whose libraries are among the largest and richest in resources.

With the unanimous acceptance of UNISIST philosophy and programme at the Inter-governmental Conference held in Paris in 1971 jointly by UNESCO and ICSU and its formal launching in 1973, some 36 U.N. Agencies have set up over 100 international information systems, with the active participation of Member States, which are either already in operation or at various stages of development. In keeping with its national policy, India is actively participating in or associating with these systems, e.g. India is participating actively in the International Nuclear Information System (INIS) launched by the

International Atomic Energy Agency in May 1971 and also the International Information System in Agricultural Sciences and Technology (AGRIS) launched in January 1975 by Food and Agriculture Organisation (FAO). India has been actively associated with systems such as Development Sciences Information System (DEVSIS) and Science Policy Information Exchange System (SPINES) which are ready for launching, and some other systems also.

In the field of publishing, India ranks as the seventh biggest producer of books in the world and the third biggest producer of books in English language. According to a survey recently conducted by the Institute for Scientific Information of the U.S.A., its founder-president Dr. E. Garfield has stated that India is a 'super-power' among developing countries as regards publication of scientific papers is concerned. This should, however, be viewed against the background of the fact that India can boast of having the third largest scientific and technical man-power in the world.

Having briefly surveyed the Library and Information Science scenario in India, let us have a cursory look at the scenario in the advanced countries such as the U.S.A., the U.K., F.R.G., France, Japan and so on where astounding advances in the fields of computer, telecommunication, micrographics, reprographics, laser, video-disk, optical-disk, fibre-optics etc., are being increasingly applied in library operations and information handling, which has heralded the so called 'Information Age', radically changing the very concept and also complexion of libraries and information centres and as a consequence introduced new trends in their management. I will be dealing with this very interesting topic when I present my paper entitled 'New Trends in Management of Libraries : Technology and Efficiency in Management'. Before I conclude my address, I would like to survey very briefly the historical evolution of the library, and information technology.

The word library is derived from the Latin word 'liber' which means book and refers, in a classical sense, to a collection of books gathered for the purpose of reading, study or reference. In the earliest times, there was no distinction

between a record room or archive, and a library, and in this sense, libraries can be said to have existed almost as long as records have been kept. A temple in the Babylonian town of Nippur dating from the first half of the 3rd millennium B.C. was found to have a number of rooms filled with clay tablets, suggesting a well-stocked archive or library. Similar collections of Assyrian clay tablets of the 2nd millennium B.C. were found at Tell-el-Amara in Egypt. The Alexandrian library planned and set up by Ptolemy I round about 280 B.C. had the largest collection of papyrus and vellum scrolls said to have numbered 500,000. In Asia Minor, a library rivalling that of Alexandria was set up at Pergamum in the 2nd century B.C. Most of the large Greek temples seem to have possessed libraries even in quite early times. There were many libraries in classical Rome also. In China, tablets of bamboo were used upto about 200 B.C. and then scrolls made from silk waste. India too had many libraries in ancient times, most famous of them being those at Taxila and Nalanda which were most renowned seats of learning of their times. In North India, birch bark was a popular material for manuscripts and in the South, palm leaves, held together by threads.

From what I have said, the most extensively used media for recording knowledge for preservation in the earliest times were clay tablets, papyrus, vellum or parchment prepared from leather, bamboo, palm leaf and birch bark. These media were used for recording knowledge obviously after the invention of languages and their scripts. It appears that writing was invented first by the Sumerians in the 4th millennium B.C. According to some authorities, Chinese script is perhaps the world's oldest. In any case, before the invention of writing, communication was obviously through word of mouth.

As regards the organisation of the holdings of these ancient libraries and their management practices, no reliable information is available. It is, however, obvious that accessibility to these libraries was limited and reproduction of the library material was time-consuming.

Some of the epoch-making landmarks which radically changed the scenario of storing, reproducing, retrieving and

disseminating information are : Invention of paper (from pulp) in China, most probably in 105 A.D. and subsequently ink also. Paper became the most suitable and popular information carrier medium and it still continues this dominant role, although many other media far superior to it in several respects such as magnetic tape, disk drums; microforms; optical-disk; videoc-disk, etc., will eventually replace paper as information carrier media.

Invention of printing press (movable type) in 1438 A.D. by the German, Johannes Gutenberg, was a great landmark. It is believed that printing devices of some kind or other were in use in China, Japan and India even before this invention (e.g. Block Printing). However, the real impact of printing, which greatly facilitated and accelerated the dissemination of information in the form of books, journals and other types of publications was felt only after Gutenberg's invention. Since this historical break-through, spectacular advances have been made in printing technology.

Speedy and reliable communication is a very vital factor in the information transfer process. The inventions of telegraph in 1837 by the American, S.F.B. Morse, telephone in 1876 by the Scotman, Alexander Graham Bell, radio in 1895 by the Italian, G. Mareoni, television in 1925 by the Scotman, J.L. Baird and laser in 1960 by the American, Theodore Maiman radically changed the communication process.

Fast, cheap and faithful reproduction of information is another important operation in the information transfer process. Significant landmarks in this field are : Invention of photography in 1839, based on the action of light on silver halides, more or less at the same time, by the Frenchman, L.G.M. Daguerre and Englishman, W.H.F. Talbot and soon after that, micrography by the Englishman, J.B. Dancer and Frenchman, Rene Dagan; xerography by the American, Chester Carlson in 1938 based on electrostatic copying on ordinary plain paper. Today over 90% of document reproduction in the world is done by Xerox machines popularly called Plain Paper Copiers (PPCs).

Compact and inexpensive storage of information and its speedy retrieval is an important operation in the information transfer process. Advent of the computer is a revolutionary

landmark in this field. Starting with the first fully electronic computer called ENIAC (Electronic Numerical Integrator & Calculator) built by the Pennsylvania University, U.S.A., in 1946 to the present day fourth generation super-computer & pocket-size personal computer is indeed a quantum jump in the field and the computer, more than any other machine, invented so far, is changing human society and its institutions in a way undreamt of before. Now the fifth generation computer endowed with artificial intelligence, is underway, particularly in the U.S.A. and Japan.

The launching of the first 'Sputnik' on October 4, 1957 by the Soviet Union not only opened a new chapter in space exploration but also provided a powerful tool in the development of communication technology. Thanks to communication satellites, almost instantaneous transmission of information to any distance has become possible. Other technologies such as fibre-optics, COM, Video-text, word-processing, CAR, CAD, etc. are radically changing library and information scenario. No wonder that in the advanced countries such as the U.S.A., the emergence of the so called 'paperless libraries', 'paperless offices' etc. will soon be a reality and this process has already begun. In such a situation, there will be unavoidable radical changes in library operations and management practices. India will sooner or later be adopting information technology in various ways in its libraries and information centres and also in other fields. Some libraries and information centres have already set in motion this process. In this context, this Seminar assumes great relevance. I am sure that the new trends in library management resulting from the adoption of information technology will be discussed in great detail and all delegates will actively participate in the deliberations. I wish the Seminar all success.

Thank you very much for your kind attention.

Key-note address delivered by Dr. V.A. Kamath, retired Head of Library & Information Services, Bhabha Atomic Research Centre, Bombay & presently, Hon. Adviser & Chairman, Library Committee, Nehru Centre, Bombay, at the 'National Seminar on New Trends in Management of Libraries' on December 19, 1984, Poona University.

UNIVERSITY OF POONA

DEPARTMENT OF LIBRARY AND INFORMATION SCIENCE
SEMINAR ON NEW TRENDS IN MANAGEMENT OF LIBRARIES

19-22 Dec. 1984

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MANAGEMENT OF PERIODICAL PUBLICATIONS AT THE NCL - A CASE STUDY

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(ABSTRACT)

The paper explains periodicals management in all its aspects such as selection, procurement and storage and maintenance. It also discusses the various microforms now available, their advantages and disadvantages and the policy evolved by NCL in respect of serials control.

1. INTRODUCTION : The shrinking library budgets, rising costs of publications and the exponential growth of literature, coupled with changing needs of users, have made all managers of libraries and information centres to rethink about the policies adopted so far, to manage an effective collection.

The effective collection here denotes a collection which satisfies the user needs to the maximum and, at the same time, the expenditure is maintained to the lowest, possibly within the available financial resources. This criterion has to be satisfied, particularly by special libraries catering to the needs of research and development staff of their organisations. These libraries have to provide access to the nascent thoughts that are generally disseminated through periodical publications, and hence are required to allocate a major share of their financial resources for the procurement of periodicals. Here the term periodical is used to cover serials, journals, transactions, proceedings, memoirs etc. issued at regular intervals on a continuing basis.

Periodicals' prices have shown steep rise during the last decade. The average price of periodicals published in the United States by both society and commercial publishers, which was under \$ 50 in 1972, has risen to \$ 175 in 1982. The average price of chemistry and physics journals has quadrupled during the same period.⁽¹⁾ From the Indian point of view, Kapur and others⁽²⁾ have studied the price fluctuating trends in Chemistry, Economics and English literature periodicals for the period 1971-1980. Their analysis shows that the average price of a chemistry periodical which was Rs.460 in 1971 rose to Rs.2272 in 1981. Though there are many factors that contribute to the rise in prices of periodicals, the net effect is that the subscribers have to pay more. The libraries are finding it difficult to adjust and provide adequate funds.

Information explosion has also its impact on the acquisition policy of periodicals in special libraries. Periodicals have been proliferating at an alarming rate. The number of scientific and technical periodicals in existence has been variously estimated between 30,000 and 1,00,000. On the basis of the listings in successive editions of the World List of Scientific Periodicals Brown⁽³⁾ estimated that by 1979 the number of scientific and technical periodicals would reach 1,00,000. The proliferation of primary periodicals may be ascribed to various causes-

- (1) Increase in research and development activity.
- (2) Increase in number of scientists and technologists active in research and publication.

- (3) Importance attached to publications as a measure of a scientist's stature by his peers and employers.
- (4) Increasing specialisation in science and technology.
- (5) Development of high-speed, low-cost printing technology.

The increase in the number of periodicals is accompanied by an increase in the size of the periodical itself.

The number of articles published has also registered a similar growth over the years. The rapid growth of literature in chemistry is illustrated by the publication of the 10 millionth abstract in Chemical Abstracts (CA) in 1984.⁽⁴⁾ It took some 65 years (upto 1971) for CA to publish the first 5 million abstracts. The second 5 million appeared in only 13 years. The special libraries are faced with the problem of selecting the relevant periodicals from their ever-increasing number to provide adequate literature coverage.

The boundaries of scientific disciplines are diffusing and interdisciplinary approach to solve specific problems is becoming more prominent. This mission oriented approach in various organisations demands access to literature in various allied disciplines. Special libraries cannot adjust to this new situation without modifying the traditional practices. The managers of special libraries are compelled to rethink about the present practices and adopt some new practices in order to provide effective and adequate service to their clientele.

2. MANAGEMENT : Management of periodicals may be taken to mean the various measures to be taken at every stage of perio-

dicals collection development, so that an effective collection is developed and put to proper use. The aim would be to utilise the available financial resources to provide maximum literature coverage in the concerned field, and without any undue inconvenience to the users. We discuss here all the stages of developing periodicals collection and its maintenance. Broadly, these stages could be identified as - selection, procurement, storage and maintenance.

2.1 Selection : The selection of periodicals is normally influenced by the following factors.

1. Financial resources
2. Scope of parent organisations
3. Users' requirements
4. Resource sharing

2.11 Financial Resources : One of the serious problems faced by libraries is the ever-increasing cost of periodicals. Finance plays an important role in the development of collection. Most of the special libraries draw their funds from their parent organisations, which are mostly non-profit making bodies. They are always under financial constraints. They find it difficult to meet the demands of their libraries.

2.12 Scope : The scope of special libraries naturally coincides with the scope of parent organisations themselves. They try to meet the information needs of R & D workers to the maximum extent. The managers of these libraries are required to keep in constant touch with their users and to take note of changes of their interests. These changes are due to many factors such

as - 1) change in orientation of organisation; 2) change in the government policy; 3) change in social outlook of the public in general and 4) advancement of technology etc. Intake of periodicals is to be revised continuously to cope with the above changes.

2.13 Users' Requirements : It is observed that researchers have many faceted literature demands. Broadly, these could be grouped as - 1) to satisfy their pinpointed and immediate needs, 2) to keep them abreast of developments in their fields, 3) to know what has been done in their field over a period of time and 4) to know what is being done in allied fields of their interests. In order to satisfy these types of needs, publishers produce different types of periodicals. These are: i) primary periodicals, ii) secondary periodicals and iii) reviewing periodicals. Proper attention has to be paid while selecting periodicals from the different types so that all types of demands are satisfied adequately.

2.14 Resource Sharing : By sharing the literature resources mutually, libraries of a particular group/region can meet the needs of their clientele with reduced financial burden. Particularly, demands of peripheral periodicals could be met with the help of resource sharing amongst the libraries situated in the same city or region. This trend is visible amongst the special libraries in India. Special mention can be made of efforts of BOSLA (Bombay Science Libraries Association) in this respect.

In the present days of limited budgets and costly materials 'Resource Sharing' would be ideal to practise amongst

the special libraries. Any problems encountered in the process may be resolved satisfactorily in the larger interest of easy access to information.

2.2 Procurement : Procurement of periodicals is a continuous process, which consists of ordering and regular receipts of issues. Normally the following methods of procurement are in vogue in libraries.

- 1) Directly from publishers.
- 2) Through agents.
- 3) Through a centralised agency for a group of libraries.

The advantages and disadvantages of these methods are listed below.

2.21 Directly from Publishers : In this method periodicals are procured directly from the publishers or their sole distributors. There is direct dialogue between libraries and publishers, and no intermediate agency is involved. The advantages and disadvantages are:

Advantages

Disadvantages

- | | |
|--|--|
| 1. Surety of timely renewal. | 1. To contact individual publishers involves more expenses in the form of manpower and postal charges etc. |
| 2. Security of money paid in advance. | 2. To pay in foreign currencies create more difficulties. |
| 3. Libraries are kept informed about changes taking place in the publication of periodicals on time. | 3. No discount is allowed by publisher to individual subscribers. |
| 4. Problems of missing issues are solved to a greater extent through direct dialogue | |
| 5. No handling charges which are required if subscribed through agency. | |

2.22 Through Agents : In this method periodicals are procured through agents who work on a commission basis. The advantages and disadvantages are -

Advantages

1. Volume of correspondence is reduced.
2. Some percentage of agency discount is passed on to libraries, if intake of periodicals is more.
3. Handling charges on no-discount periodicals are sometimes waived; if intake of periodicals is more.
4. Sometimes agents stand guarantee for non-supply of issues.

Disadvantages

1. Security of advance payment is in jeopardy.
2. Making payments to agents in foreign countries is still more hazardous.
3. Contact with publishers is lost and libraries are in dark for a long time in respect of changes in various aspects of periodicals.
4. It is more difficult and time consuming in contacting foreign agents.

2.23 Centralised Procurement : There are instances when a central agency undertakes the responsibility of ordering and making payments to publishers on behalf of the participating libraries; e.g. INSDOC, New Delhi, acts as a central agency for the procurement of periodicals for laboratories working under CSIR.

All the advantages and disadvantages of subscribing periodicals through agents are obtainable in the case of centralised procurement except that in centralised procurement advance payment is secured and the commission available to central agency can be shared by the participating libraries. But as the volume of work increases, management problems start playing their role, at times to the disadvantage of the system.

Considering the advantages and disadvantages of these

methods of periodicals procurement every library may select the one which is the most suitable in its own environment. They may adopt more than one method if situation demands.

2.24 RECORDS : Records for periodicals ordering and receipt tend to be more detailed and complicated than those for books. Each record should contain the title, periodicity, sponsor, publisher, subscription agency/supplier, subscription charges, holding details, order number, special instructions, space for noting each separate issue indicating its volume, part number, year and date of receipt. The system is also required to ensure a timely despatch of reminders to suppliers for non-receipt of issues.

Claims for the issues not received must be made promptly, as these tend to go out of print rapidly and it becomes very difficult to get a replacement copy from publishers if not claimed on time. The maintenance of proper records makes the tasks of cataloguing and preparation of holdings list easier.

There are various systems in use for keeping such records e.g. bound registers, loose leaf registers, three-card system, kardex and automatic systems. These systems are described below in brief.

2.241 Bound Registers : Small libraries, subscribing to a limited number of periodicals (around 50), may use bound registers for keeping the periodicals record. Generally a page is earmarked for each title. The major consideration in using register could be security of the records as all leaves are stitched together. But it has its own limitations. It does not

allow interpolation, which disturbs the alphabetical sequence of records over a span of time. This hinders the easy access to a required periodical. Registers are not suitable when the intake of periodicals is more.

2.242 Loose Leaf Registers : In this system periodical records are maintained on loose leaves of various sizes. The common size in vogue is 4" x 6". These leaves are kept in special binders, boxes, cabinets etc. The advantages and disadvantages of this system are as under :

Advantages

1. Flexible.
2. Interpolation possible.
3. Easy access to individual titles.

Disadvantages

1. Not secure.
2. Does not aid to indicate gaps in supply.
3. More than one leaf are needed for titles having more frequency, such as weeklies, fortnightlies. This increases the maintenance cost.

2.243 Three Cards System : This system is devised by Dr. S.E. Ranganathan in 1930. In this system three cards of 7.5 x 12.5 cms size are used for each title. These cards are known as register card, check card and classified index card.

Register Card - This card contains particulars about periodical, as well as record of receipt of issues. These are arranged alphabetically and stored in trays or cabinets.

Check Card - These cards are grouped according to expected date of receipt of next issue and are arranged alphabetically within each group.

Classified Index Card - These cards are arranged according to subject/class number allotted to periodicals and help in finding out how many periodicals are available on a particular subject in the library. The advantages and disadvantages of this system are:

Advantages

1. Interpolation is possible.
2. Flexible.
3. Cheapest to install.
4. No special equipment required.
5. Aids in regular reminding of non-supply of issues.
6. Subject approach is possible.

Disadvantages

1. Sequence may get disturbed easily.
2. Size of card is small. This necessitates the frequent change of cards, particularly for weekly and fortnightly periodicals.
3. Since subject approach is almost nil, the effort needed to maintain the subject cards is not justifiable in many cases.

2.244 Kardex : Kardex is a cabinet containing varying sizes of trays. The number of trays also varies from model to model. A normal size kardex contains 16 trays. Each tray accommodates about 50-60 pockets to hold cards on both sides. Pockets are so arranged that the bottom most line of each card is visible. This line contains titles of periodicals. Thus all the titles of a tray are visible at a glance. There are two cards for each title placed face to face. The top card is used for recording title, publisher's address, source of supply, subscription cost details, back volumes in stock etc. The bottom card is used for recording receipt of issues. Coloured indicators are inserted near the title

to indicate gaps in supply. This helps in contacting the publishers to procure gaps. Following are some of the advantages and disadvantages of this system.

Advantages

1. About 50 titles are visible at a glance. This minimises the time required in searching a desired title.
2. Forwarding of indicators is faster in Kardex.
3. Registration work is faster.
4. Cards inserted in Kardex are more secured.
5. Kardex is more compact and elegant in appearance.

Disadvantages

1. Interpolation is not so easy as in card systems.
2. Indicators are not very precise for weekly and fortnightly periodicals.
3. Kardex does not satisfy the classified approach.
4. It is costlier equipment and maintenance of Kardex is expensive. It needs careful handling and pockets get jammed quite often.

2.245 Automatic Systems : With the advent of computers the maintenance of periodicals records has been more efficient. Punched cards, tapes, discs are used to store the periodicals data. These data are manipulated with the help of computers. Computer produces reminders for non-supply, periodicals holding, current list etc. within no time.

Advantages

1. Speedy and accurate.
2. Consistency and uniformity.
3. Reminders for non-receipt and overdue issues can be prepared automatically.

Disadvantages

1. Computers are costly equipment.
2. Normally computers are used by many departments/institutes, hence access to the same is limited.
3. Since the records are not visible, it is not possible to get trivial details quickly.

4. Various kinds of lists can be generated easily, e.g. list of subscribed, gratis and exchange titles, agent-wise, countrywise periodicals, languagewise, subject-wise periodicals etc.
4. Not advantageous for small libraries.
5. Catalogue of periodicals can be printed easily.

Depending upon the number of periodicals and size of library, one may select one or the other recording system.

3. STORAGE AND MAINTENANCE

3.1 Hard Copies : The major aim in the storage of periodicals is to ensure easy access. Other aims are that it should be protected as far as possible from wear and tear, that it should take up as little space as possible and that unwanted items should be extracted periodically. Storage of back files needs more space as well as financial involvement to get them bound and providing proper storage furniture. The huge volume of back files adds maintenance costs in replacing and keeping the stack neat and tidy.

Many libraries store the periodicals in alphabetical sequence, some group them under major subject categories and some group according to the types of periodicals such as primary periodicals, indexing and abstracting periodicals, current awareness periodicals and back files. In libraries where more than one major subject are covered it is advisable to break them under major subject categories.

Libraries either retain all hard copies of periodicals in bound form or retain them for a limited period. Some libraries

may be in a position to replace hard copies by microforms. The advantages and disadvantages of these alternatives are described below.

3.11 Retain all hard-copy periodicals at hand

Advantages

1. Maximum user convenience, all journals to hand in bound form.
2. No special equipment required, e.g. readers, viewers or printers.
3. No increase in cost involved.

Disadvantages

1. Ever-increasing stack space needed.
2. Periodicals disappear from library for binding.
3. Cost and difficulty in replacing a lost volume.
4. Considerable floor weight loading.
5. Appreciable binding and rebinding costs.
6. Periodic rearrangement of stack necessary.

3.12 Retain hard-copy periodicals for a limited period

Depending on the needs of individual libraries, back runs of periodicals are retained for a limited period and then disposed of. This retention period in some libraries is 5-10 years.

Advantages

1. Stack space is contained.
2. No special equipment required.
3. No increase in cost involved.

Disadvantages

1. For older references readers are inconvenienced.
2. Difficult to maintain the loose issues.
3. Cost and difficulty in replacing lost volumes.
4. Considerable floor weight loading.
5. Reliance on external sources increased.
6. Costly resources thrown away.

3.13 Replace hard-copy periodicals by microform after sometime

Advantages

1. A small and very slowly increasing space required.
2. All issues are available at all times.
3. No binding costs.
4. Lower floor weight loading.
5. Possibility of automation of microform holdings.

Disadvantages

1. Increased subscription cost for microform version of periodicals.
2. Special equipment required (readers, reader-printers)
3. Possible readers' reaction.

3.2 Microform : To cope with the space problem and high cost of maintenance, microform versions of periodicals are now being preferred in many libraries. (7) Microform is a generic term used for all types of information carriers using microfilm or other similar optical media for high density recording and storage of optically encoded information in the shape of microimages of printed documents. In short the media on which microimage is fixed.

There are two types of microforms in vogue to store periodical literature viz. i) Microfilm and ii) Microfiche.

3.21 Microfilm : These films are made of plastics, which are coated with halide solution. These are packed in roll and strip forms. Standard length of a roll is 30 meters or 100 feet. The width of the film is either 16 mm or 35 mm. One roll can take 800 or 2000 frames. In the case of 16 mm the ratio of reduction is 20 times while it is about 12 to 18 times for 35 mm film. The 16 mm film contains 2000 frames, while 35 mm film contains 800 frames. The roll films can be packaged on spools. Microfilms

are convenient to record and read long runs of materials. The two major defects in using microfilms are findability and filability i.e. users find it difficult to trace the desired item in microfilm and the staff experience difficulty in replacing them back. The microfilms are cheaper also as compared to microfiches.

3.22 Microfiche : Microfiche is a flat sheet of transparent film containing rows of optically reduced images. Each fiche has title strip at the top for recording bibliographical details like title, volume, year, page numbers etc. Title strip is readable with naked eyes. This facilitates identification, filing and retrieval of specific fiche from the collection. There are two types of microfiches, viz. 1) negative with clear text on dark background and 2) positive with dark text on clear background. Most fiches come in international A6 size of 105 x 148 mm (approx. 4" x 6"). Total number of images recorded on a fiche varies according to reduction ratio. Generally reduction ratios of 20X and 24X are used to accommodate 60 and 98 images (frames) respectively on A6 microfiche.

Recording on microfiche is also done with the help of computers. The COM (Computer Output Microform) catalogue of the Library of Congress is well known in this category. Library catalogues, periodicals and monographs with low circulation, out of print books, synopsis periodicals, theses, bibliographies etc. are now available in this form. Microfiches are kept in separate envelopes. Handling the fiche in envelopes and storing them in folders provide sufficient protection against scratching, dust, dirt etc. Shelving of these folders is also convenient.

Both types of microforms, i.e. microfilm and microfiche, have got their own advantages and disadvantages. These are illustrated below.

<u>Microfilm</u>	<u>Microfiche</u>
1. Sequential access.	1. Random access.
2. Microfilm reader creates noise.	2. Microfiche reader is noiseless.
3. Same volume cannot be used by more than one person at a time.	3. Same volume can be used by more than one person at a time.
4. Microfilms are less prone to be lost.	4. Microfiche are more prone to be lost.
5. Cheaper in cost.	5. More costly.

3.23 EQUIPMENT

3.231 Microform Readers : A microform reader provides the facility to project the microform images on to a screen, where images can be read. Microform readers are manufactured and marketed in different varieties to suit the different requirements. The increased production of reading materials in microform by national and international agencies has created a great demand for microform readers. Many companies in foreign countries and a few in India are producing various types of microform readers. The price of these readers varies from Rs 5,000 to Rs 25,000.

2.232 Microform Reader-Printers : At times, users need hard copies to use at later dates, outside the library premises. To meet such demands, reader-cum-printers have been manufactured and marketed by many companies in foreign countries. Of course, we do not have any manufacturer of these types of equipment in

our country. These equipment project images on screen, which can be consulted; and it is possible to prepare hard copies whenever needed. These prints can be broadly grouped under two categories, the first one gives hard copies on coated paper and the second prints them on plain paper. Hard copies produced on plain paper are cheaper than those printed on coated paper. But the quality of reproduction on coated paper is definitely better than that on plain paper (particularly when high resolution is required, as in the case of engineering drawings). Different companies have their different models and specifications. The average cost of these equipment varies from Rs 50,000 to Rs 2,00,000.

3.3 Availability of Microforms : Many publishers are changing their views of traditional publishing, due to inflation in costs of paper, printing, distribution etc. They also find better demands for microforms from libraries as these are cheaper and occupy less space.

A study made by Gowtham⁽⁵⁾ revealed that around 30% of periodicals listed in Ulrich's International Periodicals Directory, 18th edition, 1979, were available in microforms in 1979. Many parties have started producing microform versions. Some of these distribute microforms simultaneously and some after completion of a volume or year. Generally microfilm versions are produced after a year, whereas microfiche versions are produced simultaneously with the printed versions. Some of the microform producers are- 1) University Microfilms Inc., USA, 2) Pergamon Press, UK, 3) Readex Microprint Corporation, USA,

4) Educational Resources Information Center, USA, 5) Microtext Library Services, USA, 6) Princeton Microfilm Corporation, USA, 7) World Microfilm Publications Ltd., UK, 8) Oxford Microform Publications Ltd., UK etc.

3.4 Advantages and Disadvantages of Microforms : The following are advantages and disadvantages of microforms as compared to hard copies.

Advantages

Disadvantages

- | | |
|---|--|
| 1. Economical and speedy distribution: microforms can be distributed by airmail, as these are light in weight, and involve less charges. | 1. Violation of copy-right act while producing hard copies. |
| 2. Economical in storing, stacking and maintaining: microforms help in saving about 80-85% of stack area as compared to hard copies. | 2. Requires special equipment like readers, reader-printers, to use them. |
| 3. Speedy retrieval: can be retrieved quickly either mechanically or manually. | 3. Requires larger investment in purchasing aids and its maintenance. |
| 4. Can be duplicated on demand: which saves printing cost on paper and wastage is minimised | 4. Air conditioning is preferable to safeguard the microforms against heat and humidity, which involves additional cost. |
| 5. Economical in production | 5. Equipment is a barrier in communication. |
| 6. Saves binding and rebinding expenditure. | 6. Lack of browsing facility. |
| 7. Minimises mutilation and losses. | 7. Home reading is not possible. |
| 8. Economical in updating backfiles: backfiles of periodicals are procured in microforms at lesser cost, which saves finance as well as space for storing the same. | 8. Strain on eyesight, if used for longer duration and possible user reactions. |

9. Facilitates inter-library loan: involves lesser postal charges, as these are light in weight.
10. Compactness and portability are achieved.
11. Longer life as compared to paper.

3.5 Criteria for Selecting Microforms : Since major form of dissemination of information has been paper in printed form for a very long time, it cannot be totally replaced by any other form easily. The microform version is one of the alternatives, which could replace it to a greater extent. But a judicious selection has to be made by libraries, so that the collection is effective and useful. The major criteria for selecting microforms could be as under:

1. Availability of hard copy : many documents are now being produced only in microform. Libraries have no option to choose in such cases.
2. Cost of microform as compared to hard copy.
3. Microformat i.e. film or fiche.
4. Size of film and its quality.
5. Its performance for archival purposes.
6. Reduction ratios of microforms vis-a-vis available reading aids.
7. Availability of funds to procure reading aids.
8. Type of materials to be procured in microform.

3.6 Users' Reactions to Microforms : Many libraries and information centres welcomed the change of form from hard copy to microform because of financial savings and ease in handling. But some studies on users' reactions have revealed that microforms are not welcomed by users whole-heartedly. Many have tried

to find out the reasons of such reactions. Some of them are given below:

1. Strain on eyes and other discomforts in viewing films/ fiches through reading aids for a long period. This is mostly due to poor qualities of filming, poor illumination, inferior qualities of equipment and lack of maintenance thereof.
2. Home reading is not possible, as microforms need reading aids which users do not possess.
3. Lack of browsing and cross referencing facility.
4. Freedom of readers is restricted; as microforms are normally kept under closed sequence.

With the present trend in development of technology and communication systems, it is hoped that, newer forms of dissemination of information, such as microforms will find greater use in libraries, particularly, in special libraries. This change has already been recognised in the Western world and developing countries like India cannot ignore this trend. Time is not very far off when special libraries in India will be compelled to adopt newer forms in order to contain the all round proliferation and rise in costs.

4. PERIODICALS MANAGEMENT AT THE NCL LIBRARY

After considering the present trends in periodicals management, the authors now describe the various methods adopted at the NCL library to manage an effective periodicals collection. From time to time, the NCL library has tried to modify its practices so as to suit the ever-changing needs. To begin with, it would be advisable to know about the National Chemical Laboratory)

(NCL) in general and its library in particular.

The NCL is one of the premier research institutes established under the administrative control of the Council of Scientific and Industrial Research (CSIR). The aim of the NCL is 'to advance knowledge and to apply chemical science for the good of the people'. It conducts research and development work in the field of chemistry, chemical technology and related fields.

To meet the information needs of scientists engaged in research and development work, library and documentation facilities are made available through the NCL library. Since its inception in 1950, the library has been developed as an integral part of the laboratory. To cater to the information needs of scientists, it has introduced many new services and tried to develop comprehensive collection in the field of chemistry, chemical technology and related subjects. Presently, it is regarded as one of the best libraries in this field in the country. Though this facility is primarily meant for the NCL staff, it is being used by researchers in the field at local, regional and national levels. It is needless to stress the importance of periodicals in a special library like the NCL library. The special libraries of this kind cannot function effectively without providing access to periodical literature.

The use of literature by the NCL scientists, as revealed from the citation analysis study by Patil,⁽⁶⁾ shows that among the various forms of the publications, periodicals account for 82% of the total use. To manage an effective periodicals collection, the NCL library has been considering all the aspects of

collection development - right from the selection to preservation of periodicals.

4.1 Selection : Presently, the NCL library subscribes to 407 foreign and 81 Indian periodicals. In addition 179 periodicals are received in exchange or on gratis. The present (1984) annual subscription cost of these titles is Rs 14.37 lakhs, which is 83.24% of the total grants for the purchase of publications. This grant does not cover other inputs like salary, equipment, contingent expenditure etc. The remainder funds available for books are not sufficient to cope with the demands which puts a constraint on the subscription to periodicals. This trend is obtainable from mid-70's. No doubt, there is some increase in the library budget every year, but it is not adequate to cope with the situation which compelled the library managers to rethink and delete some of the periodicals from the subscription list every year to accommodate new titles, and keep the expenditure within limits.

The NCL library is assisted by a Library Committee, consisting of senior scientists of all divisions, in selecting new periodicals and dropping the current ones. The criteria applied for deletion/addition are based on the following factors.

4.11 Relevance to the Research Work : Each title from the list of recommended periodicals is closely scrutinised in relation to the present research projects in the laboratory. If any title is found to be not relevant, the same is deleted from the current list. The new titles in the field are also added keeping in view the current research activity of the laboratory.

4.12 Resource Sharing : Periodicals covering the peripheral subjects of interest of the laboratory are normally not subscribed to, if these are available in the libraries situated in Pune (e.g. - Jayakar Library, Hindustan Antibiotics Ltd., Armament Research and Development Establishment, Explosives Research and Development Laboratory, Institute of Armament Technology, National Institute of Virology etc.). The current list of periodicals from these libraries are considered by the Library Committee while arriving at the decision to delete periodicals from current list. By this method the NCL library tries to keep the intake of periodicals to the bare minimum which may be termed as core periodicals from the NCL's point of interest.

Even the increased share of periodicals expenditure (i.e. 83.24%) is not sufficient to cope with the steep rise in subscription costs. The periodicals presently subscribed to, though core periodicals, could not be continued for the next year (i.e. 1985). It has become imperative for the NCL library to adopt some other measures to overcome this problem. After considerable discussions, the NCL Library Committee has decided to change the subscription of English translations of Russian periodicals from hard copy to microform version.

The major problems in procuring periodicals in microforms are -

1. Availability
2. Currency
3. Cost
4. Browsing facility

4.13 Availability: As stated earlier, many periodicals which are needed by the NCL are not available in microforms.

4.14 Currency : Many publishers bring out microfilm/fiche editions after completion of one year or volume. This delays the availability of required references to research scientists which, at times, is not desired.

4.15 Cost : There are certain publishers, like Pergamon Press, UK, who give only 20% reduction in subscriptions to microform versions. This, at times, is not attractive enough to forgo the advantages of printed copies.

4.16 Browsing Facility : The microforms cannot be browsed with naked eyes. These require reading aids like microform readers, reader-printers. The cost factor in procuring equipment also plays an important role.

The Library Committee of the NCL considered these aspects while scrutinising the list of periodicals to be subscribed to from 1985 and a compromise was arrived at in selecting English translations of Russian periodicals to be procured in microform. The reasons being that these periodicals are published one year late and, at the same time, are very costly. The microform versions of these periodicals are available at a lower cost than printed version (at 1/3 of printed version cost approximately).

The NCL library possesses microfilm and microcard readers and necessary steps have already been taken to procure microform readers and reader-printers, which are likely to be received very soon.

4.2 Procurement : Procurement of periodicals is a very important activity as the payment is made in advance and the receipt of issues is spread over longer periods. Among the various methods of procurement discussed earlier, none is full-proof and each one has its own advantages and disadvantages. Apart from the theoretical knowledge, in this case, experience is the best teacher. One has to learn from his own as well as others' experiences and select a method, which is beneficial to his organisation. The NCL library has adopted the following methodology, which suits better to its environment.

The NCL library procures Indian periodicals directly from publishers and foreign periodicals through Indian agents. Every year quotations are invited from Indian agents, and the agent is selected by considering the following factors.

4.21 Mode of Payment - Being an autonomous body supported by public funds, the norms of Government Departments are followed. For advance payment bank guarantee is needed. It is preferred, if an agent pays first and claims later which saves obtaining bank guarantee and its ramifications.

4.22 Subscription Price : Publishers' subscription prices are accepted.

4.23 Exchange Rates : Actual bank rates prevailing on the day of forwarding payment to publishers are accepted.

4.24 Handling Charges : Since the annual intake of the NCL library is to the tune of 14 lakhs, it generally gets services at net, even if agents do not get sufficient agency commission

on society publications.

4.25 Any Other Services : Due consideration is given to some additional services like free airmail procurement, reimbursement of non-supplied issues and discount on some titles etc.

Payment and receipt records of periodicals are maintained on 'Kardex'. Kardex is convenient as compared to loose leaf and three-card system. Two cards are maintained for each title - on one card payment details are recorded and on the other receipt of issues.

Different colour plastic strips are used to indicate the overdue issues. This helps in sending timely reminders.

This year the NCL has purchased SN-23 computer for process control operations. Some computer time is available to the library also. The library is planning to computerize periodicals procurement. This may prove cost effective as well as efficient.

4.3 STORAGE AND MAINTENANCE

Presently, periodicals collection in the NCL library is arranged in three sequences - i) loose issues on display racks, ii) bound volumes in main stack arranged alphabetically by titles and iii) Chemical Abstracts housed separately in the stack as its usage is heavy.

The NCL library is facing space problem as the available space has already been occupied and there is not much space available for new additions, which require, on an average, 750

running feet of shelving space every year. After careful consideration following measures have been adopted to solve the space problems:

4.31 Conversion to Microforms : As discussed earlier, it has been decided to procure about 9 titles, mostly English translations of Russian periodicals, in microform. This will reduce the demand of additional space to a certain extent. It has also been decided to procure back sets of periodicals, if needed, only in microform, e.g. complete set of Chemical Abstracts (1907-1981) has been procured in microform.

4.32 Concept of Self-Renewing Libraries : This principle has been applied partially to solve the space problem, i.e. in storing older sets of periodicals in compact form. Study of citations of technical papers contributed by the NCL scientists⁽⁶⁾ indicated that about 90% citations belong to periodicals, which were published during last 25 years. The distribution of citation frequency also showed decreasing trend through the passage of time, i.e. more citations relating to recent periodicals and fewer citations to older periodicals. Considering this use aspect and on the advice of the Library Committee, it has been decided to shift all back volumes published upto 1950 in a stack wherein storage is compact. This process is still in progress and it is estimated that around 30% of the total space presently occupied will be saved when completed.

5. CONCLUSION

The present trend in communications is changing from paper to paperless medium. As Lancaster⁽⁸⁾ points out, "whether

we like it or not, society is evolving from one whose formal communication has, for centuries, been based almost extensively on print on paper to one whose formal communication will be largely paperless". Libraries will have to use different formats which are cheaper, faster in production, compact and compatible to advanced communication technologies. These could be microforms, on-line data bases, video discs, telex systems and silicon chips etc.

Microforms are likely to find greater use in storing periodicals as these formats are most suitable in the present environment obtainable in libraries.

6. ACKNOWLEDGEMENT

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Document Supply Services in India : An Overview

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(Abstract)

[The paper stresses the importance of physical access to documents, as bibliographic control, howsoever praiseworthy it may be throughout the world today, is not enough from the viewpoint of the user. Presenting the current status of document delivery services in India, the author suggests the minimum programme the national focal point should launch.]

Sir Issac Newton once remarked "If I see further; it is because I stand upon the shoulders of giants". By "shoulders of giants" he meant the vast quantity of information gathered and codified by his predecessors and contemporaries which is collectively referred to as "the literature".

When a giant among scientists like Newton had to rely on the literature to "see further", it is absolutely indispensable for the majority of the researchers.

Ever since the primary journal (Transactions of the Royal Society of London) was published for the first time in 1665, it has been the most viable and popular medium for communicating the primary information, especially in the field of Science and Technology. The tremendous growth in research activity coupled with the greed of the researchers to excel one another by publishing more and more papers a tendency popularly known as "Publish or Perish" syndrome, has resulted in what is known as "Information Explosion" or "Literature Explosion". Besides, the problem of proliferation of the literature, the "scattering of literature" and interdisciplinary and multidisciplinary nature of the scientific activity itself have rendered the libraries all over the world helpless in acquiring all that is needed by their clientele. According to a report in Economist published in 1981 about 5,00,000 pages of technical reports, scientific journals and books are produced every minute.

The proliferation of literature has given rise to three more problems, the last of which is relevant to the present discussion.

i) Bibliographic Control :

The quantum of literature is so much that even to record part of it has become a great problem. Thanks to the bibliographic control provided by major indexing and abstracting services, such as Chemical Abstracts, Biological Abstracts, Index Medicus, Excerpts Medica, Science Citation Index etc., it can safely be presumed that a major portion of the worthwhile literature is recorded systematically not only in science and Technology but also in Social Sciences and Humanities.

ii) Information Retrieval :

Secondly, retrieving the details of relevant information recorded is also a big problem. Various indexing systems and retrieval techniques come to the rescue and help the information seeker in knowing what is published and where. Of late, with the advent of the sophisticated computer and communications technologies, it has become possible for a researcher (at least in western countries) to search and retrieve the bibliographic details of the relevant literature from millions of records stored in machine readable databases on computers thousands of miles away, within a few minutes.

iii) Document Supply :

Thirdly, the problem of document supply, Irrespective of the fact whether a researcher himself conducts the bibliographic search or an information worker does it for him, the final result will be a mere list of surrogates of the original documents, with or without an abstract. Even the highly advanced on-line searches would yield almost the same, at a faster rate, of course, notwithstanding the other advantages.

It is worthwhile to note that it is a misnomer to call these services as "information retrieval services" or "information services" when they could only provide in most of the cases the "information about information".

Need for Original Documents :

It is a well established fact that even the references with abstracts cannot satisfy the need for original documents. The bibliographic search output is something like a "menu" in a restaurant; in both the cases, the client would only be able to know what is available.

This fact has very well been appreciated by IFIA which has launched "Universal Availability of Publications" (UAP) Programme as a companion programme for its "Universal Bibliographic Control" (UBC) Programme. The two programmes taken together may be seen as elements in a broader, though as yet unarticulated, programme of 'Universal Access to Information'. UBC provides information on the publications that exist and UAP provides access to the information contained in the publications. Further, some of the secondary information publishers have also started document supply service. ISI's (Institute for Scientific Information, USA) document supply service namely, "Genuine Articles" (formerly, "Original Article Tear Sheet Service - OATS) is a classic example. They supply the documents enlisted in their bibliographic services such as 'Current Contents'; Science Citation Index, Automatic Subject Citation Alert (ASCA), etc.

Even some of the on-line suppliers have started document supply service, for instance, "DIALORDER" service of DIALOG, which enables a user to order the complete text of documents online, is an example worth mentioning.

Not long ago, when INSDOC conducted a computerised SDI service on two databases namely, CA Search and COMPENDEX, the users were almost unanimous when they opined (in response to a questionnaire) that the SDI service should have been accompanied by document back-up service. The same feelings have been expressed by the scientists at National Institute of Virology, when the author has recently obtained for them the off-line bibliographic search output from MEDLARS database provided by Karolinska Institute, Stockholm, under the auspices of WHO.

Obtaining the Original Document :

Once a scientist comes to know about the existence of the documents of his interest, he turns towards his library for

seeing the same in full text. If his library does not have it, he tries through several channels to obtain the same.

i) To write to the author :

Of all the secondary information services, the most popular one seems to be the "Current Contents" published from Institute for Scientific Information, USA. Its popularity may partly lie in the fact that a researcher is informed of the latest publications even before any library could get it (more so in the case of our country as majority of the journals we subscribe to are of foreign origin, and they take time to reach us). As there is the least possible time lag between the publication of a document and retrieval of its surrogates, a researcher would always try to write to the author for free reprints. This system is not always helpful, as the authors may not be in a position to cope with the demand, as they are usually allotted a limited number of reprints for free distribution by the publishers. Besides, in the case of retrospective searches, conducted on other indexing/abstracting services, writing to the author might not be helpful at all, as he would have long exhausted the quota of free reprints and he would not be inclined to honour a request at his cost but in exceptional cases.

The other options open to the scientists are :

i) Write to colleagues (if any) working in institutions with well stocked libraries.

Even if a scientist is privileged enough to have friends elsewhere working in big institutions, it is not always possible to get the documents, as no library in the world is exhaustive in collection.

ii) Approach his librarian with a request to obtain the document on inter-library loan.

iii) Write to the national and/or international document supply centres.

The last two channels open to a user are of relevance to the present discussion.

Inter Library Loans :

As has already been noted, no library in the world, not even the Library of Congress can claim self sufficiency in meeting the document requirements of its users, leave alone procuring everything that is published. Traditionally, libraries exchange publications through inter-library loans to meet the unmet needs of their clientele. Now, with the advent of reprographic and micrographic technologies, photocopies and microforms of the original documents are exchanged wherever possible. However, in the case of monographs (books), actual volumes are still exchanged.

A requesting library comes to know the availability of the documents through the following means :

- i) Lists of current periodicals subscribed by various other libraries e.g., List of Current Periodicals (1984), CDRI, Lucknow. These lists are usually exchanged between the libraries voluntarily and sometimes upon request.
- ii) Catalogues of serial holdings (showing the details of back volumes etc) of certain libraries e.g., serial holdings of National Institute of Virology, Pune (1983).
- iii) Discipline oriented catalogues of serials: e.g.
 - a) Union catalogue of Medical, Biomedical and Pharmaceutical Periodicals (1983), covering Maharashtra, Gujarat, Rajasthan and Madhya Pradesh, prepared by Indian Medical Library Association (Western Region), Bombay.
 - b) Union list of periodicals of a group of libraries.
- iv) Various Regional Union Catalogues of serials prepared by INSDOC covering regions: Bangalore, Varanasi, Kerala, Mysore, Bombay-Pune, Hyderabad, Madras, Lucknow, West-Bengal, Delhi Medical Libraries.
- v) National Union catalogue of serials:

INSDOC is currently engaged in bringing out a comprehensive 'National Union-catalogue of scientific Serials' through its computer. As a preparatory volume, it has brought out 'Union

list of Current Scientific Serials in India (1981). As its name suggests, it is only a (union) list of serials, which does not show the actual holdings of a particular library other than the title.

The Effectiveness of Inter Library Loans :

The most popular means of all the above is the union catalogues. Almost all the Regional Union Catalogues prepared by INSDOC are now dated. The National Union Catalogue is yet to be published. The newly brought out National Union List, as has already been noted, is only a list that does not show the details of volumes and years of a particular serial.

Even if one is able to exactly locate the availability of the documents required, the lending library will not always be in a position to supply the document for various reasons. First of all the lending library is not under any obligation to supply the documents whether free or otherwise. Inter-library co-operation is only voluntary but not mandatory. We often find lack of inter departmental co-operation even within a particular institution; where it is mandatory, we can easily see how idealistic and theoretical it is to expect inter-library co-operation, when the parental bodies are not same. Inter library co-operation, whatever little we find, is mostly due to inter personal relations between the librarians. Further, there are other constraints, such as administrative, technical, procedural, financial or mere lethargy or lack of interest. These points need not be elaborated much, as many of the professionals might have had experienced one time or the other.

The other two options open to obtain the original documents is to try the national or international document supply centres.

II. Document Supply Centres at National Level :

i) Indian National Scientific Documentation Centre : INSDOC being the national scientific documentation centre, took up the responsibility of document supply even though its resources hardly permit it to be a national document supply centre.

In theory, any user can obtain any document from INSDOC by paying the prescribed amount. But in practice, it is not true in most of the cases. Though INSDOC tries to supply or actually

supplies every document requested for, the timeliness of the service has to be taken into account, which varies from months to years.

Much has been said critically about the document supply service of INSDOC at various ^{fora} ~~for~~ over the years, taking cue from the fact that majority of the users have had bitter experience with INSDOC especially with its document supply service. There is no point in repeating the same.

Like any other service oriented organisation, INSDOC too has got quite a few valid constraints in providing a satisfactory service. First and foremost is that it lacks infra-structure to provide an effective document supply service. The acquisition policy of its library, namely, National Science Library allows it to acquire only the fringe journals as it forbids it to duplicate any serial available in any of the Delhi Libraries. The modus operandi of INSDOC in supplying the documents is to first determine whether it can supply the requested document from its collection at National Science Library. If it is not possible, it approaches the other libraries at Delhi viz; IARI, JNU, Delhi University, National Medical Library etc. If it is still not possible, it tries the other libraries in India and finally, international document supply centres, such as British Library Lending Division (BLLD) at Bostan Spa, U.K. etc.

It is worthwhile to note that only 10% of the requests could be met from its own collection at NSL, 50% from other libraries at Delhi, 5% from other Indian libraries and 25% from foreign sources. The reasons for the delay in supply need not explicitly be stated as these statistics speak for themselves. Since its collection is so inadequate even to meet 10% of the 25,000 or so requests per year, INSDOC has to run from pillar to post before a document is supplied to the requester. This naturally takes time.

Other National Services :

Among other document supply services at the national level, the sectoral centres of NISSAT like National Information Centre for Drugs and Pharmaceuticals (NICDAP) at CDRI can be mentioned, though its services are limited only to the disciplines it caters to. Besides, National Medical Library also supplies documents

from its collection of more than 2,000 journals against fee. Unlike INSDOC, these centres do not have the stated responsibility to supply what they do not have. However, National Medical Library, New Delhi, has been designated as 'National Focal Point' by WHO, and has the responsibility of obtaining the documents from National Library of Medicine, USA, if the documents are not available with them. Still, many a times the responses indicated that they are not fully equipped to meet the demand.

International Services :

The most notable service which is truly international is British Library Lending Division (BLLD) at Boston Spa, UK, which is unique in being the only system in the world with the most comprehensive collection of documents including books, journals, scientific and technical reports and conference proceedings meant only for a single purpose i.e., Document supply. It has revolutionised the whole concept of document supply by actually putting into practice what is called 'planned centralisation' in document supply parlance.

It operates on the following five principles :

- i) Lending from central loan stock whenever possible;
- ii) Simple arrangement of stock;
- iii) Systems involve the minimal amount of checking;
- iv) Systems require the minimal amount of accounting;
- v) Make records only if absolutely necessary.

As regards the serials, BLLD attempts to acquire all worthwhile titles in all subjects and in all languages wherever published. Consequently it subscribes to more than 50,000 current serials. As regards monographs, it tries to obtain all significant items in the English language, wherever published, but it would be very selective in purchasing the foreign language titles. It possessed more than two million monographs, it also acquires S&T reports and conference proceedings. Besides, it held in 1976 itself some 300 miles of microfilm and about 2.5 million microfiche in 1979-80.

As early as 1980 itself, BLLD had handled about 3 million requests a year. It meets about 83% of the demand from its own

collection. In 1979-80, 19% of the requests came from abroad. Material was sent to 120 countries although demand tended to be concentrated within a few countries; the US, France, Japan, Belgium and the Scandinavian countries together claimed half the foreign demand. It is interesting to note that despite its highly advanced library network system, the US is the biggest among the foreign clients.

The only inhibitory factor in availing BILD's service is its high cost i.e., about Rs. 45/- for the first 10 pages or so.

The Problem :

It is a well established fact that the conventional approaches such as interlibrary loans even through the union catalogues have proved to be ineffective even to meet the present demand. There may be a vast potential demand which is not surfacing presently as the satisfaction level is so low. It is a notion that if access is somehow provided to the holdings of all the leading libraries in India the local user should be able to obtain virtually everything he requires. Besides, this assumption would look fallacious as India as a nation received only 13,403 current scientific titles in 785 libraries put together, as upto the end of 1981. Further, this collection is meant for local use which is given top priority.

Solution :

By looking at the example of BILD, it may be asked why other countries have not followed the example of the United Kingdom, notwithstanding the fact that a few developed countries, like USA and France, have already started thinking in that direction. The main reason is the high cost involved. Especially for a developing country like India, which has to import much of the material, it is a matter of huge burden on foreign exchange and duplication of much of the material already available somewhere within the country itself. As regards the cost factor, the unit cost would not be so high, if there is a high demand. The existing demand is not an indication for the reasons already discussed. As regards duplicating the material within the country, while we do not bother to check duplication, rather multiplication of the same journals within a city, why bother about duplication in one more library for a specific objective, that too at the national level.

According to Maurice B. Line, a document supply centre need not be comprehensive in its collection to give a good service. If the experience of BLLD is any indication, not only can it confine its stock to science and technology, and journals and reports, but even within these limits it need not attempt to acquire everything. Of the 50,000 or so current serials received at BLLD, 5,500 can meet 80% of the demand and 9,000 can meet 90% of the demand. India can easily afford a core collection of 5,000 journals with back volumes in microform to set up a national document supply centre or to enrich the existing collection of National Science Library of INSDOC, and a couple of photocopying machines and micrographic equipment and sufficient staff, meant for the only purpose of 'Document Supply'

Nation as such would not be spending that much amount as the time goes by, because quite a few libraries in India might be prompted to drop many a journal of fringe interest (to its clientele) if they are sure of getting the photocopies of the same in a couple of days from the national centre. Besides, by offering such a service to the other countries in the region on a commercial basis, the cost of the system could partly be met.

We often proudly proclaim that we have the third largest number of scientific and technical personnel after the USA and USSR. We can no longer afford to ignore their ultimate need in the process of information seeking.

It is heartening to note that INSDOC is presently planning to implement the scheme mentioned above with some variations.

Information Network : Structure and Operation
with reference to India

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(Abstract)

[The importance and impact of information technology in information handling is mentioned. Defining information network, delineates the types and range of information networks with reference to library and information networks. Explains the different types of structures of networks with their economics and organisational aspects. Discusses the objectives and operation of networks with special reference to India giving examples of networks of document delivery, union catalogue and inter-institutional information services.]

0 Introduction

As information service becomes increasingly critical in 1980's, its attention is no longer limited to the traditional operations of acquisition, indexing, and storage of documents. Instead, it is taking on an expanded role in the understanding and analysis of economic issues and the management of technological innovation. Technology is playing a vital role in the improved management of information services. In this communication, an attempt is made to focus the impact of technology on information services, through 'Networks'.

It is an established fact, that no library or information service can be self-sufficient, but, needs to be involved in the exploitation of shared resources. This approach has naturally led to the creation of a variety of library and information networks. Networking concept has become a major breakthrough on several information-related fronts over the last decade. It is rather important to view this concept from a variety of perspectives to gain a better insight into the advantages and disadvantages.

The expanding range of products and economic activities associated with information has been facilitated by technological developments in information storage, retrieval and transmission. The market for information products has been made possible due to the lowered cost of data handling and data transmission. Computer-based networks have increased in both diversity and the number of participants. Now, technology exists for linking individual information users into a computer-based world wide network.

1 Network Definition

There has not been an agreed set of definitions as to what the term 'network' means in the information sense. (6) (OCLC C.19). The Oxford English Dictionary states that a network is an "interconnected chain or system of immaterial things". On the other hand the National Commission on Libraries and Information Science (NCLIS), U.S.A., defines network as "two or more libraries and / or other organisations engaged in a common pattern of information exchange, through communications, for some functional purpose. A network usually consists of a formal arrangement whereby materials, information and services provided by a variety of types of libraries and / or other organisations are made available to all potential users. Libraries may be in different jurisdictions but agree to serve one another on the same basis as each serves its own constituents. Computers and telecommunications may be among the tools used for facilitating communications among them". (ALA Year Book, 1976, p-248). Yet another definition has been furnished in the UNISIST II. Working document which states 'Information Network' as "a set of interrelated information systems associated with communication facilities, which are cooperating through more or less formal agreements and institutional arrangements, in order to jointly implement information handling operation, with a view to pooling their resources and to offer better services to users. They generally follow identical or compatible procedures". (UNISIST II).

1.1 Types of Networking

There are three types of networking, which may be said to have considerable impact on library and information services. These are : Communication networks, Computer networks and library / information networks. A brief account of these network types is provided in the following paragraphs so as to present an integrated approach to the 'networking' concept.

1.11 Communication Networks :

Communication networks are made up of transmission-lines, concentrators, switching mechanisms and non-data processing components. Due to the increased competition in the communications industry, new and specialised common carriers and value-added networks with data processing equipment are also linked to communication networks.

The current technological trend setter in communications is "packet switching", a result of ARPANET developed technology. This technology has been proved and is available in commercial sector through enterprises like 'Telenet Corporation,' etc. The greatest advantage of 'packet switched networks' is in applications where the ratio of peak to average loads is high and where the distance involved is great. Information Services involve relatively large quantities of data for full bibliographic or full text retrieval, and therefore, the distance advantage applies more clearly to these applications. (2,10)

1.12 Computer Networks

Computer networks received much attention during recent years and much has been written about them. Even so, "there is little agreement as to what the term means precisely". (2) According to one source (2), 'a set of autonomous computer systems, interconnected so as to permit interactive resource sharing between any pair of them constitutes a computer network'. The two main reasons ascribed for computer networking are : 'load sharing' and

'resource sharing'. The former term means the ability to off-load work from one heavily loaded computer through network onto another machine which is lightly loaded. The second term 'resource sharing' implies that each computer should make every local resource available to any computer in the network in such a way that any program available to local users can be used remotely without degradation. In other words, any program should be able to call on the resources of other computers much as it would call on its own. The resources, which can be shared in a computer network, include software, data, as well as hardware of a particular database. (2).

It has been stated that computer networks result in economy of scale, economy of specialisation, where it is cheaper to provide access to specialised resources remotely than to transfer hardware, software, and technical expertise. The advent of relatively powerful (and recently microcomputers) offers the possibility for highly decentralised computer resources. Whereas a large centralised computer installation has provided the most economic approach in the earlier era, decentralisation now offers technical, if not managerial, advantages. However, the total economic analysis pertaining to computer networks in relation to information services should take into account staff costs which are constantly on the increase. For information service applications this is likely to be a most significant factor.

1.13 Library and Information Networks

By the definitions previously presented (vide section 1 of this paper) Library and Information Networking is the area with greatest direct impact on information services, their efficiency and effectiveness. Definitions of library networks usually emphasise different levels of cooperation among libraries. The NCLIS definition, cited in Section 1, covers a broad range of services, organisation types, and modes of communication. According to the Library of Congress, the functions

existing in a library network are the bibliographic utility and service centres. (9) (Avram, 1977). The main distinction between these functions is based on the product orientation of bibliographic utility and the distributor orientation of the service centre. Service centres mainly function as access points to provide products and services obtained directly or derived from the bibliographic utilities. In addition to accessing the bibliographic utilities the service centres may also provide the input data to the storage and retrieval facilities of bibliographic utilities.

1.131 Range of Network Services

The range of services provided by many resource sharing networks include storage and retrieval of data such as factual, physical and bibliographic data, document ordering and delivery services, general computer services (Eg. ARPANET), and support of group communication and decision making. The most widely used networks can be described by four major types of services. They are :

- i) Shared cataloguing
- ii) On-line reference
- iii) Shared circulation
- iv) Interlibrary loan.

Of these, cataloguing networks are by far the most popular type and are often cited as examples of computer applications to library services. OCLC is one such network. The advantages offered by OCLC to the participating libraries is that the library staff will be in a position to improve and expand the reader's services because of the decreasing percentage of the budget required to support technical services.

Five major online vendors in U.S.A. namely Bibliographic Retrieval Services (BRS), Lockheed Information Systems (LIS), National Medical Library (NLM),

New York Times Information Services and Systems Development Corporation ("SDC") offer bibliographic services mostly on a fee basis. The resource sharing aspect of these networks is that time sharing computers and tele-communication systems are used to facilitate simultaneous access of data bases by multiple libraries. Cooperative use of resources in this case, computers and telecommunications systems satisfy one definition of a network.

A library and information network may be viewed from the perspective of a requesting library seeking information via multiple resources that may include non-computer-based tools as well.

On-line circulation systems is another type of network that is recently expanding beyond the domain of a single library and its branches.

Probably the most traditional resource sharing networks in the library field is that of interlibrary loan. The ILLINET may be cited as the best example of this type. A large portion of the national interlibrary loan demand is for the photocopies of periodical articles. The BLLD is serving such a need as far as UK is concerned.

Among the four types of services represented by the major library and information networks, there appears to be a common element of resource sharing. However, the resources and the nature of sharing may differ in each case depending upon the types of the service supported by the network. In the case of cataloguing and circulation and interlibrary loan networks, there exist multiple resource libraries within a single services. The network services depend on the collections of some of the participating libraries. In addition, the participating members may function both as resource libraries as well requesting libraries. On the other hand, the on-line reference networks operate on a different type of resource sharing network because the requesting libraries do not function as resource libraries. The on-line reference and networks only serve to provide answers to questions and the requesting libraries only serve to query the data bases and provide results as services.

2 Network Organisation or Network Structure

In this part of the paper, it is proposed to consider some of the issues relating to the design, development and operation of library networks. The main issues considered here could be grouped into : organisation types, network structures, economics and performance measures.

2.1 Organisation types

The network organisation types may range from interlibrary networks to international networks. The network members may represent either same types of libraries such as research libraries, special libraries or multiple library types such as public, academic libraries, etc. Network organisation types are some what influenced by the type of services offered by them. For instance, shared circulation services and inter-library loan networks tend to be oriented on intrastate or interstate level as opposed to national level. The reason for this appears to be the traditional dichotomy of services associated with the libraries namely, technical versus public services. We may also note that shared circulation and interlibrary loan networks have not become as popular as shared cataloguing or reference service networks. The reason behind this situation may be that most of the funding that was provided for libraries in the developed countries, like USA, was motivated to develop technical services that support library operations as opposed to those directly serving the individual user's needs. However, the existing library networks may be grouped into five organisational types :

- i) Interlibrary network
- ii) Intra state network
- iii) Inter state network
- iv) National network
- v) International network.

A number of examples can be cited for most of these types.

2.2 Network Structures

Since several networks are in operation in developed countries like USA and UK, there is a considerable body of literature available on network structures and models. (8).

Network structures can be discussed in terms of elements, configurations and levels. The configuration for a particular network may vary depending on the focus of interest.

The elements of a library network consist of nodes or processing centres and arcs or possible paths of communication. The pattern that results when nodes and arcs are connected is the network configuration. (9) The levels of a network may indicate different stages in processing activities. Four network configurations are known and applied in both computer and telecommunication fields. They are : the star, distributed, ring and hierarchical network. These types are relevant even in the context of library networks. These four types are discussed with some specific examples. The main interest in the network structure is the impact of the structure on information flows.

2.21 The Star Structure

This is a totally centralised network. Activities or services provided by the network are controlled by the central node. The network member (A) holds all the resources with other members merely making use of them.

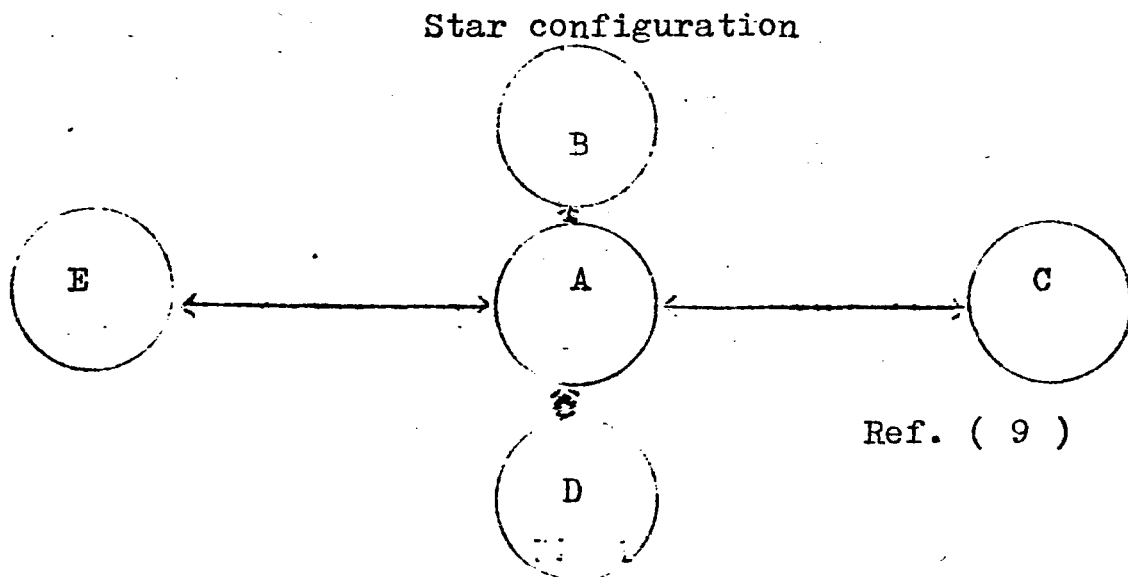


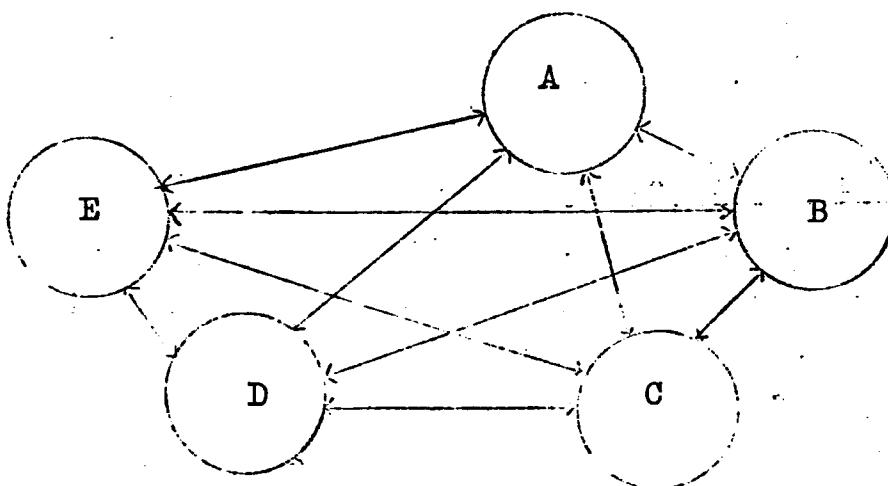
Fig.1

Communication routes do not exist between the outer nodes in this type of network structure. All communication is controlled by the central node. From the management point of view, star configuration may appear attractive because of the fact that record keeping and major processing are centralised with one set of staff instead of being duplicated at every centre. From the user's perspective, the star configuration may appear rather inefficient because of the time delay experienced by the individual users in the receipt of services. This is because the processing time involves the time taken by the central node as well as the time required by each additional library from the outer nodes.

2.22 Distributed Network

This is a completely decentralised network. Each node in this configuration has the option of communicating with every other node in the network. There is no ranking or order imposed on the communication links. Each library or node responsible for generating an interlibrary loan request is responsible for choosing the next processing node for unfulfilled requests. In other words, the network is composed of members with different resources, with all members able to call directly on the resources of all the participating libraries.

Diagram of Distributed Network



Ref.
(9)

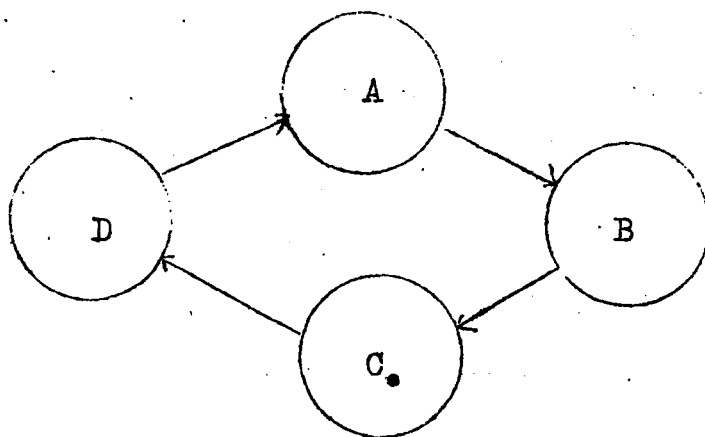
Fig.2

2.23 The Ring Structure

A third configuration commonly used to describe network structure is the ring. Like the distributed network, in the case of ring structure there is no central processing node. The distinguishing feature of ring structure relates to the communication or processing order. Once a request enters the network at a node (I) and further processing of the request is necessary, the request can only be sent to node I+1.

The fact that sequence of nodes, if fixed, may be inefficient for some processing activities, such as inter-library loan, when library I knows that library I+2 owns the item, and library I+1 merely serves as a switching centre.

Diagram representing Ring structure



Ref.(9)

Fig.3

2.24 Hierarchical Structure

Till now we have considered libraries processing similar number of subject specialities and similar in having resources. Vertical routing refers to the movement in hierarchy. As we move up in the hierarchy, there are usually lesser number of libraries each of which has greater responsibility and access to more comprehensive collections.

Diagram showing Hierarchical Network

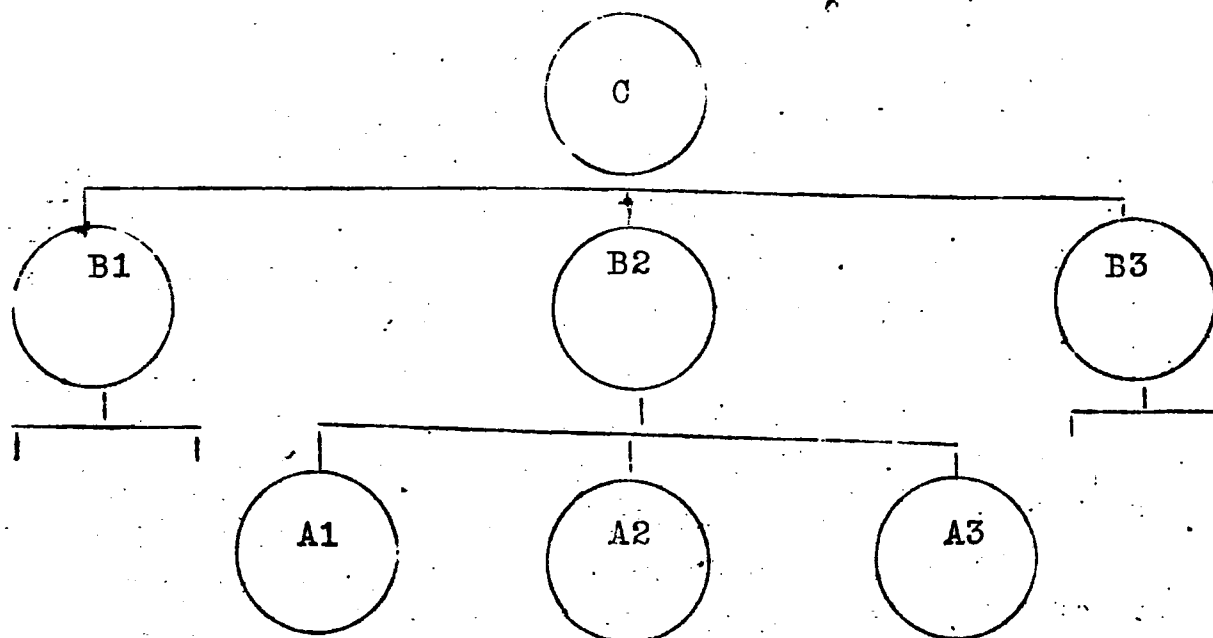


Fig.4

Ref (6)

The hierarchical network exists in an environment in which network members share resources locally; with needs for resources sent on to the next higher level in the system. The topology for this type of network is represented in the diagram (fig.4). In the diagram, A1, A2, A3 represent libraries involved in the resource sharing, finding that their needs for resources can usually be met as a result of resource sharing activity among themselves. When necessary, these three participants refer their requests to the next higher level (B2). In case B1, B2, B3 do not have the requested materials, unit 'C' is then connected. The NML network may be cited as the best example of a hierarchical network structure.

2.3 Economic Factors

One of the motivating factors for any library to join a resource sharing network is the rate of rise in the library operating costs. Inflation, combined with the tightening budgets has caused the cost of labour-intensive activities of libraries to rise at an alarming rate. Network membership is viewed as one of the labour saving devices. The economics of library services has not yet developed

sophisticated methods for analysing collective and individual public services offered by libraries. Cost-benefit and cost-effective analyses are appropriate methodologies for solving economic problems of libraries. One of the difficulties associated with such analyses is the non-quantifiable characteristics traditionally identified with library services. The lack of standard definitions for costs impedes any comparative analysis. In evaluating network services, we must discuss additional factors other than cost-effectiveness of individual libraries participating in the network. Since the library networks operate on a large scale than the individual libraries, it is likely that networks may encounter changes in costs and operations. Some of the library network economic issues are discussed by Hayes (Hayes 1974). He suggests that economic rationale of funding a proposed national network is that greater use of information resources can be realised with slightly increased costs. Measures of network effectiveness are suggested to include the degree of use and network response time. Measures of cost are suggested to include the capital costs involved in the purchase, maintenance and access to information (i.e. books, indexes and computing). Another factor related to the economic issues is the value of new technology with respect to network costs for services. All these economic issues must be regarded by the designers and managers of library networks.

2.4 Performance Measures

A primary purpose of the performance measures is to enable management to measure how well the network organisation is accomplishing its stated objectives.

In the library field, it is generally agreed that the overall objective of libraries is to provide individuals with the documents (or their surrogates) containing recorded knowledge. A simple measure for libraries in achieving this objective is to count the total number of volumes available in the library and compare this figure with the measures of performance such as circulation transactions, which are generally useful in measuring the

library's attempt to provide information to the users. Another factor that is useful in this connection is user satisfaction. This is a somewhat subjective criterion and rather difficult to measure and usually requires time consuming data collection efforts, such as interviews or surveys through questionnaires.

Objectives of library networks are similar to the objectives of individual libraries. However, library network objectives must address the interaction of activities among network members. J. Williams lists the factors that should be used as guidelines for developing network performance measures as : "reliability, flexibility, accessibility, availability, acceptability, efficiency, effectiveness, and quality control". We may be able to simplify the problem of defining network performance criteria if we approach library performance from the users' perspective. Individual users are interested in receiving good service in the sense of having a high probability of finding what they require, while experiencing a short waiting time to receive the desired items of information. Thus, we can suggest three performance measures for library networks as follows :

- i) Probability of satisfying request for services
- ii) Average waiting time taken to satisfy a request
- iii) Average cost needed to satisfy a request.

3 Indian Situation

Till now we have discussed the major factors associated with networking concept, and tried to understand it from the situation and environment prevalent in developed countries. It should be pointed out at this stage, that successful implementation of this concept depends to a large extent on telecommunication facilities available in the country and the use of modern computer technology. Apart from this essential condition, important considerations such as (a) objectives of the national network, (b) formal agreements of the participating organisations in the network for sharing resources with proper delineation of administrative authority for making decisions, .

(c) appropriate standards, guidelines and manuals for design and operation, maintenance and evaluation and
(d) manpower design and development, management and operation, supervision and control, are to be addressed to. It is needless to point out that successful governance of information networks depends on these pre-requisites. In the absence of any one of these, the effort at network design and development would not yield the expected results.

4 Some functional networks for India

Of the diverse functions that are to be performed by the various institutions in the three-tier NISSAT model for India, three typical functions that need proper integration and interlinking are explained here, namely, document delivery, preparation and production of union catalogues, supporting document delivery systems, indexing/abstracting data bases for bibliographical access to primary documents. Insdoc has been offering these services right from its inception although there is scope for further streamlining and efficient operation. As mentioned earlier in this paper, any network is essentially linked up with telecommunication facilities without which networking remains only at the conceptual level. Assuming that Indian telecommunication networks would advance sufficiently in the next few years and be available for developing information networks, we are briefly discussing a few functional networks that might come up in the future.

Document Delivery : As essentially star network combined with a few interactive links with some designated resource libraries, i.e. libraries with extensive document collection in certain fields, is presently conceived for the document delivery system at Insdoc. It is planned that Insdoc would build up a core journal collection in S&T to the tune of 8000 to 10000 titles which would meet a bulk of the demand besides taking care to acquire titles not being presently received in the various science libraries by way of supplementing the national collection. This resource would be augmented by collections available at the Indian Agricultural Research Institute Library, and

the National Medical Library in agriculture and medicine, reports literature at the Bhabha Atomic Research Centre and the National Aeronautical Laboratory, patents at National Informatics Centre and similar others. Insdac would thus have a national resource which would meet the requirements comprehensively for document delivery supported by the Union Catalogue of Scientific Serials for location of items; and with extensive reprographic facilities, the document delivery services could also be keyed to our SDI service. Figure 5 gives an idea of this network.

Union Catalogue of Scientific Serials : Spread over two decades, Insdac has collected data on about 30,000 scientific serials (journals, conference proceedings, annual reports, etc.) available in about 800 libraries in the country. This vast body of data, collected very painstakingly by a time consuming and tedious process for ensuring authenticity and accuracy, has to be made as a tool for intense use. A number of volumes representing holdings in major libraries of the country and also in libraries in several regions have already been published. A directory of scientific serials was released in 1983, as a pre-publication programme before the final publication of the National Union Catalogue. This is perhaps the only bibliographic data service that has a national character and scope. It is possible to develop this service on the model of the Ohio College Library Center (OCLC) for inputting journal information by participating institutions keeping the National Union Catalogue database fully updated, for location of items for Document Delivery Service including SDI, for providing print-outs for any group listing by subject, types of documents or regional / individual library holdings and also for the purpose of analysis to estimate the strengths and weaknesses of our national resource, that would help in policy making and funding. It is hoped that in the next two years proper netting and telecommunication links would be developed in Delhi to try out the experiments. The National Union Catalogue network is likely to be a star network as the

data would be centrally processed by several interactive features that could be built into it.

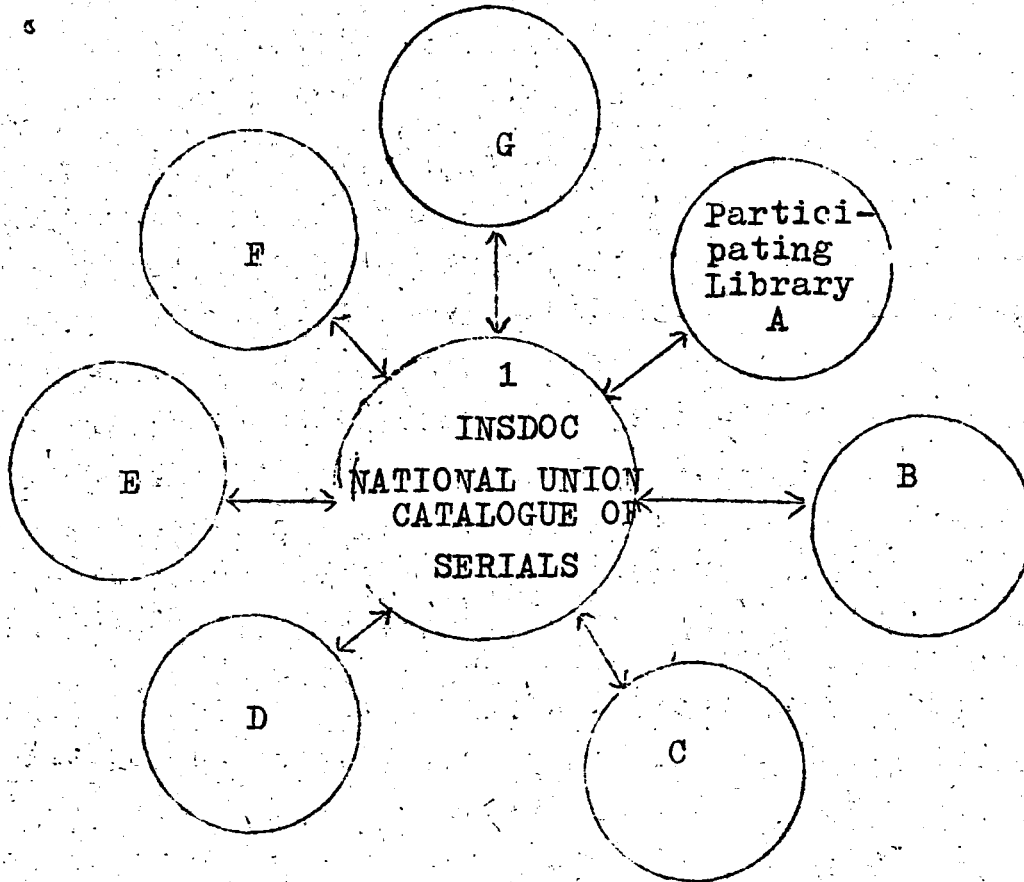


Fig.5 : Network of the National Union Catalogue of Scientific Serials.

Circle 1 at the centre represents the NUC Data Centre with the outer circles A-G representing the participating libraries.

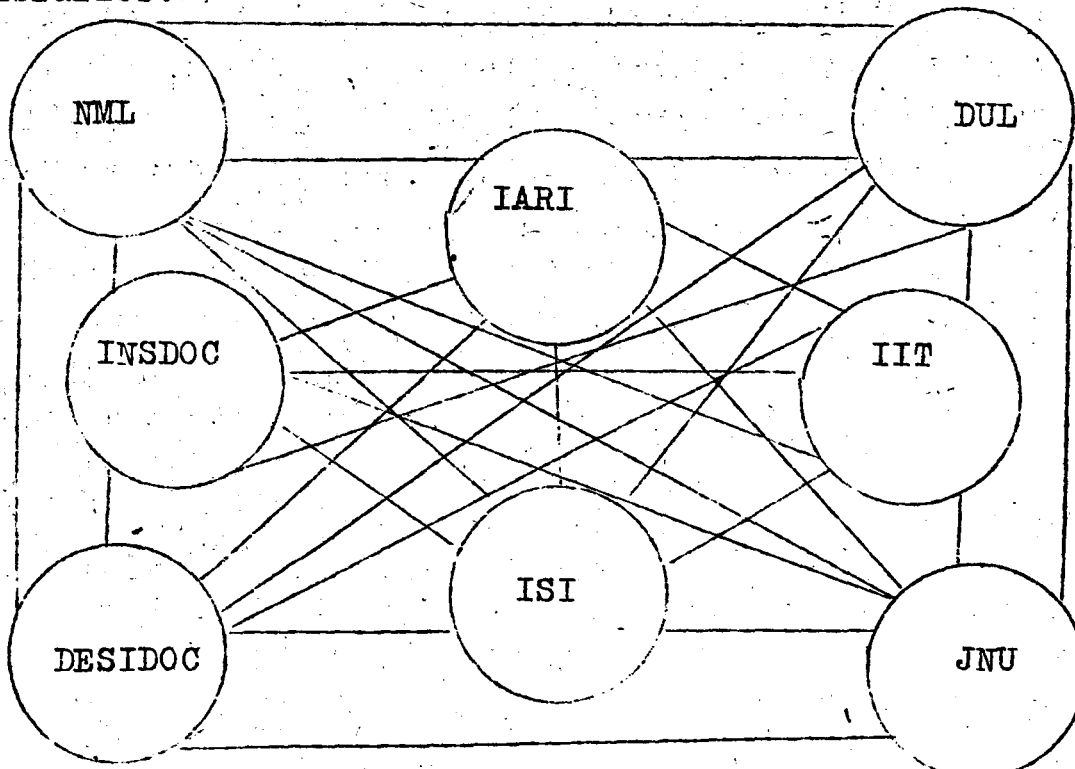


Fig.6 : Network of Information Institutions in Delhi - An Illustrative Example of Interactive Model.

Other networks : A large majority of information networks would have to be of the interactive model so as to exploit fully the resources available nationally. A schematic model of such an interactive network is given in Figure 6 as an illustrative example.

Conclusion

In the 7th Five-Year Plan (1985-90) a national bibliographic network is to evolve with a number of interactive sub-networks to access information located within the country, with gateway facilities to have interlinks with foreign data bases such as Frascati or Lockheed, US. The next 10 years are sure to witness a fundamental change in information handling, mainly due to the tremendous advances in information technology. The library and information community will have to meet the challenge to stay in the profession.

-oOo-

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UNIT COST OF TECHNICAL PROCESSING
IN ACADEMIC LIBRARIES

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(Abstract)

∟ The paper first gives in brief the basic cost accounting theory of 'Unit Cost' and discusses its application to the libraries for cost analysis purposes. It then gives a short account of the work done abroad in this area by the profession in terms of developing methodologies. It further states certain attempts made in India at governmental and non-governmental levels to lay down certain norms and standards for job performance, which are essential for the proper unit cost study. It mentions the difficulties faced in working out the unit costs in Indian conditions.

The paper concludes with example of a case study, where attempt has been made to calculate unit cost of technical processing in the Central Library of Indian Institute of Technology, Bombay. ∟

Purpose of Cost Accounting

Increase in the collection and services of the academic libraries has put tremendous pressure on its infrastructure. These libraries started with humble beginnings; but the onslaught of the literature as well as of the users made it necessary to ask for better and increased manpower, methods and money-which were not coming forth-commensurate with the objectives set by the library or demands put forth by its users. It has been a difficult task to convince authorities for allocating the required budget to meet its requirements in the absence of any systematic performance-oriented proposals. Scientific methods of time and motion study were mostly applied in many libraries outside India to study the time required for every job performed in the library and to assess the need, based on the same. Detailed principles of cost accounting were also merged with the scientific studies to arrive at a proper costing system.

In the course of time, certain systematic criteria were developed based on certain standardized practices and procedures to carry out the different tasks of the library. Such norms and standards which were laid down by specialists were usually adopted abroad for study purposes but even these applications have not given very conclusive results.

Brutcher and others¹ have said that "In order to present the library's needs and impress upon the budgeting authorities their role in policy making, some libraries have adopted performance budgeting. In its simplest terms, the goal of performance budgeting is to prepare, analyse and interpret the financial plan in terms of service and activity programs, rather than limiting the budget to a detailing of objects of dispersement.

"It has been found that performance budgeting, besides providing a more easily-understood statement of what is to be accomplished with the requested funds, can present a more accurate statement of needs, provide a more equitable allocation of funds, allow for carefully controlled expenditure of funds, give performance and cost control, and serve as a planning tool."

The performance budgeting or take budgeting by formula which has been the modern trend in academic libraries, can be planned if the cost accounting statistics for a library are maintained. In cost accounting, the process cost accounting and the job cost accounting are the most important factors. Cost accounting enables the libraries to improve these two basic unit costs. Cost accounting mainly concerns itself with the determination of 'cost' and this theory is easily used to find out the unit cost of industrial products. Before it is applied to libraries, it will be useful to know its basic theory and then to think of applying this for cost accounting in a library and finally try to find out the unit cost of different library functions.

What is Unit Cost ?

The cost of a unit of industrial product is composed of three elements :-

1. the direct material required to make the product
 2. the direct labour employed to produce the product
- and
3. the overhead applicable to the product.

The first two of these costs are known as direct costs and the third is an indirect cost. The direct material cost of a unit of product is the cost of a unit of raw material, times the number of units of raw material employed in the unit of product. The unit cost of raw material can be determined from the purchase invoices. Direct labour cost is the hourly time the worker spends on a unit of product multiplied by his hourly wage. This system of costing is especially designed for industrial output and is more appropriately applicable to industrial units. Library is not an industrial unit but an intellectual service organization and, therefore, applying such production norms of profit making will not be helpful. However, there is some similarity in certain units of the library which acquire, process and deliver the processed material almost like a shop-floor production. It has some similarities with an industrial unit which obtains or purchases the material, produces certain products after processing the material and sells it. In the library, the entire process of acquisition or procurement of material, its technical processing, such as classification, cataloguing and other activities involved for making the material produced presentable for use by its clientele, is thus similar to what goes on in a manufacturing unit.

Methodologies

A number of techniques and methods have been described and used by different authors to carry out a cost analysis in the library and to find out the cost of a process. One such method, outlined by Lawrence Leonard, is to find out the mean time in minutes for a specific technical process by time observation which may then be converted to the unit cost of the process. Maier², while

giving her methodology says that, "Problem in essence is to convert the time required to perform each task cost into dollars and cents, then to cumulate these individual task cost to obtain a unit cost for book processing for a given library i.e. if we put all suggested methods a standard formula for unit cost could be written as :-

Unit cost = unit time to perform a job x wage rate."

Main problem is how to find out standard or mean time of a process. Even if we come to conclusion in finding out a standard unit time it may be faulty in many respects. If we take an example of cataloguing, for time estimation, one may take into account the number of books catalogued by a cataloguer during a fixed time period, say for a fiscal year, and we divide this with the total working time in minutes, we may get some standard / average time required to catalogue a single book. But whether the time arrived at is meaningful? or whether one is sure that the time is comparable with the standard time. Unfortunately, there is no universal standard time schedule available for comparison, as practice of cataloguing differs in different libraries. Other variables are different types of books, extent of detailed treatment given to them, and difference in working capacity from cataloguer to cataloguer. All books do not require complete cataloguing. Added copies or additional copies acquired subsequently do not require it at all. It is our experience that in a fixed amount of time a cataloguer can catalogue as many as 25 simple books with six cards each but if the books are of difficult nature such as conference proceedings or reports or foreign language publications the number catalogued may be less than the standard assignment.

In this respect, it may be of interest to all of us to quote an attempt in this direction made by Saha³, who carried out the time and motion study of three libraries including ours. This project was initiated by National Institute for Training in Industrial Engineering (NITIE), Bombay. It was specially permitted by the Director, IIT,

Bombay, with the purpose that this study might show some ways to reduce the process time and increase the efficiency of workers. The study has successfully tried to consider and take into account the local working situation and the nature of different jobs performed in the library and suggested computerization of some activities to reduce the fatigue caused due to manual work and to increase the efficiency.

The study was carried out through close observation of time and motion of each process, with stop watch. But it is found that after giving sufficient time allowance for each process, the researcher could not arrive at a standard time schedule for different steps involved in the processes which could be practically applied. In fact, it was found that these processes were not amenable to this sort of time scheduling and, therefore, it was not applied in IIT Central Library.

Dougherty⁴, while discussing this problem, has mentioned that "if we are to solve this problem, the library profession must develop a dictionary of standard time based on carefully defined task descriptions". He mentioned his disappointment over the insufficient work done on this by the profession and says that "neither we as individual administrators nor the profession at large has done its house-work on labour costs. As this deficiency becomes more visible to outsiders, our budget justifications appear more and more absurd to those who hold our purse strings. Money spent in researching labour cost in libraries on a nation-wide scale would yield a rich harvest at budget approval time". If we think of Indian libraries against the above background much more has to be done in finding out some practicable standard time schedule for different library processes.

Labour Cost

Vickery⁵ in his chapter on "the analysis of process" has put forth various ways to analyse the library processes, given methods and mentioned difficulties in

estimating time for various processes. He has also given some suggestions to improve the efficiency. The standard times which he has arrived at are not applicable to Indian libraries.

However, the different methods he has adopted in finding out labour cost for a specific process are worth considering. According to him the cost of a specific process is the time directly expended on a specific job, multiplied by the hourly rate (salary) of the staff member. He has given allowances for leave, the chance of sickness, time for training and further education, lunch and coffee breaks etc., and assumed that out of 7.5 hours a day actual productive time is only 5 hours as other time is taken for getting ready for work, interacting with superiors, lunch and tea break etc. After taking the allowances into account the total working days in a year are 225. As per his formula if T is the time required for a process, then $300/T$ unit tasks can be performed daily and $225 \times \frac{300}{T}$ yearly. If the S is the annual gross salary of an employee then the labour cost per unit task is $\frac{ST}{225 \times 300}$. In addition to this he has also given some normal production rates for various functions in library assessed by Hanson & Slater.

Unit Cost in an Academic Library

Academic library is essentially a service organization and therefore, inspite of having functional divisions, it is extremely difficult to have highly water tight compartmentalization of various activities for the costing purposes. In most of the cases in such libraries, a lot of time of the staff members, assigned various tasks of processing library material, is consumed by uncertain queries relating to their activities and providing reference etc. This aspect has to be taken into account when such studies are initiated.

Unit costing is to be considered in the academic library only for conventional printed material in the form of books, monographs, conference proceedings and similar

other material, which are ordered, received, recorded in the main accession register and required full technical processing such as classification in depth and usually detailed cataloguing.

However, before we proceed further it may be added here that in the Indian context arriving at the appropriate unit cost of a task may be difficult even if not impossible as our system of procurement and processing etc. has not been amenable to this type of time and motion studies to obtain precise results. Most of our libraries are suffering from the shortages of manpower, material, equipment and funds and the concerned staff have to attend to a variety of tasks in the course of their routine duties and help library users.

Besides, most of the famous studies completed by experts and the results which have been published in scientific and technical sources in our field are based on an entirely different environment prevailing in highly sophisticated set-ups of academic or public libraries. Most of these libraries either use printed catalogue cards produced by the Library of Congress under MARC cataloguing system or use common resource sharing networks in their areas through co-operative / centralized cataloguing services. They also use advanced electrical / electronic equipment such as typewriters, duplicators and now also word processors, desk top computers and calculators which greatly reduce the manpower requirements.

In India, we have to do everything manually, without the help of such essential equipment making jobs tedious and time consuming.

In addition to some work done by Dr. Ranganathan⁶ on job analysis several decades ago, a few attempts were made in India to prescribe some norms for such activities.

The first attempt was made in the form of a memorandum, sent to all departmental libraries in various ministries, regarding standards of work for jobs in those libraries. The report was prepared by Staff Inspection

Unit of the Government of India, Ministry of Finance (Dept. of Expenditure) in April, 1965, and was issued to the government and other libraries for implementing its recommendations. The standardization of 20 jobs covering major items of work common to most departmental libraries was done. In the case of classification and cataloguing the following details have been mentioned in the memorandum⁷:-

Classification

Elements of the job	Time
Surveying the book and formulating idea regarding the classification with reference to the introduction, table of contents, comments given on the jacket, general survey of the book etc., consulting the relevant classification schedule etc., writing the classification on the book, when classification is done according to Dewey, comparing in doubtful cases the classification with that given in the index book to Dewey's Classification Schedule, that on cards for other similar publications in the classification cabinet, in the case of some books marking the relevant entry in the classification schedule, discussing doubtful cases with the supervisor or other colleagues, transit time for going to the index, catalogues and schedules, getting ready etc.	5 mts. per publication

Note 1 : For publications selected from Bibliographies etc., in which the classification is already given according to the classification scheme followed by the library, the standard is 2 mts. per book.

Note 2 : The standard applies to the Colon as well as to the Dewey scheme of classification.

CataloguingElements of the jobTimePart I

<p>Making a general scrutiny of the book to determine the information to be set down in the Catalogue Slip, preparing the main entry catalogue slip indicating classification no., author, title and collation viz., place of publication, name of publisher, year of publication, illustrations, maps, bibliography, separate page numbering of index, preface and introduction etc., consulting the codes and other reference books where necessary, writing accession number and call number on the slips, indicating on the main-entry Catalogue Slip all additional cards to be prepared, such as editor's card, commentator's card, classification card etc., making additions and alterations in the cards for the earlier editions (the aid of the attendant is taken to bring the cards and the books), checking the work done by the non-professional performer.</p>	<p>5 mts. per book <u>plus</u> card prepared in addition to the main-entry card</p>
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Part II

<p>Typing the main entry card and preparing and typing the additional cards from the main entry card, preparing the book-card for the jacket of the book, writing the call number in the book on two places and on the spine of the book, filing the cards.</p>	<p>4 mts. per book plus 2 mts. per card prepared in addition to the main entry card.</p>
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Note 1 : Cataloguing of Fiction may be done by a non-professional performer.

2 : The annual work count can be taken from the accession folder or from the periodical reports of the out-turn of different items of work.

This memorandum was further amended in July 1968 which has given some relaxation in timings of some jobs.

Though the report says that these standards have been evolved after careful observations and analyses of the performance of the jobs and have also been discussed with some experienced librarians, it seems that they have been prepared as if only machines, and not human beings, work in the libraries.

This report stirred up the hornet's nest and almost caused a great commotion in the field of Indian librarianship. The report was barely implemented anywhere in India, as its recommendations were found impracticable and inhuman.

Appreciating the need to discuss this report and gather factual data and opinions of librarians involved personally, Indian National Scientific Documentation Centre (INSDOC), under the banner of CSIR, called a seminar* where most of the recommendations of the above report were rejected as they were found almost impracticable for universities and other special libraries. Out of the 47 papers discussed, 24 were presented by the participants from special libraries and 16 from university libraries and seven from government libraries.

The seminar considered the various aspects of library operations with a view to arriving at some acceptable norms on the basis of the experience of the libraries of different categories. The seminar stressed the need for finding out standard work norms which can be uniformly applied to different types of libraries taking into consideration their special problems.

Another attempt was made during the 8th IASLIC (Indian Association for Special Libraries and Information Centres) Conference (1969), where a symposium on "Standardised Library Practices and Job Classification", was held at SNDT, Bombay⁹.

The discussion centred round simplification and standardisation of library work, minimization of waste and

duplication, and improved productivity in the work. Some of the contributed papers gave results of the work study conducted in various libraries and indicating scientific rationale for job analysis and job classification in libraries to aid manpower planning.

The symposium recommended selection of a few representative libraries to undertake actual work study and to circulate the results of the study among other libraries and thus help to formulate standards for efficient management of libraries.

This process is still incomplete and much has to be done to arrive at some universally acceptable standard norms for each library process in relation to university and other special libraries. A careful and accurate time and motion study is yet required. Unless the standard norms and guidelines are available, it is very difficult to arrive at justifiable unit costs of different processes in different libraries.

A Sample Case Study

Based on some of the methods, a study to work out the unit cost of technical processing i.e. classification, cataloguing and preparation of books was initiated specially for the present seminar and its results are tabulated below :

Before we come to the actual formula or figures, it is necessary to have some background of IIT Central library. This library maintains typed card catalogue. We do not have professionally trained cataloguers. Administrative personnel are trained for cataloguing. The Library does neither detailed cataloguing nor too brief cataloguing. However, sufficient added entries are provided wherever necessary. Though the Technical Processing Section and the Book Order Section are situated near each other on the top floor, the main catalogue is on the ground floor. Each cataloguer on average does the cataloguing of minimum 15 books of different nature or types minimum 100 cards. For classification work no such target is fixed. However, it

is expected that daily at least 30 books are classified in order to maintain a smooth flow of book processing. For every simple book with one author and one class number, minimum six (6) cards are prepared as follows :-

- 1) Main Entry / Author Card
- 2) Title Entry Card
- 3) Subject or Classified Card
- 4) Shelf list Card
- 5) Book Card
- 6) Local Card

On the average 5000 to 6000 books are annually added to the library collection after processing.

The following formula, based on the study by BRUTCHER and others, is used to find out the unit cost of Technical Processing by process cost accounting :-

$$\text{Unit Cost for Technical Processing} = \frac{\text{Total Technical Processing Cost}}{\text{Total Volumes Processed}}$$

In order to calculate the total processing cost the following costs are taken into account :-

- 1) Labour cost involved in classification,
- 2) Labour cost involved in cataloguing and preparation
- 3) Material and equipment cost.

Since this library neither uses any special electrical or electronic equipment such as card duplicator, stencil cutter or computer for this purpose, nor does it receive ready made catalogue cards from Library of Congress, only material cost i.e. cost of the stationery used is considered. If the services of all professional and administrative workers who are directly responsible for technical processing are combined, the total processing cost will be equal to total labour cost + total material cost.

The gathered data are tabulated here as :-

Cataloguing work done

Time Period	Urgent books processed	Regular books processed	Old books processed	Total books processed	Total catalogue cards prepared	Total SLC, Book/Local cards prepared	Catalogue cards filed
One month with 20-1/2 working days	148	529	9	686	2014	2058	2302

Labour cost

Designation	Wage per day	Total day worked	Respective total working cost	Respective working cost with actual production time 5 hours daily
Classifier	53.07	18-1/2	1074.29	716.19
Sr. Cataloguer I	42.64	20-1/2	879.12	586.08
Sr. Cataloguer II	44.46	20-1/2	911.43	607.62
Jr. Cataloguer I	33.63	17	571.71	381.14
Jr. Cataloguer II	29.90	19	568.10	378.73
Lib. Assistant	34.18	15	512.70	341.40

Total Labour Cost = 3011.16

Stationery Cost

Stationery items	Items used	Rate per 1000 items	Respective total cost
Catalogue cards	2014	112.70	226.98
Book Card/Local Cards and Shelf List Cards	2058	60.00	123.48
Date slips	686	30.00	20.58
Labels	686	8.58	5.88
Books Pockets	686	74.20	50.90
		Total	427.82
Other misc. items 5%			21.39
		Total	Rs.449.21

Total processing cost = Total labour cost + Total material (stationery) cost
= 3011.16 + 449.21
= 3460.37

Total number of books processed = 686

Unit cost of processing = $\frac{\text{Total technical processing cost}}{\text{Total No. of volumes processed}}$
= $\frac{3460.37}{686}$

Unit cost of technical processing per title = Rs. 5.04

While calculating the labour cost, it is assumed that out of 7.50 hours daily only 5 hours on an average is the actual production time and rest of the time is taken for getting ready for work, interacting with supervisors, in attending related queries, tea and lunch breaks etc. But actually, all the workers have been fully paid i.e. paid for one full month by the institute and holidays and

leaves are paid for. If this full working cost is taken into account, the total labour cost comes to Rs.7,287.70, and the unit cost after applying the above formula will be as -

$$\begin{aligned}
 \text{Unit Technical Processing cost} &= \text{Total Labour cost} + \\
 &\quad \text{Material cost} \\
 &= \text{Rs.7287.70} + \text{Rs.449.21} \\
 &= \text{Rs.7736.91} \\
 \text{Unit cost of Technical Processing per title} &= \frac{7736.91}{686} \\
 &= \text{Rs.11.27}
 \end{aligned}$$

The actual unit cost of processing a title, where the cost of ordering, accessioning and the overhead cost, is also taken into account, will be much more than the one found out for a part of the whole processing.

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ZERO - BASE BUDGETING FOR LIBRARIES

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SYNOPSIS

Traditionally, current year's expenditure is taken as base for putting up demands for the next year's budget. It is also a practice to consume all the grants of a given year in order to protect next year's appropriation. Zero-Base Budgeting is based on annual fundamental reappraisal and correlation of purposes, methods, resources and alternatives. ZBB requires every activity and service to be considered as a decision unit. Decision units form decision packages. These decision packages are evaluated, ranked, approved or disapproved depending on the limits of funds. Zero-Base Budgeting involves all responsible persons in the planning process and expects justification for variation. 7

Introduction

Our views and philosophies of library management may not be the same, when we are attached to different parent organizations and wish to attain different objectives. However, we all wish to economise resources. We wish to achieve more with any given set of resources (i.e. material, human or financial) and try to save something for other purposes. Budgets and accounts are our tools. An account is a statement about what has happened in the previous year, while a budget may be regarded as an estimate or forecast of an account for the coming year.

One of the advantages of budgeting is the fact that it draws our attention to the allocation or the spending limits and leads to careful thinking for a precise estimate. Squeezed by rising costs of materials and services, we have to decide between cutting funds for new acquisitions, subscriptions, etc. and services. Our budgeting decisions tend to be simply number oriented.

Need for fresh orientation

Conventionally, when we work on demands by different account heads, we identify total amounts requested rather than spending priorities. We start with the current level of expenditure as an established base instead of reevaluating every programme. We do not link expenditure with efficiency and effectiveness. We do not study, challenge or evaluate our goals, nor do we look for alternative courses. There may not be clear statements of result-oriented goals. In conventional budgeting, once an activity or item of expenditure is established, it becomes immune from subsequent scrutiny. Our philosophy is to get as much as we can. We try to spend all the allocated amount in order to protect our next year's appropriation.

In order to transform this scene, we should correlate expenditure and purpose. We should justify programmes and expenditure every year and think of alternatives, lowering or enhancing provisions and assume responsibility of goals, their achievement or failure. Thus, constructing a budget based on fundamental reappraisal of purposes, methods and resources without any reference to what has gone before is Zero-Base Budgeting.

Origin of Zero-Base Budgeting

Peter Pyhrr, the originator, introduced the concept of zero-base budgeting at Texas Instruments, Inc. U.S.A. for their 1970 budget. Based on his experiences, he wrote an article in Harvard Business Review. Jimmy Carter read this article and, when he was elected Governor of Georgia, invited Mr. Pyhrr in February 1971 to discuss the feasibility of using ZBB for that state. The results were impressive. On February 3, 1976 a bill was introduced in the U.S. Senate calling for the use of ZBB in the Federal Government (The Bill, S2925, called the Government Economy and Spending Reform Act.).

When Governor Carter became President of the U.S.A. in his first Presidential Report to the American People on February 2, 1977, he announced that ZBB would be used for reorganization of the federal bureaucracy. He issued a memorandum to the heads of Executive Departments and agencies on February 14, 1977 and the Director of Office of Management and Budget issued guidelines about the use of ZBB in the Executive Branch on April 19, 1977, asking each agency head to develop a ZBB system to be used in the preparation of the 1979 budget. Since then, State Governments and several industrial organizations have been using ZBB.

The Concept of Zero-Base Budgeting, once understood is applicable to all 'actionable or discretionary' activities, programmes or services in which cost/benefit relationship can be identified, even if that relationship is highly subjective. ZBB, therefore, can be applied to all administrative, technical and commercial functions.

Elements of Zero-Base Budgeting

ZBB has three basic elements, viz.

1. Identification of decision units.
2. Analysis of decision units and formulation of decision packages.
3. Evaluation of decision packages and their ranking; resources are allocated after ranking.

Decision Units

The first step in implementation of ZBB is the identification and definition of decision units. Decision units are the lowest level or basic entities for which budgets are prepared and resources are requested. Each decision unit should have an identifiable person in-charge who has authority to establish priorities and prepare budgets for all activities within the decision unit. Decision units can be programmes, projects, functions, cost centres, organizational units, etc.

Decision Package

A decision package is defined by Peter Pyhrr as :

A document that identifies and describes a specific activity in such a manner that it can be evaluated and ranked against other activities competing for limited resources, and approved or disapproved.

Decision package is a form on which the person in-charge submits his tentative plans and the resources needed to achieve those plans.

Decision Package Form

Activity / Service ---- Rank _____

Level No. 3 of 7

Department / Section ----

Prepared by ----

Purpose of activity / service

Description of activity / service

Alternative ways of performing work / project and costs

Advantages of retaining activity / service.

Consequences if activity / service is eliminated

Resources required -

			Current Year	Budget Year
Staff	...	Rs.	_____	_____
Material	...	Rs.	_____	_____
Outside Service	...	Rs.	_____	_____
Other	...	Rs.	_____	_____
<hr/>				
Total	...	Rs.	_____	_____

Separate decision packages for ongoing programmes and individual packages for new programmes or activities or services to be considered are to be prepared. The person in-charge would also give the package a number, e.g. 3 of 7, 2 of 8. This also means that he is submitting 7 or 8 packages respectively. He would also state in a few sentences the benefits derived from funding the package. For each decision unit, three decision packages would be submitted, showing and justifying the minimum level necessary, the current operating level and improvement level. The consequences of disapproval of a package must also be reflected to provide higher authorities with the information required for decision making.

Evaluation of decision packages and ranking

Once the decision packages are submitted by various units to the higher authorities, it is their responsibility to review all packages, discuss them with subordinates, make adjustments and establish the priorities, and prepare priority list for decision units in descending order. A running cumulative total of budget request amounts is kept.

Ranking process is most crucial. It may be done by a single authority or by a committee. If there are several decision packages, the ranked decision packages may be consolidated into a smaller number of super packages for review and ranking by a higher authority. Ranking authority should have a general idea of the level of funding. He should consider interdependency of activities and operating units. This is of two types, viz. vertical and horizontal. Vertical Dependency is the relationship based on sequential levels of funding within a department. There are certain activities or services which must be maintained at the minimum level. Horizontal dependency is the interrelation of parallel activities.

There are certain core activities or packages which would be given top priority while ranking. Attention

would usually be concentrated on those packages which lie within a reasonable range around the probable 'cut-off' line. If we are ranking 50 packages, it may not be necessary to struggle for ranking, say, first forty packages. For ranking further packages, one must ask whether it should be included in the budget? Why? What is the minimum? What is the alternative? etc.. It is more important to consider which of the borderline packages should be accommodated and which can be postponed. The section or department in-charge is usually a cost centre or operating level individual. He is concerned with minimizing costs while achieving activity goals. The head of the department must tie in activities with long-range goals. He has to consider the whole department or the organization and its long-term or future projects. Hence ranking at the higher level is not just an aggregation of lower level objectives and packages.

How to use Zero-Base Budgeting

1. Break the total organizational / departmental responsibility down into clearly identifiable units. Try to group functions, processes and personnel. This should cover all projects, work activities under your control.
2. Break down these units further, where there would be at least one full person responsible and minimum expenditure, say, of Rs.5,000/- is incurred. Consider scope of work, specific level of service and quality of output, time schedule, the number of persons required and finance at the existing level.
3. For each activity, answer the following questions :
 - a) What is the minimum level of effort required for existence / provision of essential service ?
 - b) What is the current level ?
 - c) Is expansion necessary ? At what cost ?
What is the justification ?
 - d) Is there any alternative ?

4. Prepare a decision package for each activity.
5. Discuss, guide the subordinates and give them orientation.
6. Collect the packages and do the ranking.
7. Once it is decided, which activities would be funded, return the decision packages to the originators.

Epilogue

Zero-Base Budgeting is management oriented. It combines planning, budgeting and operational decision making into a single process. It becomes necessary to quantify both the anticipated costs and benefits associated with various activities and at the same time provide criteria for evaluation of achievement. It identifies, pinpoints every programme or service and avoids duplication. ZBB facilitates close monitoring of expenses. If it accepts minimum expenditure level, it can also provide for increases. It builds every service or activity from zero up as against the incremental budgetary process and requires fresh consideration of every activity each year.

CREATIVITY AND OTHER MANAGEMENT TRAINING TECHNIQUES

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ABSTRACT

(The paper explains creativity as a management concept and discusses its place in an enterprise. The author believes that management problems and opportunities in LI are same or similar to those in other fields and hence, creativity is relevant to LI area. Truly creative ideas of very high order have left permanent impact on LI field. Finally, the author discusses, with relevance to LI field, the techniques for developing creative abilities as categorized by Hicks and Gullet into (a) analytic, (b) free-association, (c) forced relationship, and (d) eclectic. The two other techniques used in management training, viz., Delphi and Role Playing, are also explained).

Modern management is required to handle a variety of problems arising out of individual and group human behaviour, assimilation of technology, changing social values and the need to make the best use of human talent. To help face such problems a number of techniques and methods that make use of human appreciation of problems and situations have been developed. Three such important methods, namely, creativity development, Delphi and other panel techniques and role playing are considered here.

Creativity

Creativity is a gift of nature. It is the ability to generate new ideas or perceive things in a unique way. Creativity and intelligence seem to be two distinct forms of mental ability. A related process is innovation (creativity of a lower order) which is improving upon an existing idea, product or process.

Creativity in Organisations

Enterprises exist in a competitive world. To survive and survive well organisations need to scout for ideas and opportunities that lead to improving methods and policies; creating new products or modifying existing lines of production; cut costs; diversity into new areas, merger of units, separations and a host of other means that give them a competitive edge. All this involves creative thinking and decision making. However, the real problem lies in translating major ideas into action. They must be economically viable, and also harmonise with the existing organisational mission, structure and climate of the enterprise. This calls for careful evaluation of new ideas, willingness to take risks and tact in implementing. Managers need to be not only creative by themselves, but should be able to spot, enthuse and exploit to mutual advantage the talents of creative persons in an enterprise. Creativity plays an important part in planning, decision making and problem solving.

A creative organisation is one which attracts large number of creative people into its fold, makes full use of their creativity, and promotes a creative environment throughout the enterprise. In organisational context creativity has two aspects : (a) creative approach to problems and managerial processes; and (b) creative individuals who produce ideas which can be utilised for the organisational betterment.

Creative persons as they could make brilliant contributions may also cause some problems to management. This happens because of aversion to strict discipline, super-sensitiveness in certain aspects of personality and eccentricity generally associated with such persons. Since most new ideas challenge or disturb entrenched ideas resistance is likely to crop up born out of genuine concern or vested interests. If the resistance is too strong vested interests may try to sabotage implementing new ideas.

Creativity and LI

Managerial problems and opportunities in LI are same or similar to those in other fields, except that the environment differs. Hence, creativity is relevant to LI area. Recent creative endeavours in British libraries have been highlighted by Hart(1). She states the problem as "How the creative spirit so obviously alive in librarianship can be fostered, not just in the upper ranges of management, but throughout library and information organisations so that challenges and problems can be met positively". The answer seems to lie in increasing the awareness about the potentialities and importance of creativity among LI workers, besides following a creative approach to LI management.

Truly creative ideas of very high order have left permanent impact on LI field. A few examples of such creative ideas are - development of book classification by Melvil Dewey, introduction of unit card in libraries, faceted classification concept of S.R. Ranganathan, evaluation of index languages in laboratory situations by Cyril Cleverdon and associates, computer generated key-word index (and SDI) by H.P. Juhn, citation index by Eugene Garfield, unorthodox approach to cataloguing and binding of serials in NLL by Donald Urquhart, recognition of commodity and cultural aspects of information, electronic book and the PRESTEL concept, just to mention a few.

Adoption of ideas, procedures and techniques found elsewhere, though not considered to fall under creativity in its true sense, still involve some creativity. Visits to other LIs and critical observation of their functioning and their problems could become a source of creative ideas though of a lower order. New ideas, procedures and techniques noticed during such visits and exchanges can be profitably copied with or without modifications, particularly at working level.

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Creative Process

Genesis of creativity is traced to complicated mental processes involving - (a) logical thinking, (b) cross-fertilisation of ideas and relationships, (c) problem solving - a process where a given problem is defined, facts gathered, alternative solutions formulated, solutions selected and tested, and (d) free flash of ideas from conscious and sub-conscious levels of human mind. It is a product of imagination, intelligence, curiosity and often agonising involvement.

Creative thinking seems to proceed in following stages - (a) problem recognition, (b) gathering information, data and facts, (c) pondering or mental fervour over finding solution, (d) incubation period when the whole problem is consciously forgotten or shelved for sometime, (e) flash of ideas and (f) verification and formalisation of the new ideas.

Development of Creative Abilities

Recent researches indicate that potential for creativity exists in most people, but in varying degrees. It is a matter of recognising and fostering the talent. Several techniques have been developed for stimulating creative thinking. Hicks and Gullet(2) have grouped them into four categories - (a) analytic, (b) free-association, (c) forced relationship, and (d) eclectic.

Analytic techniques. They approach a problem through rational analysis.

The well known methods are :

Attribute Listing. Developed by Robert Crawford(3), a given idea, process or product is broken down into its attributes or characteristics. By changing each of the attributes in all possible manners new designs or ideas are created. Evaluation or judgement is permitted only after all ideas have been listed.

Input-output Technique. Devised by the General Electric Co. of America, the technique first specifies the desired output and then defines the available inputs. Converting the available inputs in all conceivable manners to achieve the desired output throws up new ideas. It is most helpful in solving problems dealing with use of energy.

Grid Analysis of Fritz Zwicky(4). After defining the problem it is analysed. The major variables of a problem are expressed on a two dimensional grid which is used to indicate all possible combinations of the variables. Then the appropriate combination is given to brainstorming. Ideas are listed and all possible theoretical solutions are worked out. After assessing every solution the best solution is selected.

Free-association techniques. These aim at generating ideas from individuals in a group session. Well known techniques are : brainstorming, synectics or Gordon technique, morphological synthesis and the Philips 66 Buzz session.

Brainstorming. The technique developed by Alex Osborne(5) was first applied to business to elicit creative ideas in problem solving. It consists of posing before a select group of persons a specific problem for which a solution is desired. The participants are encouraged to come up with new ideas in an open atmosphere. Positive efforts are made by the leader of the session to obtain ideas including what may look like wild or crazy. All ideas are listed. At the end of the allotted time the listed ideas are grouped and subjected to criticism and evaluation. During the session two rules are scrupulously followed, that is, (a) no value judgements or criticisms permitted prior to evaluation stage, and (b) use of negative reasons and obstructive statements or "killer phrases" like "we have no manpower" or "it is impractical" are disallowed.

The technique works best when participants are more or less of equal rank and the problem is not too controversial. In recent years brainstorming has received a mixed reaction, in that, detractors of the technique quote that individuals are likely to develop better ideas by themselves than in groups, whereas the supporters cite that group decisions have certain advantage particularly when the group implementing a new idea also happens to be its originator(6).

Morphological Synthesis of Myron Allens(7). In this, the participants remain anonymous as they are asked to write down their ideas on a unit card. It also overcomes the limitation in the number of participants. The problem posed could be very general like "Why is our information service not very effective" ? or, be specific like "How to avoid necessary duplication of books " ?

Synectics. Originated by William J.J. Gordon(8), the technique was also known as Gordon technique. With further improvement it has been named as synectics, meaning assembling together irrelevant elements. The technique consists of two phases - (a) making the strange familiar, and (b) the familiar strange. The strange familiar phase generally consists of analytical treatment of the problem. In the second phase the problem is seen from an entirely different view point. To stimulate creative thinking the familiar-strange phase uses four types of analogies, namely, personal, direct, symbolic and fantasy. It differs from brainstorming in a major way in that only the leader will know the exact nature of the problem. This prevents the session from reaching premature solutions. Synectics is particularly suited to tackle complex decisional problems.

Phillips 66 Buzz Session. The technique developed by Donald Phillips takes the form of a competitive brainstorming as it employs a large group of participants divided into a number of small groups. Each group discusses the

same problem. Finally the ideas from all the groups are pooled together and the best is chosen after evaluation.

Forced - relationship techniques. Creative ideas are generated by the unusual and forced or mechanically formed arbitrary relationships between two or more normally unrelated ideas or parts. These include :

Catalogue Technique . An item, subject, entry, picture or word is chosen at random from a catalogue or a printed source. This is combined with a second entry in the catalogue selected in the same manner to yield new ideas based on different relationships.

Listing Technique. A number of objects or themes are listed serially, and each idea or object is considered in relation to others in the list which may give rise to a new pattern. The process is repeated with each item in the list.

Focussed - object Technique. An item is pre-selected with a specific object in mind. The other object is chosen at random so that an unusual relationship is established. This relationship is then used for deriving further free association which results in new ideas.

Eclectic Approach. This makes use of the good points and principles from other creative techniques to stimulate creativity.

Some of the techniques will be particularly useful to LI in areas such as obtaining users and staff participation in decision making, thesaurus construction.

Overdoing with Creativity

Change for the sake of change is not desirable. Excessive emphasis on the use of creativity in management may lead to losing sight of the primary objectives. Too frequent changes that follow implementing too many ideas may upset the tempo of functioning. This may lead creative techniques instead of serving useful purpose to become a fad. The creative training programmes often tend to become superficial and a gimmick with exaggerated claims of their benefits. A proper perspective of the role of creativity, its judicious application and suitably designed creativity training programmes will lead to organisational improvement in terms of dynamism, better human relationships and effective communication.

The Delphi Technique

Forecasting or a peep into future is an important feature of planning and decision making. Statistical methods and operations research are two of the quantitative techniques that are in use. Forecasting the future is judgemental and hence not amenable to quantitative techniques. Conjecturing relies on assessment of past background, present situation, state of the art and dominant trends. These are critically examined against perceived future environment and the likely forces - economic, social, political, legal, technological and others. The mental process of forecasting involves perception, intelligence, knowledge, analytical power, creative imagination, all of which are individualistic. Two widely used methods for forecasting are the Delphi technique and the heuristics.

Olaf Helmer of the Rand Corporation of America created the Delphi technique. It is frequently used for predicting future technological developments, helping decision making and encouraging technical innovation. The main

features of the technique are - (a) a panel of experts on the subject under investigation is drawn from both inside and outside the organisation;

(b) each expert is asked to make predictions, formulate opinions or value judgements on the subject topic and list them, retaining their anonymity;

(c) each participant is then supplied with the feedback received from others, ofcourse anonymously; (d) based on this feedback new estimates or opinions are evolved; and (e) this process is repeated several times to arrive at a consensus view. The technique uses questionnairing, ranking of initial opinions, analysis and evaluation of each view by the leader of the panel at different stages, followed by final summary.

The anonymity of the panel members encourages each participant to come out with uninhibited answers, uninfluenced by others. The success of the technique depends on the participants and their expertise. The unique feature of the method is that it provides a distilled consensus expert opinion on the subject. The Delphi technique is criticised for lack of scientific base and the involved time and cost.

Application to LI. Application of Delphi technique to LI area is described by Fisher(1). An account of the use of this technique to decrease uncertainty about future events relating to information and documentation is presented by Wennerberg(2). The findings of a project undertaken by the Library Unit, University of California, Los Angeles, to study the future of library education in the United States by Delphi technique is reported by Borko(3).

Role Playing

One of the techniques used in management training and development programmes is role playing. It is also known by various other names such as,

'reality practice', 'sensitivity training', 'situation tests' and 'practice management'. This technique is primarily used for developing and practising skills required in facing interpersonal and human relations situations with which managers are confronted in every day work. The technique is also used in (a) developing problem solving skills; (b) decision making, (c) changing attitudes, opinions and feelings, (d) preparing for interviews and conducting conferences, (e) grievance handling, (f) understanding industrial psychology, (g) self analysis, and (h) acquiring insights into the nature of human relations. Since all these are also faced by LI managers, role playing could be used by them to advantage. Wherever authority relationships, departmental interactions, organisation design and staff - user relations exist, role play can be tried. For those who want to conduct a role play in library situations, the personal account of such a play described by Chapman(1) will be useful.

Role is a comprehensive pattern of behaviour associated with a position. A role remains relatively stable even though different people occupy the position. Role playing must display the actions and qualities that are associated with a position. In essence, role playing is the selection of real-life situations, simulating the same by assigning roles of the interacting parties, studying how they behave as original characters and react as assumed individuals in the created situation and drawing useful inferences. It employs the techniques of critical evaluation and symbolic model of speech or action. According to Lowell(2) it dwells into problem definition, delineation of alternatives for action, exploration of the consequences of these alternatives, and decision making. The unique element in role playing, he further adds, is that when a person acts out a problem, his or her ideas are complicated by the unpredictable responses of the other role players, thus he cannot control the situation but must react and respond to actions, emotions and reasoning of others. Thus it

displays the pattern of human behaviour in facing a situation as a simulated reality experience.

The person conducting the role play creates the environment as realistic as possible, chooses the problem to be solved, selects the actors, develops the technique of enactment, controls the play, leads the evaluation session and gets feedback. Physical arrangement consists of a hall or room where players and observers sit, separately.

Role playing act could be spontaneous or structured. Whatever be the type, the leader has to build the conceptual framework, write down the case, prepare the actors for assuming the character or problem and set down the procedure. The observers may be given a set of questions to ask or concentrate on specific aspect of the character or problem for later discussion and evaluation. It can take the form of a skit, single or multiple group acting. In the single group acting, one group enacts and other members of the group join as observers. Act of role playing can be varied by (a) making more than one group enact the same play, (b) repeating the play by reversal of roles and (c) using more than one group for each role. In multiple group playing all the participants are formed into groups and all the groups play simultaneously. In cases involving embarrassing situations for role players, masks may be used.

The technique to be effective must not be used too frequently, Role players must imbibe the spirit of the character they are playing and not play out their own personal problems. The atmosphere must be conducive for frank expression, feelings and ideas.

Socio drama and psycho drama are two other forms of role playing. Socio drama is used to deal with social theme in a group context and psycho drama for handling psychological problems of individuals.

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The Problem of Motivation in University
Libraries : A Case Study

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(Abstract)

✓ Motivating junior staff is a veritable problem in University libraries in India. The paper presents a case study of a university library where junior staff, due to several factors, feel frustrated. It also suggests a few remedial measures to improve the situation ✓

The University Librarian or his deputy requires the creation and maintenance of an environment in which every individual works in a group towards the accomplishment of a common objective i.e. the best possible service to readers. The Librarian's job is not to manipulate staff but, rather, to recognize what motivates people.

The basic element of all human behaviour is some kind of activity, whether physical or mental. The question arises as to what activities human beings will undertake at any point of time, and why. We know that activities are goal-oriented, that is, people do things that lead them to accomplish something.¹

The primary task of the librarian is to get people to contribute activities that help to achieve the mission and goals of the library. To guide people's activities in desired directions requires knowing, to the best of any librarian's ability, what leads people to do things, what motivates them.¹

Motivation

Motivation is a general term applying to the entire class of drives, desires, needs, wishes, and similar forces. That librarians motivate their subordinates is to say that they do those things which they hope will satisfy these drives and desires and induce the subordinates to act in a desired manner.¹

Employees of the library also require motivation. Adequate salary and incentive schemes can motivate the staff. Besides the salary, the environment of the library is also an

important factor in motivation. It is appropriate, therefore, to present here a case study of the University of Poona Library, and the problem of motivation involved.

There are 62 staff members in the library. Out of these 22 are professional staff members : One Librarian, One Deputy Librarian, Seven Assistant Librarians and the remaining belonging to the category of Junior Technical Assistants. Since the Junior Technical Assistants are the largest group, the problem involved is of motivating them for attaining the library objective.

A bachelor's degree plus the degree in Library and Information Science are essential for the selection to the post of Junior Technical Assistant in the pay scale of Rs. 365-760.

The Junior Technical Assistant category does not come under the provisions of the UGC. The Government of Maharashtra had appointed a one-man commission for the revision of pay scales and service conditions of the Government employees. So the recommendations of the said commission have been applied to the non-teaching employees of the universities in Maharashtra. The commission first found out the equivalent scale of the government employees, and on that line, the scale of Junior Technical Assistant was fixed.

In the staff hierarchy of the library, Junior Technical Assistants are second only to Assistant Librarians. However, the difference in emoluments and status between these two categories is too wide.

Apart from this difference, there exists no promotional channel, nor a selection grade for them.

The library remains open, and rightly so, on holidays also. Mostly it is these Junior Technical Assistants who have to be on the job on holidays.

They are members of the University Employees Union. But the Union is primarily for the administrative staff with whom Junior Technical Assistants psychologically find it difficult to identify.

They are also inhibited to accept the professional association as a forum for them in this respect.

The first three rungs of the staff hierarchy, in the matter of emoluments and service conditions, are governed by the University Grants Commission provisions. The Junior Technical Assistants, on the other hand, are governed by the provisions of the State Government. Such a situation gives rise to an unwanted conflict.

In short, there exists a situation in the library which is not desirable and helpful to the librarian in fulfilling his primary task of achieving the mission and goals of his library in unison with the entire staff. If the best possible service is viewed as the common goal of the library, then all members must identify themselves with this goal and all must be equally motivated to achieve it. The kind of motivation may vary with the category of staff. For example, while a word of appreciation may motivate an assistant librarian, a Junior Technical Assistant may need a material benefit, an incentive. The six factors contributing to the frustration of Junior Technical Assistants in the University library, as explained above, defeat any attempt at motivating this category of staff. The question is not whether their frustration is justifiable or not, whether it is real or unreal. It is there and needs remedial measures.

The University Teaching Staff members as well as students expect from them efficient, quick and good service and also modest and polite behaviour. The dissatisfied and frustrated Junior Technical Assistants are naturally apathetic towards this aspect of service.

It is in this context one is reminded of Dr. Urquhart's principle in respect of library staff who must work as a team. His staff at NLL have been categorised as scientific, eligible to higher grades on the basis of assessment and are encouraged to improve their qualifications in order to improve their eligibility to higher grades. And all of them have been members of the same staff association. Duties at NLL are interchangeable. It is only under such ideal circumstances in which staff work and are rewarded. This is the type of environment that the library needs and must create.

It is possible to create such an environment in India, e.g. the UGC has already introduced the merit promotion scheme; scientific staff in India are eligible for higher categorisation on the basis of assessment. On similar lines, such measures may very well be introduced in university libraries so that there will exist no reason for the professional staff to brave under the feeling of frustration. The staff will also have to appreciate that the two most important words in the promotional schemes referred to above are merit and assessment.

There should also be a Joint Consultative Committee. One member from each category will have representation on that committee. Besides, the Library Committee will nominate equal number of members from it on the Joint Consultative Committee. There will be minimum four meetings of the Committee in a year. The Committee may be empowered to take the nonfinancial decisions and these should be implemented immediately. All staff members should be obliged to accept these decisions as final. The formation of such a Committee will create confidence among all staff.

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Increasing Library Effectiveness

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(Abstract)

Library effectiveness is a measure of a number of factors : goal achievement; the optimization of performance; the degree of user satisfaction; the efficient use of human resources; the ability to survive. The author's purpose is to inquire how to increase library effectiveness. Effectiveness can be increased by applying principles of scientific management for efficient utilization of the money and manpower at the librarian's disposal. In order to motivate his staff the librarian must display certain qualities, viz. leadership, creativity and communication skill. Under utilization of library service amounts to a waste of resources; the librarian must therefore follow the pattern of the marketing cycle and ensure that his organisation is user-centred.]

What is the meaning of the phrase 'Library effectiveness' ? Library effectiveness has been equated with efficiency; a more meaningful effort to define library effectiveness relates it to the achievement of library goals. For some library effectiveness is identical with user satisfaction. Personnel input is another criterion for measuring library effectiveness. Some equate library effectiveness with cost effectiveness. Actually library effectiveness is a measure of a number of factors; goal achievement; the optimization of performance; the degree of user satisfaction; the efficient use of human resources; the ability to survive.

In this paper we do not propose to answer the question How good is the library ? Our purpose is to inquire how to increase library effectiveness : from ineffectiveness to effectiveness, from good to better to best. "There are only two ways", wrote Ralph Shaw¹, "to meet increasing service demands. One is to get more

money. The other is to do all the work that can be done by applying the principles of scientific management to effect more efficient utilization of the money and manpower already at your disposal".

Some early librarians did make a virtue of the economy they were often forced to practise by asserting their primary concern with giving value for money. One of the earliest to give expression to this point of view was Frederic Crunden, the librarian of St. Louis Public Library, in an address to the American Library Association conference of 1887 : "The librarian, like the business superintendent, is expected to organize his subordinates so as to secure the most efficient service at the least outlay for salaries²." W. Austen, Assistant Librarian at the Cornell University, urged academic librarians to adopt those methods which were being employed to achieve greater efficiency in industry.³

Getting more money is no easy proposition today. Hence we have to opt for the alternative - the application of sound management practices in libraries for efficient utilization of money and manpower at our disposal.

Manpower planning is the working out of ways to satisfy the short and long term staffing of an organization, and to ensure that the staff are used effectively. In our pattern of recruiting staff, the first step is the advertisement. Here are two advertisements from Library Journal and one from University News.

ASSISTANT UNIVERSITY Librarian for Personnel, University of California, Davis. Reports directly to the University librarian, with primary responsibility for personnel matters in the general library; ensures compliance with university/campus personnel policies and procedures; serves as the library's affirmative action officer and as a campus sexual harassment advisor; responsible for all recruiting activities; serves as staff development officer for the library; administers collective bargaining agreements covering academic and staff personnel in the library; oversees preparation of the personnel budget; initiates and monitors merit salary programs for academic and career

staff personnel; serves as library representative to major campus personnel committees; with other members of the library administration, participates fully in developing policies for the advancement and management of the UC Davis Library System. Applicants should have a graduate degree in librarianship, or its equivalent, from an ABA - accredited institution. Demonstrated successful professional experience in an academic research library, including some supervisory experience, is essential. Extensive experience in administering personnel policies, preferably in a complex organization setting, is required. Experience with collective bargaining helpful, but not essential.

BIBLIOGRAPHER for Social Sciences, University of Minnesota Libraries-Twin Cities Campus. The University of Minnesota Libraries - Twin Cities Campus seeks applicants for the position of social sciences bibliographer. The bibliographer's responsibilities include the following : (1) Selects materials to support instruction and research in social sciences, presently including economics, geography, and anthropology; (2) analyzes, develops, and manages collections according to university needs; (3) prepares budget requests and manages an acquisitions budget; (4) serves as library liaison with the departments of economics, geography, and anthropology, and with other social science departments and programs as assigned; (5) performs bibliographic instruction in relevant subjects; (6) offers reference service, including online database searching, and research assistance in areas of collection development responsibility; (7) participates actively in the profession through relevant research, publication, and/or professional association activities. Required qualifications are a Master's degree in library science, experience in collection management and development at a professional level in social science disciplines in a research library, and knowledge of the literature and research methods of at least one of the social sciences, as demonstrated by education or experience. Other desired qualifications include an advanced degree in a social discipline, working knowledge of

one or more modern European languages, experience in online database searching and in bibliographic instruction, and good communication skills. The minimum salary is \$ 20,000.

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University of Delhi
Professional Senior

- (a) First or Second Class M.A./M.Sc./M.Com. plus a first or second class B.Lib.Sc. or diploma in Library Science. The degree of M.Lib. Sc. being a preferential qualification.
- (b) At least 7 years experience as Librarian or in a responsible professional capacity in a library
- (c) Good academic qualifications and research experience (with publications). The qualifications must be, in general, comparable to those of Readers in the Universities.

(University News May 8, 1984).

In the advertisements in the Library Journal job specifications are spelt out but is not found in the advertisement from the University News. Most of our advertisements for library personnel do not carry job specifications. Our first step should be to undertake a scientific job analysis and the preparation of detailed job specification. In the advertisement the tasks, responsibilities and abilities required for each grade of job could be set out formally along with the educational qualifications and experience required. This would result in the matching of employees to job/^{and} less chance of cases of square pegs in round holes. Personnel should be appointed to fit the known requirements of the organization rather than the organization should fit itself to individuals.

A university library usually has a collection of materials on several disciplines. It may happen that a

library has collected in the course of years a very rich collection in a particular discipline but there is no one on the staff with a sufficient knowledge of the discipline, and consequently these resources may not be fully utilized. With a proper manpower planning a library can build up a staff having proficiency in most of the disciplines if not in all. The subject specialist could be utilized to build up specific sections of the bookstock, to assist readers to use the resources effectively, provide specialised reference service and thus increase the image of the library. In every advertisement there can be a clause that candidates with special knowledge and education in a particular discipline will be preferred, and in course of time the library would have on the staff subject specialists, at least in most of the subjects, if not in all.

Having on the staff, personnel who have language proficiency in different languages, oriental and occidental, is definitely a great asset to the library. They can serve as translators, act as interpreters, and assist in the indexing and abstracting of journals in the language they are proficient in and also help in the development of research materials in languages other than English. Once again each advertisement can intimate the preference for candidates with proficiency in a particular language. This requires proper manpower planning.

The staff of the library is the key element in library effectiveness whether it is a question of evaluation of effectiveness or the question of increasing effectiveness. Even a small staff but committed, dedicated, enthusiastic, optimistic can be very effective in increasing the image of the library. Staff are the most flexible and complex component of an organization. People work for money, but not only for money. They also look for security, the need to belong and be accepted, the need for recognition and self fulfilment. Some people are optimistic by nature. But there are some who tend to see the negative side before the good. The librarian has to create a consistent atmosphere of optimism and enthusiasm and also a team spirit among his

staff. There is a way to inspire positive feeling in your staff. It is called motivation. The essence of motivation is said to be the art of getting others to want to do what you feel should be done. It is an art very few of us have mastered effectively. All bosses motivate in one form or other, but not all motivation results in positive behaviour.

Several suggestions have been offered as regards the means of motivating and encouraging the staff to give off their best. One of them is the reliance on leadership to provide the necessary dynamism. It has been argued that there is a 'definite psychological law' of imitation such that employees are influenced by the example of fellow workers, hence efficient management would focus on these individuals who showed initiative, special skill or other positive qualities.⁴ Some writers have pointed to the importance of personality, the wisdom, the example set by the chief librarian of inspiring and motivating the staff.⁵ It is natural for staff to respond positively to such motivational factors as a sense of achievement, recognition and work that is intrinsically satisfying.⁶ The Sheffield Manpower Project found that for library staff 'factors which acted as "satisfiers" ... were those which were intrinsic to the work itself (e.g. variety, involvement with people, a sense for service and social worth, intellectual satisfaction, opportunities for personal development.'⁷

To effectively implement programmes of personnel development and to encourage self development are the most important items in harnessing human resources in any organization. Studies have shown that work which is more challenging and which calls on the staff to utilize as well as update their knowledge results in continuing self-development. We should take advantage of this intrinsic motivation of the work itself to stimulate meaningful development activities.

Every library has public relations in the sense that it has a relationship with the community it serves. Public relations is the deliberate, planned and sustained

effort to establish and maintain mutual understanding between organization and its public. In public relations, as in other areas of library management, the librarian must know his community and also his library and be able to identify the good, the bad in the service. The staff of the library are its image builders and destroyers. They are the assets and the liabilities. The librarian must develop a communication structure to keep the staff informed as a part of internal public relations. Often the staff are not aware of the goals and objectives of the library and the role each one is expected to play in the organization. The staff should have a feeling of active participation in decision making, innovation and in the management's endeavour to increase library effectiveness. Effective communication makes people more aware of their working environment. Communication should be done on a regular basis, with the entire staff if possible, with groups of employees (section-wise) or sometimes individually (referred to as individual conferences). Communication does not mean hauling up to reprimand, to communicate criticism, though this at time is necessary but this should be done privately not before other members of the staff. The librarian should seek to praise and encourage. Misunderstandings are caused by lack of communication.

The stock in most of our libraries, if not in all, are under-used and one of the reasons ascribed is user ignorance. Under exploitation of any service provided by an organization is a serious waste of organizational resources. Librarians now need to adopt a new approach to providing services and investigate their clients' new requirements, following the pattern of the marketing cycle : starting with the consumer; finding out his needs; then decide the status of the product, its price, and how to distribute it; establish techniques for publicity and sales; then check whether clients' needs are really being satisfied

Douglas wood, Marketing Manager, Aslib, says :
 "... Marketing methods, if applied appropriately, can make a vital contribution to library and information work. The

role of marketing is to match your capabilities with the needs of your customers, so that they respond by action profitable to you".⁸ Effective marketing requires a number of general activities. "In classic theory", says Wood, "marketing covers the four Ps

Promotion

Product (or service)

Place (where you promote)

Price (or profit)".⁹

In this article, Wood describes how marketing ideas can help the librarian review his services and ensure that they meet the needs of the library's users and of the organizations as a whole. Most writers for the subject agree that marketing concepts and techniques can be useful for libraries and other nonprofit institutions, but each organization needs to determine the appropriate mix which will fit its own specific needs and objectives. Successful marketing demands the cooperation and contribution of all personnel in a library or an information agency. It is important that the institution strive to be user-centred rather than materials-centred in order to satisfy the needs of the consumer.

Philip Kotler and Sidney J. Levy remind us in their article¹⁰ that the original purpose of an organization is to provide service to specific clientele. However, they warn us that : "In the course of evolving, many organizations lose sight of their original mandate, grow hard, and become self-serving". Librarians and information scientists must be on their guard to prevent this situation happening in their organizations. Let me conclude with what Thomas Peters and Robert Waterman have to say on "excellence" in their book¹¹ that has become the inspirational favourite of modern business. The authors view "excellence" as the quality of continuous creativity, and they list eight traits that mark out outstanding companies.

1. They like action.
2. They stay in touch with their customers.
3. They breed "champions".
4. They draw their power from the rank and file.
Excellent companies make each employee feel like a winner.

5. They live by the spirit and the letter of their beliefs.
6. They stick to their knitting. "Virtually all the growth in the excellent companies has been internally generated and home-grown".
7. They keep their form simple, their staff lean. "small is beautiful."
8. They communicate.

F.W. Taylor, the founding father of management science and famous for work measurement, viewed workers as mechanistic. This was a mistake, The key to excellence may be this : treat people, not capital spending and automation, as a primary source of productivity.

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New Trends in Management of Libraries :
Technology & Efficiency in Management

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(Extended Abstract)

As a result of increasing applications of the advances in computer, telecommunication, reprographics, micrographics, laser and some other technologies in the operations of libraries and information centres, particularly in advanced countries such as the U.S.A., the U.K., Japan, France, FRG & so on, the so called 'Information Age' has dawned and 'paperless libraries', among others, are fast coming into existence, radically changing the traditional concept, complexion, services and management practices of libraries.

Paper, which was most probably invented in 105 A.D. in China and has been the most popular information carrier medium, is steadily losing ground to modern media such as magnetic tape, disk, drum, microforms, optical disk, video-disk etc. due to the following reasons : (1) Its constantly increasing cost; (2) Fast dwindling sources of raw materials from which it is made (recycling technology which is being developed and applied to regenerate non-renewable raw materials can at best be used to some extent to tackle this problem); (3) Bulkiness-information generated in every field of human activity is growing so rapidly that the demand for its storage space, cost of which is escalating, is growing fast which libraries find very difficult to cope with. (Information generated in the field of science and technology alone is doubling every 7 to 8 years and presently, over 3 million documents of various kinds are produced annually all over the world); (4) Difficulty of retrieving both the documents and the specific information they contain. In today's hectic world, retrieval of information is required to be speedy, exhaustive and also inexpensive. In spite of adopting a variety of classification, cataloguing and indexing systems,

retrieval of desired documents / information is becoming increasingly difficult, time-consuming and also incomplete; and (5) Short life (durability of paper is short and can be enhanced to some extent by adopting measures such as air-conditioning, humidity control, use of pesticides etc. which are costly).

The modern information carrier media have several advantages over paper. Let us consider, for instance, microforms, mainly microfilm and microfiche. Microphotography, now popularly called micrography, is the photographic production of minute pictures, usually of such objects as a page of text, engineering drawing etc. on film. It is now possible to reduce these to the size of a pin-head or dot on a film without loss of legibility. Micrography began soon after the invention of photography itself when Benjamin Dancer, an English optical manufacturer, in 1839 reduced a 20" document to 1/8 of its original length which was visible under microscope at 100 X. More or less at the same time, a French photographer, Rene Dargan also developed micrography. Since then gigantic strides have been taken in this field. The most commonly used microform is the 16 mm or 35 mm roll film or the microfiche. Microfiche, usually of size 15 cm X 10 cm, is generally used in micro-publishing systems where it is necessary to distribute a large number of copies to libraries, engineering units, industrial firms and so on. The internationally accepted microfiche format contains 98 frames. The ultra-fiche with micro-images at a reduction ratio of 150:1 accommodates approximately 3000 images on one A6 size microfiche. In fact, it is now possible to put multiple volume encyclopaedias, dictionaries etc. running into thousands of pages on a single microfiche. For example, the 13-volume Oxford English Dictionary which runs into 16,750 pages with some 450,000 words, can be stored on a single 15 cm X 10 cm fiche! A number of micro-image retrieval systems have been invented such as Kodak Miracode II System (Microfilm information retrieval access code)-which enables the display of any desired image on a reader screen within

seconds. No wonder that with the distinct advantages such as cheapness, less storage space, fast retrieval etc. more and more libraries in advanced countries are opting for microforms, particularly for library catalogues, reference works, indexing and abstracting periodicals and even primary periodicals.

Besides, in integration with data processing, word processing, telecommunication etc., micrographics is providing an increasing number of ingenious systems, e.g. Computer Assisted Retrieval (CAR) in which the computer is efficiently indexing, cross-referencing, updating and helping in retrieving documents in a rapid and precise manner from large microfilm data bases.

Other media such as magnetic tape, disk, drum, video-disk, optical disk and so on are also being increasingly used in the libraries for storage and retrieval of documents and information, though these media are costlier than the microforms. For example, from a video-disk on which tens of thousands of pages of information can be recorded, the user can reproduce the information he desires in the form of images on the screen of a specially designed television at will. Random access to desired information is also possible. Some existing examples of this system are : PRESTEL & SEEFAX of the U.K., ANTIOPE of France, TELIDON of Canada, CAPTAINS of Japan, BILD SCHIRMZEITUNG of FRG. These systems are fast proliferating, bringing the information needed by a person almost instantaneously at the location he wants.

Smithsonian Institute, U.S.A., has put on one video-disk 100,000 photographs. The price of one video-disk is only \$ 30. A hand held selector helps the video-disk user to find any desired photograph. The technique used is to photograph the collection usually on 35 mm film which is then transferred to a videotape. Duplicates are made from the 'master'. Needless to say, library holdings can be put on video-disks and can be made accessible to users even at remote locations through suitable telecommunication links.

Management of the library, in its widest sense, encompasses all library operations, routines, services and also personnel. Its principal aims are : (1) Enhancing efficiency (2) Improving reliability (3) Reducing costs. The main functions of the library are : (1) Acquisition (2) Processing (3) Storage (4) Retrieval (5) Dissemination of all kinds of publications such as books, journals, conference proceedings, reports, patents, standards, specifications and so on.

Application of the various components of information technology I have dealt with in this paper will undoubtedly change radically the library scenario. A user need not visit a completely mechanised library, i.e. the so-called 'Paperless Library'. He can get the documents/information needed by him on his T.V. screen in his laboratory, office, house or any place he desires if he has the necessary tele-communication and other facilities. Because of compact storage, the library space requirement will be far less. Retrieval and dissemination of documents / information will be much faster. Besides, the total cost of library materials will be considerably less.

Another significant feature of the 'Paperless Library' is that it can be manned by fewer persons. Besides, the nature of their jobs will be to a large extent different from that of those working in a conventional library. Robots, which are being increasingly used in industry to enhance productivity, will, no doubt, make their appearance on the library scenario as well, in due course.

What will be the library scenario at the end of this century ? The well-known American information specialist, Prof. F.W. Lancaster and specialists belonging to his school of thought, envisage the total demise of paper as information carrier medium by the end of this century, at least in the USA. There are, of course, other information specialists who do not share this view. But the trend towards increasing mechanisation of libraries

in advanced countries is unmistakable in their highly competitive environment. The main aim of adopting increasingly sophisticated technologies in every field of human activity is to enhance efficiency and productivity as essential to-day for the survival of the individuals, society and also nations at large. Information industry is fast becoming the dominant industry in advanced countries. In the U.S.A., for example, according to an estimate, over 50% of its gross national product (G.N.P.) and 52% of its work-force are involved in information activities at present and these are steadily increasing.

What is the library scenario in India as regards the application of information technology ? A few large scientific and technical libraries and information centres have, no doubt, already embarked on mechanisation to some extent, e.g. INSDOC, DESIDOC, BARC Library & Information Services, TIFR Library, BHEL Library, PRL Library, and some are also acquiring computer data bases and publications in microform and more and more libraries and information centres will follow suit. Information net-works such as National Information System for Science and Technology (NISSAT), National Informatics Centre (NIC), Environmental Information System (ENVIS) are already in existence and many more are likely to be set up in due course. For the effective functioning of these information net-works, application of modern information technology is a prerequisite. Besides, information technology tools such as computers, micrographic, reprographic and telecommunication equipment are being imported as well as indigenously produced in ever-increasing quantities and are being procured and used by libraries and information centres, among others, which should naturally result in enhancing the efficiency of their working. However, I do not envisage the complete demise of paper or the emergence of 'paperless libraries' in this country even at the end of this century, the main reasons being the availability of vast scientific and technical man power, presently the third largest in the world, and the basically conservative nature of Indians, including those in the library profession.

INFORMATION TECHNOLOGY : Its Applications to Library
and Information Field for Effective Library or
Information Management

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ABSTRACT

∟ The information technology is the one which is useful for information handling. Its applications to library and information field are becoming extremely popular because of the complexities involved in information handling. The complexities are mainly due to information explosion, availability of the machine-readable data and its multi-usable nature. Information technology can be applied for supporting clerical functions in libraries and information centres, for information retrieval and for management information services. In order to use information technology very effectively and to have efficient information systems, it may be necessary for us to introduce hierarchical information systems in addition to organizing information according to its life cycles. Use of information technology will be very effective, if we further emphasize the training programme (to train information personnel) as a part of day-to-day activities of the information system. J.

1. Introduction

The functions of a library are to acquire documents related to user's need, to organize and display the documents in various ways and finally to make them available to users. These functions are usually dictated by the objectives of the library. The late Dr. S.R. Ranganathan discussed the objectives of the library in considerable detail in 1931 when he presented his Five Laws of Library Science. In his fourth law, i.e. "Save the Time of the Reader", Ranganathan recognized an objective relating to the internal efficiency of the library. In a

corollary to this law, he further argued that while a library has objectives to minimize time loss to the user, the library management has even an objective to save the time of the librarian. Perhaps, it can only be done by increasing the internal efficiency of the day to day work within the library. It is in this context of the fourth law, we are now thinking of using "information technology".

The information technology is the one which is useful for the purposes of information handling. It covers computer, telecommunication and reprographic technology. An increasing range of information technology is available in Indian market (for instance, microprocessors, Xerox machines, AV kits, etc.) and it now provides opportunities for libraries and information centres to widen the scope of their activities and increase their significance within the organization they serve.

2. Why Information Technology ?

As I mentioned earlier, we think of using information technology in the context of fourth law of library science. But, the main reasons are :

1. Information Explosion : Information is being published such a way that it increases exponentially. For instance, the CAS published 3.5 million abstracts from 1907 to 1966; on the other hand, from 1967 to 1982, 5.5 million abstracts were published (2). Without computers, it may be difficult for one to handle such a large information, and in fact, this increased rate of growth would not have been possible without the extensive use of computers.
2. Availability of the Information in Machine Readable Form : Information is also being disseminated in machine readable form. In 1960, there were only 250,000 bibliographic records available on-line. But in 1982, 77 million such records were available on-line (2).

In fact, some of the records are available only in machine-readable form. There are even a few primary journals in machine readable form only. Because of the development in telecommunication system, it is possible for us to have access to such databases from any part of the world to any place; unfortunately, access is still difficult and expensive for us in India.

3. Multi-Use of Machine Readable Records : A machine-readable bibliographical record can be used by many users for any number of times for various purposes. For instance, if we have Books-in-Print in machine-readable form, an acquisition librarian can make use of these machine-readable records for selecting and searching documents for the purposes of acquisition. The same records can in turn be used for the purposes of

- i) Creating / updating the Accession List (in machine-readable form) when a document is acquired.
- ii) Cataloguing.
- iii) Creating a database for circulation control, etc. .

Thus, information technology can be used in libraries most effectively for many purposes (1). Such applications can be categorised into three types :

- 1) For supporting clerical functions associated with technical processing and circulation work (-- Library Automation).
- 2) For supporting information storage, retrieval and dissemination systems.
- 3) For supporting "management information services" for librarians, especially analysing library statistics.

In addition to these three applications, information technology offers a new dimension to co-operation among libraries. Its importance in the creation of library networks is just beginning. Developmental stages of the use of information technology in library and information field can be traced as follows :

- 1) Applications of semi-mechanized approaches including edge-notched cards, peak-a-boo cards, etc. (during 1940's).
- 2) Use of punched cards, dataprocessing equipment (like unit record machines -- tabulators, collators, sorters, etc.) and early computers (during 1950's).
- 3) Use of general purpose digital computers for the purpose of library automation and for design and development of information retrieval systems (during the early 1960's).
- 4) Feasibility studies on on-line interactive systems and some advanced micro-image searching systems (during the last 1960's).
- 5) Design, development and implementation of on-line systems (during 1970's).
- 6) Intensive use of on-line systems and use of mini / micro computers, especially the microprocessors (in 1980's).

In contrast to the room-sized computer of the 1950's, we now have the same computing capacity on a silicon chip of size about an inch square. It is inexpensive. Because of its computing and storing capacity and because of the low price, the chip makes automation a practical possibility in 1980's, especially in special libraries / information centres, even in India.

3. Applications of Information Technology

3.1 Library Automation

The term "automation" is first used to refer to the phenomenon of "automatic process control" in industries.

Similarly, the term "library automation" refers to the phenomenon of mechanization of traditional library activities. In fact, the term is used extensively to refer primarily to the use of computers to perform some of the traditional library activities (such as acquisition, serial control, cataloguing and circulation). Some times, even information retrieval is included within its purview. The role played by the telecommunication system and reprographic technology is equally important because of the extent of support they offer to library automation.

A systematic implementation of library automation programmes undoubtedly increases the efficiency of the library management. For example, if one automates a book ordering system, it partially helps in automating cataloguing function and also circulation control. The machine readable databases developed for the purpose of library automation can be further used for information retrieval. Functions of the certain automated systems are discussed below :

3.1.1 Book Ordering System

Designing a computer-aided book ordering system is usually difficult since it is expected to perform certain managerial functions in addition to clerical functions, such as pre-order searching, creating purchase order etc. The system must usually respond to regular orders, blanket orders, exchanges, etc. It must also be able to handle regular receipt, non-receipt, out-of-print, documents with wrong billing, unwanted documents with right billing and so on. The typical functions of an automated book ordering system are :

- 1) Pre-order searching, especially to avoid duplicate orders.
- 2) Creating purchase orders.
- 3) Providing information on orders outstanding and sometimes on work-in-process (that is, books received but not yet catalogued).
- 4) Preparing vouchers to pay for the books (in an advanced systems, even cheques can be prepared).

- 5) Maintaining book fund accounts and printing book fund reports.

Also, if there is any delay on the part of the book-seller in supplying a book, the system must prepare a reminder note. As and when books are received, the system can handle the various associated accounting procedures. It can even produce an accession register as a by-product.

The details regarding the files and the data elements in each file are given else where (3).

3.1.2 Computerized Cataloguing

In recent years, it has been amply demonstrated that computers can be successfully used as aid in cataloguing. The main activity of cataloguing systems is the production of catalogue cards. Because of the high-speed printers, book catalogues are becoming equally popular. But, in recent years catalogues in microfiche form are becoming more popular than book catalogues; they are extensively used since they are less expensive and more durable than book catalogues. In fact, they can also be produced by the computers. In a computer-aided cataloguing system, we can also produce, as a by-product of it, spine labels, book packets and book cards for use in circulation systems. It also further helps us to provide most economically cataloguing information to branch libraries. The procedure involved in developing a computer aided cataloguing is (3) :

- 1) Preparing worksheet.
- 2) Preparing input for cataloguing (from the worksheet) in machine-readable form.
- 3) Generating machine readable bibliographical records (say, on the lines of MARC).
- 4) Generation of added entries, if necessary.
- 5) Generation of indexes and cross references, if necessary.
- 6) Printing the bibliographical records.

3.1.3 Circulation Control

Circulation, as a function of a library, is very specific, definable and allied to common business activities such as material handling and inventory control. Circulation control is an operation mainly concerned with the clerical function of keeping track of documents taken out of the library by the user -- concerned with the procedures of charging overdue control, reserves, and associated file maintenance activities. So it has been one of the areas naturally thought of as high possibility for automation.

A typical automated circulation system is usually expected to perform some or all of the following functions :

- 1) Identifying the location of the item.
- 2) Identification of items on loan to a particular borrower or class of borrowers.
- 3) Recording of holds / personal reserves for items on loan but desired by another user, often with additional provision for notifying the library staff when the item is returned and printing a book-available notice for mailing to the person who requested the item.
- 4) Printing the recall notices.
- 5) Renewal of loans.
- 6) Notification to the library staff of over-due items and printing of over-due notices.
- 7) Notification to the library staff about the delinquent borrowers.
- 8) Calculation of times, printing of fine notices, etc.
- 9) Collection, computation and analysis of circulation statistics.
- 10) Handling of special categories of users and special types of documents.
- 11) Printing due date slips, generating orders for lost books etc.

To achieve these functions, circulation systems are designed to capture and manipulate three kinds of information - about the documents, users and transactions. These are further discussed elsewhere (3).

3.1.4 Serial Control Systems

An automated serial control system is slightly different from that of a simple book ordering system. Because of the very nature of the serials, automated serial control systems are usually designed and developed as independent of book ordering systems. Automation of serial control systems helps us to handle serials more easily, quickly and less expensively. Since, especially in scientific libraries, serials may account for as much as 75% of the total budget, it is worth developing an automated system to have an effective control over serials. Procedure involved in design and development of an automated serial control system is discussed elsewhere (3). The main functions of an automated serial control are ordering, renewing, sending reminders to the vendor, reader services, and management services.

3.2 Information Storage and Retrieval

A recent development in information technology is the large-scale database storage capability (-- the ability to store not only bibliographical information on-line but the complete document or article). It has a great impact on libraries. Until recently, the amount of information that could be made available on-line was limited. The technology has now developed to such an extent that the documents can be stored in a data-strip which has a capacity to store about 1 to 2 billion bits or the equivalent of about 200 reels of tapes. It hardly costs \$/ 25. This dense storage capability combined with a mini-computer permits filing, indexing, storage, retrieval, distribution and file control, and on-line maintenance. It also allows image display and copying capability to several users simultaneously.

Thus, an important application of information technology to library and information field falls in the area of information retrieval. Library automation is not a pre-requisite to have a computerized IR system. On the other hand, development of machine-readable databases and software for updating and retrieving are most important to have CIRS. However, if one automates a few functions of libraries (such as, circulation, acquisition, serial control, etc.), CIRS can easily be developed since :

- 1) at least locally developed databases are available for the purposes of IR, and
- 2) we gain sufficient experience in information handling using computers in local conditions.

Design and development of CIRS involves developing software for the creation of a database and for its operation.

A database is a non-redundant, multi-usable, independent and physically available set of data elements. The typical operations which are performed on databases are insertion, deletion, correction and searching a record. The details regarding the information storage and retrieval are discussed elsewhere (3,5).

3.3 Office Automation

Offices in India are notoriously labour intensive. Almost every secretary in almost every office performs a significant volume of work only with meagre facilities (such as short-hand note book, typewriter, telephone, etc.). Because of the recent development in information technology, the offices in smaller or less-innovative institutions / industries may plan in the future for an installation of a word processing system or acquisition of a microprocessor to perform routine record management or computations and offices in a large or more innovative industries may be interested in distributive data processing, micrographics, the decentralized work place and electronic mail. Thus, the offices in the future probably mean a different way of looking at the work force in terms of accountability, hours

worked and technology employed. In fact, it may be absolutely inevitable that over the next few years all of us will perhaps use either a microprocessor or a word processor in our every day work.

In the context of an office, we can use the information technology for several purposes (4,6). For instance for the purposes of :

- 1) Text-capturing : The key to rapid and inexpensive access is the ability to capture text in digital form. When an idea is keyboarded on word processing equipment, it can be duplicated, edited, distributed and stored. All these functions can be done most effectively, efficiently and economically. Unfortunately, at present in many places, a word processor is used as a cheaper way of typing and duplicating. The long range information requirements have been overlooked.
- 2) Electronic Mailing : As work volumes grow, the attempts to cope with ever increasing amounts of paper have made the concept of electronic mail most attractive in many offices. In such a system, a user can query the computer through its terminal with a personal identification number for a mail. The terminal displays the mail list with subject, date, author, etc. from his file. A quick review of the list enables the user to determine the most urgent item requiring attention. The entire electronic letter can be brought to the screen in its full text by a push of a button.
- 3) Maintaining Diary : We can also use the computer for the purpose of maintaining our appointment diary. Here, the advantage will be the ease of arranging meetings with other users of the system by asking the computer to find the first available open time for all necessary attendees. A priority system for various different levels of meetings

could enable the computer to resolve conflicts or present a series of alternative schedules.

- 4) Teleconferencing : We can also use the information technology for the purpose of teleconferencing. However, since our telephone network is most unreliable, perhaps this may remain as only an academic interest even in the early 1990's.

A skeleton view of the office automation is shown below :

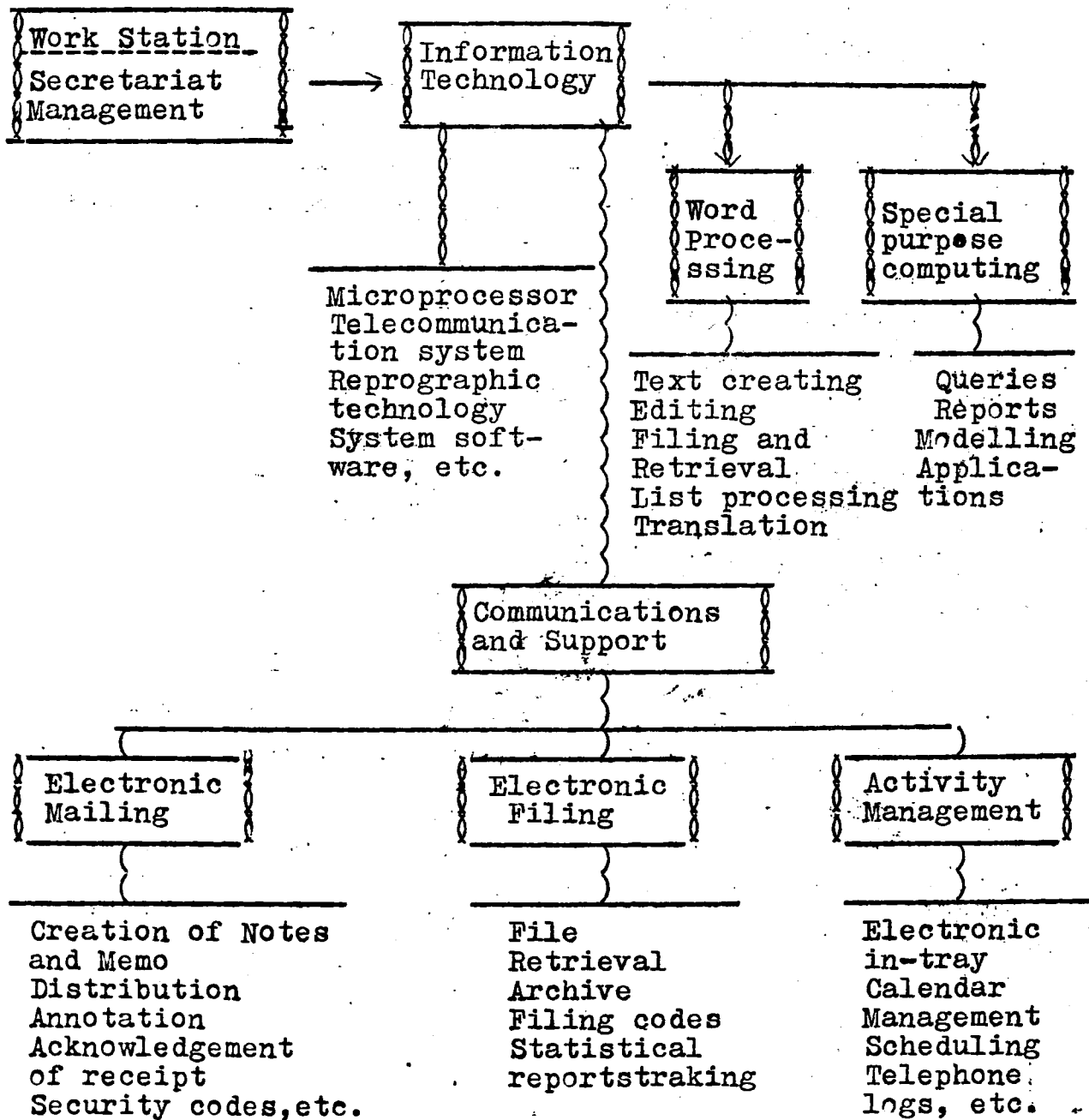


Figure 1 : A skeleton view of an office automation.

4. Information Technology : Its Effectiveness

Past experience indicates that fifty percent of the work-load in a library / information centre is usually handled by clerks and/or semi-professionals. But the salary paid to the trained professionals is to the order of 60 to 70% of the total budget meant for the personnel. In such an environment, information technology helps us in increasing the effectiveness of expensive professional sector. For instance, teleconferencing, electronic mail and automation can improve the performance of the professionals. Information technology supports us by reducing time wasted on non-productive routine works and by enhancing the quality of productive works. It helps us in having :

- 1) Immediate access to up-to-date information.
- 2) Electronic mailing.
- 3) Shared diaries.

Automation can also make valuable contributions to the effectiveness with which librarians/information scientists may perform their jobs. For example, in project management, decision-making, report generation, etc.

Further, in order to use information technology most effectively, one must begin an automation programme by structuring information in a more predictable fashion. For instance, establishing a hierarchical subject classification for all records would be a logical step. Those libraries/information centres which have a directory/thesaurus/classification schedule with a uniform and predictable structure for its use will be able to utilize any form of new technology far more efficiently and effectively than those who have not.

Also it seems logical to begin preparing for an automation programme by categorizing information according to its life cycle. With a hierarchical system, it is possible to determine information life cycles for each class or record in a precise term. If one is able to

introduce a hierarchical system and organize information according to its life cycle, substantial savings in the operational cost of the system, in space, equipment and labour cost can be achieved.

5. Indian Scenario

Text editing equipment was first introduced in Indian market in 1964 with the introduction of the IBM Magnetic Tape Selectric Typewriter. Although this had several advantages over the electric typewriter, the benefits claimed were not really achieved. It was only in 1970's that the second generation of WP equipment as we know it today was introduced. The word processing system and the micro-processors which are now available in Indian market have features almost limitless. It has :

- i) The facilities to store large amounts of data.
- ii) Powerful computing and editing capabilities.
- iii) Video display and electronic keyboard for inputting and editing.
- iv) Easy operating facilities.

There are several systems now available in India. The first in the field in 1979 were Digitron, Adivision of Datamatics, with their Wang systems.

There are many industries in India now involved in production, maintenance and supply of micro-computers/micro-processors. A few models which are available are HCL 8 / 2, system IDB-8, ORION 8000, ORG systems, PSI, Zenith, etc. The directory entitled "The computer directory of India 1983, edited by Prithvi Haldea, A CONCON Publication of Constellat Consultants (P) Ltd." gives a detailed list of computers, peripherals, software, which are available in Indian market.

6. Concluding Remarks

Information technology can be used to perform many functions in libraries / information centres. The

table below briefly shows what it can do :

Function	How it is being done without the sophistic inf. tech.	New technology
Text entry, editing, composing	Typing, Typesetting	Word processing
Replication	Printing	Computer terminal, display, Xerox, printing
Search, select	Catalogue search browsing	Computer readable database software
Communication	Mail, travel, etc.	Computer network, teletext, video-disc, etc.

In recent years, we are experiencing a phenomenon called information dilemma. It manifests itself in a long list of specifics which are mainly due to a tremendous increase in the amount of data and information available for decision making. This increase is not only recent and is directly related to the advent of the computer. To tackle the information dilemma, one must realize that information is a resource. It must be managed and controlled. It is necessary for us to have information technology to handle information most effectively and efficiently.

However, to introduce a computer for information handling, the most important thing is the constant training of personnel. It is essential to change the habits of the worker, which are likely to be a hindrance to automation. To be successful, full automation requires considerable change in individual habits. Thus, emphasis on training for both management and employees seems inevitable.

Thus, the training of personnel must be an essential part of daily activities in a library/information centre and it must be a major element of all systems planning in library and information field. The justification

for the cost of training must be compared with not training.

The history of information management shows that its progress is concurrent with the advances in technology. Use of information technology would be very effective if we emphasize training programmes (to train our personnel) as part of the total activities of the information system.

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