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INFORMATION MANAGEMENT: Scope, Definition, Challenges & Issues

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[Information, a key resource, plays an important role in information society. Treating information as resource itself is a change in information management. Different issues in information management are management of change, systems and services, technology, collection development, personnel management, finance and planning. Some of these issues are discussed in this paper.]

Information is vital for managers, scientists, and for practitioners, in any organization to take decisions, to prepare plans, to control activities, to 'outcast' competitors, to pursue research at advanced level, to provide services, etc. Information, formal or informal, is however to be managed. Information is now seen as a valuable resource within many organizations. It is an organizational resource. It is a self-regenerative resource and it is the key economic element. It can be accessed by anyone from anywhere, any number of times, yet remain undiminished and unchanged; ofcourse, this requires intensive use of information technologies. It is a resource that, if it is properly managed and used, can stimulate innovation, speed product development, raise levels of productivity, ensure consistent standards of quality and through all of these means raise the relative level of competitiveness.

Information plays an important role both in public and private sectors. In private sectors, information is particularly important in

- i) Product design,
- ii) Manufacturing process,
- iii) Commercial / business transactions, and
- iv) Marketing.

To meet the requirements of the customers, design and development of products need a high level of market intelligence and an understanding of ways in which customer refuses different products. Further, manufacturing approach of “just in time” production totally depends on the processing and communication of available information. Commerce and/or business transactions involve considerable clerical and administrative work. While these transitions and work are automated, a large quantity of information is generated without much difficulties and intern they can be used for decision making as well as for planning purposes; for example, reservation system, financial transactions, etc. generate a lot of information which are of high-value.

In many organizations decision support systems (DSS) are used as a part of management tool to reduce risk. For example, an application for a personal loan can be approved/disapproved even by a middle manager, provided the manager has access to a DSS to obtain a “credit score” – applicants who score above certain level receive the loan. Success of such a system is totally depending on the availability of information.

Extensive use of information is also made in marketing. Especially, information is very much essential to promote products. The long term success of private sectors is determined by their capacity to use and manage information to reduce costs, to extend their range of services, to reduce risk and to become more sensitive to customer demands.

Thus, the information system of a company should totally involve in collecting, storing, processing and retrieving of various product specifications, which are available in the market. Even in manufacturing process, information is equally important.

Information makes a similar impact even on the public sector. Public servants are now beginning to realize that information can change the way they work, quite dramatically. Use of information at appropriate time in a right manner enables them to improve their

general efficiency in ways that are similar to those used in private sectors – through automation of their day to day routines, through decision support systems, through electronic financial transactions, etc. In other sectors like, education, health, social security, public servants ultimately handles information and their decisions are all depend on the available information.

Ofcourse, it is needless for me to discuss here the information needs of scientists and technologists. They use critically the existing data/information and in turn create information.

All this calls for a strategic approach to the management of information both in private and public sectors and it is believed that to achieve significant productivity gains particularly in industries it is necessary to develop a radically different approach to the management of information.

1. WHAT IS INFORMATION MANAGEMENT?

Information Management (IM), a discipline emerged in mid 1980s, has firmly established itself by now which is evident from the following two incidents:

- Journal of Institute of Data Processing Management was renamed as “Information Management Journal”
- ASLIB, after fifty years of its establishment, changed its name from Association of Special Libraries and Information Bureaus to the “Association of Information Management”

These two simple examples signify the importance of IM. However, a critical question remains persistent, asking as to “is there anything new in the concept of information management?” or is it just a luxurious label for “library administration?” The concept of information as a resource, the problem of information overload, the tremendous impact of IT on the librarianship are the key issues in IM. On the other hand, library administration deals with the day-to-day administration of the library procedures – executing and monitoring the traditional library functions.

Blaise Cronin (2) opines that there is nothing to stop librarians or information scientists from retitling themselves as Information Managers. But the change of title does not necessarily imply change of activity or attitude. Further, he argues that IM is more than a value added librarianship. In addition to the usual functions of library administration, IM involves data processing, automation activities, systems analysis, information services, management services, the new skills and techniques needed by the information managers to deal with the IT and strategies for developing a corporate information plan. Martin White (6) gives a working definition of IM as “the efficient and effective co-ordination of information from internal and external sources. “As Peter Vickers (5) puts it “Management of Information is not concerned simply with documents, message and data, but with the entire apparatus of information handling. He identifies the characteristics of information management as follows:

- Information has to be treated as a resource requiring proper management, like money, manpower, and materials.
- At the simplest level, information management involves planning and co-ordination (if not direct control or use) of the following:
 - information handling skills
 - information technology
 - information sources and services
- Information management requires a careful “watch on” new developments that can contribute to the better management of information resources
- Information management requires an understanding of the patterns of information flow within the organization and then it demands a systematic means of mapping and monitoring such flows.

Information management is thus a means by which a centre maximizes the efficiency with which it plans, collects, processes, controls, dissemination and uses its information and through which it ensure that the value of that information is identified and exploited to the fullest extent.

But, on the other hand, a concept called Total Quality Management (TQM) is increasingly becoming popular, particularly in industries. What is then TQM? It may be defined as “a management philosophy embracing all activities through which the needs and expectations of the customer and the community and the objectives of the organizations are satisfied in the most efficient and cost effective way of maximizing the potential of all employees in a continuing drive for improvement (1).

In some respects IM and TQM have evolved from a common management philosophy in which the main trust was to increase productivity or cut costs or both almost regardless of anything else. This approach is now changing to one which is more customer-oriented-quality service; in case of libraries and information centres, it is user-orientated – quality service.

It is in this background, DRTC together with SQC & OR Unit is organizing the Workshop on Information Management with emphasis on ISO 9000 system.

In this Workshop, information management is discussed in an environment of special libraries and/or information centres.

2. SPECIAL LIBRARIES

The term “Special libraries” generally refers to a library meant mainly for a group of users – Children’s library, Hospital library, Prison Library, etc. Often, a special library also means a library where (3)

- a) emphasis is on providing information instead of documents
- b) it is established in non-traditional settings – industries, laboratories, business houses, etc.
- c) it is catering to a limited number of homogeneous group of users.
- d) the subject scope is limited -- plywood, leather, food science, etc.
- e) the collection size may be very small
- f) the users demand/need information on micro subjects.
- g) emphasis is on collection of micro literature.

There are other characteristics associated with special libraries, Seetharama (3) has discussed them in detail.

2.1 Information Management in the Context of Special Libraries

The process of delivering information, rather than documents or bibliographic information, begins with determination of the scope and type of information needed. Between determination of 'need' and 'delivery', there is a process of gathering, evaluating, synthesizing and packaging. These processes are basically functions of special libraries and it is the task of the IM.

Further, when users' demand information in traditional setup, librarians deliver articles / books. Librarians rarely know whether or not user derived needed information from them. Thus, to some extent, delivery of documents is expensive (infact, not necessarily be effective and not necessarily satisfies users), as compared to delivery of information.

By considering these two factors, information management in special libraries by combining the gathering function with analysis, synthesis and delivery in acceptable form adds value in two ways:

- i) the special libraries' (or information centres') output increases with minimum possible input costs
- ii) productivity will increase
- iii) cost effective

Also, in addition to the users' need, information management deals with the problems of getting the right information to right users at the right time in the right form. Information management processes in special libraries focuses on the information needs of individual users and delivery of an information product or providing an information service to fulfill the users' need.

3. MANAGEMENT AND CHANGE

The management of Change” is an important aspect of IM, particularly in the context of media and technology, as applicable to information work and services. The changes can clearly be seen in three different areas:

Information Generation	Information Preservation	Information Retrieval
a) Writing	Paper	Card-index
b) Typing	Microfilm/Microfiche	Punched cards
c) Carbon Copies	Magnetic storage	DBMS
d) Electro-mechanical duplications	Video discs	DBMS with advanced features
e) Typesetting		Web pages, free text databases
f) Word processing		
g) Word processing with advanced features		
h) Characters & Voice recognition		

Information systems have changed in structure/design from simple offline systems to batch and then to online; now the information systems are designed for the Net environment.

All these changes have taken place in a span of 50 to 60 years; particularly, in the last two decades, these changes are rapid and tremendous. We even notice that the communication systems have changed from a simple postal service to telephones to telex and then to fax; now the entire communication is centered around e-mail/document distribution and computer conferencing. All these “changes” can be grouped as:

- technological changes
- socio-political, educational, and demographic changes
- changes in the Government policies
- changes in user needs and requirements
- changes in structure and dimension of information industry

The first in the string of changes, is marked by a movement of industrial society to an information society. In information society, information technology plays an important role and it is developing at a rapid pace and forcing a change in the structure and dynamics of

information society. Introduction of technology reduces the functional boundaries, which have been observed traditionally. IT thus forces us to re-arranging the order of a working environment by creating new relationships and alerting the existing ones within an organizational framework. This calls for a dynamic leadership in quality with better managerial skills and a different attitude. Further there is a fear that the trained intermediaries may be eliminated in the years to come. The need of the hour is to respond to technological changes. Users change their requirements very frequently for various reasons. Their culture and demographic characteristics also changes. All these changes require a careful watch and an information manager has to tackle these related issues. Changes in the structure and dimension of information industry have direct reflect on information sources and thus have impact on the information management. For instance, because of the fast emerging Internet, the scope of the library automation is now being extended to

- handling of electronic journals
- online information search
- handling of CD-ROM databases

This trend raises several issues in Information Management; they are related to:

- selection of information resources in different media
- collection development

Information is today available in different formats and media. For example, a bibliographic database is available in paper form, microform, CD-ROMs, on online systems and on the Internet. The important question is how far it is possible to predict uses of the different types of information sources that exist today. Will we prefer:

- Printed materials
- Online databases
- CD-ROM databases
- Web sources

It is believed that the usage of printed materials are likely to decrease in favour of electronic media. CD-ROMs are often preferred instead of printed media since the user

interfaces are likely to allow end-users to search for themselves. On the other hand, online services require unlimited budget and often these services are provided for a fee. Many electronic journals are now available on the web; libraries therefore must have the infrastructure to access web space. Under these circumstances, an information manager has to make decisions about the purchase of online or CD-ROM or Internet sources. It is a difficult task. One must come out with a plan to use all the three media appropriately. Such a plan must provide flexibility, ease of use and access in a cost-effective way. These changes are related to the media of the information research and have impact on information management.

4. INFORMATION MANAGEMENT STRATEGIES

In order to achieve an effective IM, clear-cut strategies have to be developed. In order to develop and implement strategies, an information manager must clearly think about:

- i) what are the information required – in relations to users' need?
- ii) How good the existing information systems and services are?
- iii) What are the sources? Where exactly they are available?
- iv) Cost of obtaining, processing, delivering of information. Are they cheaper to access instead of acquiring?
- v) What are the penalties/loss if they are not obtained?

One has to study these factors and then appropriately apply IT in order to create and implement information management strategies.

5. MARKETING

According to Smith (4), marketing is a stance and an attitude that focuses on meeting the needs of users. Marketing is not separate from good practice. It is good practice. Some times, marketing is also seen from a point of final results of a whole business. Marketing offers both a theory and a process by which libraries can link products, results and roles.

Marketing begins with an investigation of users' need, wants and demand. In the context of marketing, information services are developed to fulfill users' wants and

sometimes services are priced appropriately and then they are delivered or distributed in a manner appropriate to users' need. Further, "marketing " as such helps us in identifying different services to different users/target groups. A marketing approach also respects intelligence of the users rather than assuming that the potential users are ignorant about the availability of the information. In a traditional set up, users satisfaction is equated with a visit to the library or providing an answer to a reference question. Librarians usually justify the level of service by size of collection, number of reference questions answered, number of visits to the library etc. In marketing approach, these measures are useless and in such environments, measures are developed based on the satisfaction derived from the purchase of a service; it is closely linked with met and unmet needs, regrets, etc.

Thus, marketing is an important aspect in information management and success in IM is measured by users' satisfaction and in some instances by the earnings!

6 TRAINING AND PROFESSIONAL DEVELOPMENT

For a successful implementation of IM programmes, there is a need for staff development activities to improve the competence of information managers. The managers must be trained to handle users, information, and systems. The 'users' part includes:

- skill to conduct user studies to identify their need , want, demand and their information seeking behaviour
- patterns of information use

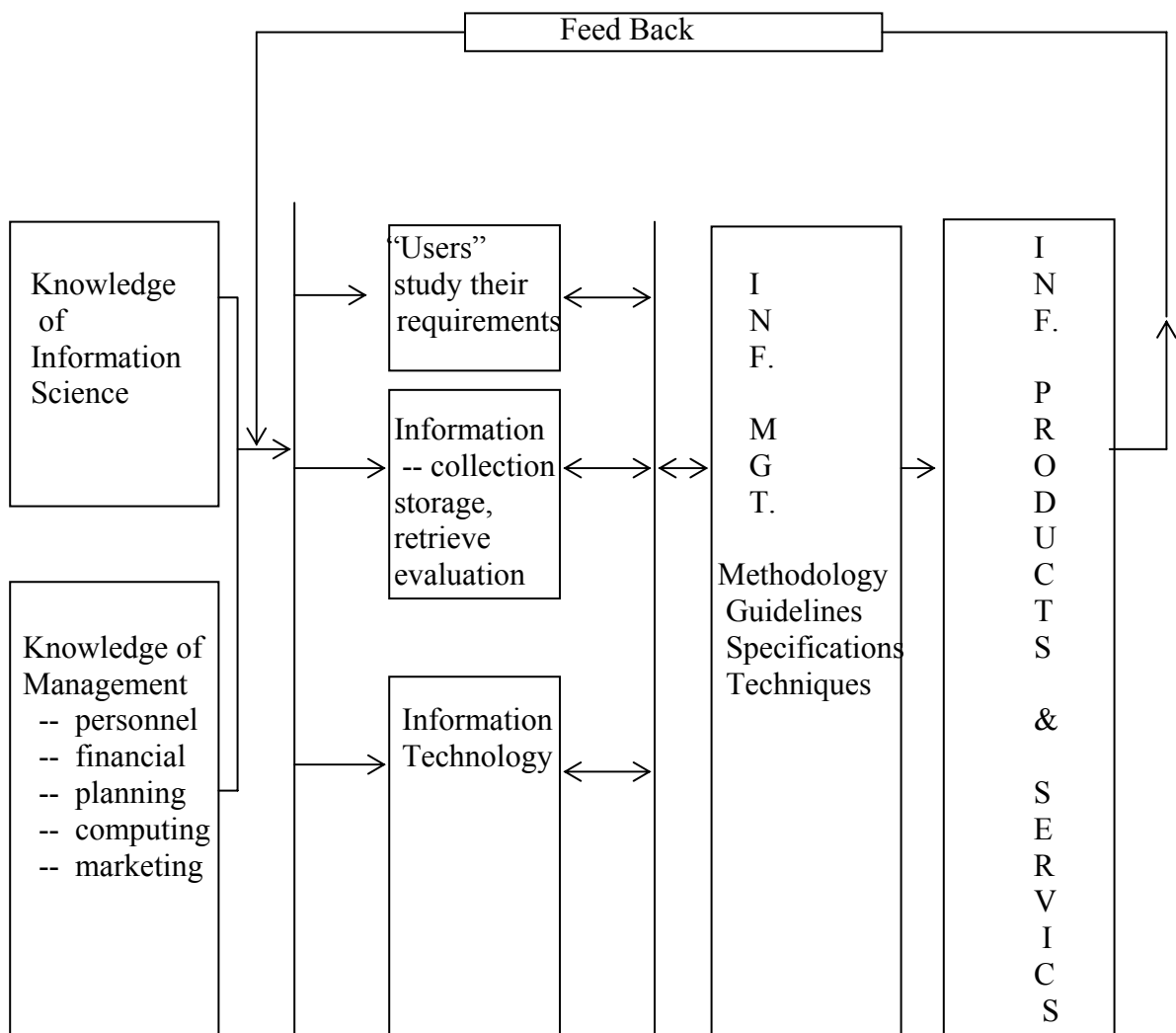
The 'information' part consists of

- Information transfer
- Information storage, records management, etc.
- Information retrieval, including the methods of classification and indexing, information sources, etc.
- Communication; this includes various kinds of information services, different forms of document delivery methods, reprography and micrographics

The 'system' part includes

- Information technologies, its capabilities and applications
- Automation activities related to both library and office
- Systems security

The managers must also familiar with the topics, such as research methodology, methods of data collection and data analysis, systems analysis, marketing, etc. An IM model is shown below:



A MODEL OF INFROMATION MANAGEMENT

7. IT RELATED ISSUES

Technology, networking and media of information sources and services represent a combination of factors which affect librarians. Because of the technological advances, the nature of library operations and possible social role of libraries are changing. Technologies which can be used to collect, acquire, process, store, transmit, and disseminate information are usually known as information technologies (IT). These includes:

- micros, minis, and mainframes with a variety of input, output devices, mass-storage devices, multimedia kit, etc
- data communication and networking devices
- software

Devices related to reprography and micrographics are also considered as part of the IT.

An important component in information management is IT Management (ITM). Further in ITM, the important issues are selection of hardware and software. In this section an attempt has been made to discuss certain issues related to selection of hardware and software.

7.1 Selection of Hardware

Depending on the requirements, the libraries/information managers must decide in advance the various hardware requirements. Decision in this regard on the purpose for which the hardware is being purchased. For example, the purpose may be to use the hardware for

- i) office automation
- ii) library automation
- iii) networking – local, national and international levels
- iv) information retrieval

After determining the purpose, the next step is to decide the various hardware requirements. For example, the following may be a checklist:

- i) memory and storage capability
- ii) various input-output devices
- iii) number of systems / terminals
- iv) networking requirements -- hub, cables, modems, etc
- v) cost aspects -- both in terms of foreign and local currency
- vi) compatibility issues -- with the existing systems, if any
- vii) facilities for upgrading the system, for AMC, etc
- viii) details regarding the operating systems, -- whether they are good enough for the library applications.

7.2 Selection of Software

Software is a collection of programs required for the computers to manipulate the data to produce desired results. The software mainly grouped as operating systems, programming languages, and application programs. Software requirements vary from library to library. Some large library may require integrated software package to be used on multi-user environment. On the other hand small libraries may satisfy with those software which performs one or two specific functions. General criteria for software selection are:

- i) it must have been tested, and a widely used package, from software users' points of view
- ii) cost consideration
- iii) manufactures – are they well-known in the field? Their credentials!
- iv) ease of use, compatibility, and quality of the 'interface', etc.
- v) availability of manual and its quality
- vi) is special training required for its use?

The other aspect of IT management is to keeping track of the 'development' in the industry. This helps us in planning of upgradation, AMC, etc. Finally, the ultimate aims of the IT management are to reduce the manual work related to repetitive jobs, to collect a variety of information to use the systems effectively for communication as well as for transfer of information.

8. COLLECTION DEVELOPMENT

Collection Development is not any single activity or group of activities but a planning and decision making process. Its key functions are planning and policy making, collection analysis, materials selection. Maintenance, resource sharing, etc. Each one of these functions involves several; activities and they are interrelated. The impact of information technology (IT) on collection development is related to several issues such as ownership vs access, co-operative effects and evaluation. Because of the recent advances in IT, librarians are now able to give importance to accessing the other libraries collection rather than trying to possess almost all documents. Recent advances in IT have thus resulted into bringing together the libraries all over the world and thus the librarians have opportunities to use the available collection world over for providing a variety of services to users. This requires several initiatives on the part of librarians and there are several challenging issues. These are to be tackled by an effective IM.

IT has its impact on collection development. It is necessary to monitor what is available on the Net. It may also be necessary to search frequently the Net and download the relevant records, depending on the local interest. Effective techniques may have to be developed for storing and searching such downloaded data. Since electronic publications, including the CD-ROM database, are increasingly becoming popular, the collection development policy should take care of such trends.

9. CONCLUSION

Information is a key resource. Several agencies in private sectors offer alternative information services and public funding is diminishing every year; end users approach directly information suppliers for their requirements. In corporate, academic and public sectors, information (both internal & external) is handled and managed without specialist support.

“Information Management” is now becoming necessary and it is no longer simply materials and handling techniques that libraries deal with. It is an independent body of knowledge and sophisticated structures that are at the heart of the ‘information industry’. It is of central importance to most aspects of life in ‘information society’

Research, development and innovation in IM have not been limited to the presentation of data in new formats (-- online sources, CR-ROMs, records management, optical storage and retrieval) The IM extends its scope through out the information industry by making possible the co-ordination and management of productive activities (-- total quality control, planning of information systems & services, just-in-time approach) An effective IM ultimately aims at providing faster and more effective exchange of data by electronic means.

Information management involves management of change, management of information system and services, management of sources (-- basically it involves collection development as such, collection evaluation, etc.), management of information technology, personnel management, finance and planning.

If we briefly sum up, information management is user driven; it has long-term objectives and goals; decisions are taken based on data / information; it eliminates waste; high employee participation is expected; preventive measures are given importance; managers must have the leadership quality.

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