

Tools and Techniques for Information Management

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Abstract

Information management is concerned with economy, efficiency and affectiveness of an organization's information resources. Numerous tools and techniques, both conventional and non-conventional have been developed to find the ways of satisfying demands for relevant up-to-date and accurate information at an economic cost. The author describes briefly about the tools and techniques, useful to information managers i.e. information technology, standards, systems analysis, bibliometrics, work analysis, monitoring and controlling, evaluation and conventional techniques like classification and bibliographic description.

Introduction

Information management covers the whole spectrum of information handling activities, technology and its role in information handling as well as various management activities practised in institutions. Two major trends have come together to create an unprecedented awareness of the importance of information. Firstly, the growing complexity of organizational structures and operations, and secondly the impact of computing and communications technologies (collectively called IT) on work functions and patterns. Consequently, the managerial spotlight is now on information processing and information resources handling within the organizational framework.

The question then is *not* what IM *but* How IM ? The answer lies in the various tools and techniques available to the library and information profession, some of which are discussed in this paper.

Information Technology

This newly introduced technology essentially based on electronics seems to be gradually replacing the conventional tools in information activities as it is amenable to integration unlike the latter. In other words, IT facilitates both manipulation and synthesis of information.

Nevertheless, integration has not been achievable in many cases due to incompatibilities in system hardware and software design and associated standards.

New advances / key technologies which the market has identified as the necessary foundations on which to build an information revolution are provided below :

- Invention of the *Mainframe Computers* acting as the first information repositories
- Invention of the *Minicomputer*
- *Word Processor* which appeared as a special hardware quickly disappeared to be embodied in PC software for Word Processing and Desktop Publishing
- *Personal Computer (PC)*
- Development of *Computer Network* and linking of PC's and Workstations to a central machine
- Development of *LAN*, linking individual groups of PC's together often with a minicomputer as a shared repository.
- Development of *WAN* via satellite or landline, linking users in one network with information stored on a remote machine or with users on that network.
- Creation of *Optical Storage Device* capable of mass storage of text and document images (Portable online libraries)
- Creation of *Document Scanning Technology* (Electronic Microfilm)
- Invention of CD-ROM which is becoming the dominant distribution medium for all documents / information for a wide audience
- Invention of *OCR* and *Intelligent Character Recognition* for converting older and incoming documents into a medium which can be understood and indexed by computers.
- Invention of *Optical Juke Book* for storing vast image and document libraries.
- Emergence of *Relational Databases* making separation of data and program a reality and making classes of information 'stored once' reusable in many applications.
- Creation of *Client Server Computing* making separation of the interface from the central information repository encouraging shared data and collaboration.

- Evolution of *Massive Parallel Processing*
- Invention of *Text Retrieval*, opening up the potential for content based searching of unstructured information the key to unlocking the value of documents.
- Creation of *Electronic Mail Systems* for providing much more than messages between people and for moving information around efficiently.
- reation of *Electronic Workflow and Document Routing*, removing the need for serial processing of documents and freeing us from the wait state which reliance on paper imposes.
- Creation of *Electronic Document Viewing Technology* (the means by which one could eliminate paper from the equation much of the time).
- Emergence of *UNIX & Windows NT* (Possibly the nearest we shall ever get to a universal operating system)
- Emergence and domination of *Microsoft* and *Windows* as a generic PC-based user interface.
- Invention of *Object Databases* and *Document Markup Standards*.
- *Speech Recognition Technology* to make data input just a matter of speaking into a machine the end of the keyboard eventually.

From the above, one can recognize the role of IT as a tool in IM. Further, comprehensive treatment of the application of IT for various library house keeping operations, acquisitions, classification, cataloguing, circulation, stock taking, serials control, etc. can be found in library literature and hence not discussed here. The role of networks, especially the arrival on the scene of INTERNET, has completely revolutionalised the entire gamut of activities that constitute library and IM, be it Collection Management, Information Services Management, Document Delivery Services (electronic), etc. However, some of the crucial issues that need to be addressed in a network environment include copyright management, standardization, training and education as these would facilitate effective utilization of valuable resources and power tools available on network.

Standards

Standards may be considered as important tools in IM. For example, Indian Standards Institution (now called Bureau of Indian Standards) have

developed and published a number of Indian standards for documentation pertaining to bibliographical reference, book binding, books and periodicals, cataloguing, classification, library and archives building, furniture, lighting, microfilms, proof corrections, typography etc. In addition, a number of institutions and individuals have formulated library standards, both official and nonofficial, useful in the planning and management of libraries and information centres. Similarly, British, European and International Standards for quality systems have been developed and if implemented successfully would lead to improved quality, reduced production cost, and enhanced ability to demonstrate credibility to the potential customers.

Systems Analysis

Systems Analysis (SA), a tool for IM has proved invaluable in analyzing complex organizations and solving problems resulting from organizations in conflict with an environment dominated by change and the uncertainty that inevitably accompanies change. But its use in library and information environments has been limited. Increasingly, however, in recent times, libraries are becoming aware of its potential usefulness to analyze and help solve their problems.

Bibliometrics

While British Standards Institution has defined Bibliometrics as "the study of the use of documents and patterns of publication in which mathematical and statistical methods have been applied". Sengupta defines it as "the organization, classification and quantitative evaluation of publication patterns of all macro and micro communication along with their authorships by mathematical and statistical calculus". It is a quantitative science and is divided into Descriptive bibliometrics (productivity count) and Evaluative bibliometrics (literature usage count). The techniques of bibliometrics have extensive applications equally in sociological studies of science, information management, librarianship, history of science including science policy, study of science and scientists, etc.

Work Analysis Techniques

In managerial work, it is essential to analyze operations step-by-step as this would facilitate efficiency and effectiveness of the operations. Several standard techniques have been developed to aid this type of work analysis. Some of the techniques of work analysis which will be useful

for IM situations are block diagram, flow process chart, decision flow chart, man-machine chart, micromotion etc.

Monitoring Techniques and Controlling

While controlling usually refers to checking, verifying, testing, reputating, exercising restraint or directing influence in order to successfully carry out a management process, monitoring involves looking for faults, performing of duty, giving advice and instruction and exercising caution.

A monitoring technique is a time negotiated procedure on how allowed resources will be committed to a chieving objectives. It is a guideline, a tool or an aid. The best techniques are those that are not rigid as they have provisions for adjustments as future events become known. These include, Operation Research (OR), Management Information System (MIS), Management by Objectves (MBO), Network analysis : PERT and CPM, and Budgetary control etc.

Evaluation Techniques

Evaluation of any service, process or activity in management usually refers to "determining its worth" or "assessment, valuation, appraisal, criticism, review, calculation, measurement" or need to know closely the utility. Evaluation thus is a matter of comparison of actual results, not only with anticipated results, but also with external standards, in the light of existing institutional realities which may be relevant to evaluating the future trajectory of the program or service and provide an objective basis for decision making.

Some of the basic techniques which are applicable for evaluation process are performance measuerment, cost-effectivness and cost-benefit studies etc.

Conventional Techniques

It may not be out of place to mention that librarians were the first people to bring some discipline and order to IM with their classification and cataloging schemes². However, sometimes it is argued that with automation of information retrieval it is possible to dispense with traditional methodologies / techniques for organizing information, in particular classification. The strongest counter argument to this is that classification underlies all thinking; thus it would be prima facie surprising if it finds no place in online systems of the future.

Classification has such an important place in online systems, that we should prepare for a resurgence of interest in both its theory and practice. A similar line of thinking is marked in the work of Walker⁹, Liu & Svenanius⁴, Nohr⁷, and Watanabe¹⁰ who have used classification techniques in the context of OPAC searching.

Similarly, Library of Congress Subject of Headings List, Rules for Subject Cataloging (RSWK), Thesaurus Keyword Indexing have been used for subject search and retrieval in OPACs.

To state that classification has a role in information management would be to state the obvious. It may be in relation to the users interest profile construction, document profile construction, arrangement and presentation of information, database creation, etc. Neelameghan⁶ has shown how Normative Principles of Classification are useful in designing of a database.

Further, in studying the information needs of the potential users, classification is of great help in the case of specialists belonging to a particular discipline. But, in the case of planners and decision makers, it is rendered difficult as the information needs are not structured according to subjects in the usual sense of the term, but are essentially function or task - oriented. Therefore, an alternative approach - a Model or Reference Framework according to which planning and decision making programmes are conceptually analysed into different phases, sub-tasks, activities, etc. and the information support needed for each are identified. When this is done (which is nothing but classification in one sense), it would be possible to select / extract relevant data and information from different sources/databases and repackage them into relevant subsets for convenient use at the different stages of planning work.

Seetharama⁸ has showed that classification has a role in the generation of information services and products, especially in the arrangement of ideas in information consolidation products.

In the context of bibliographic description (cataloging) of documents, the role played by AACR and CCC in the development of machine readable bibliographic record formats - US MARC, UK MARC, UNIMARC, CCF, etc. is well known.

Conclusion

Whatever Information Management is, it perhaps is concerned with obtaining the best possible value for money from an organization's information resources. In other words, the buzz words in this context would be economy, efficiency and effectiveness in relation to the

information or record life cycle - creation, communication, use, storage and disposal of information. To achieve this, numerous tools and techniques, both conventional and non conventional, have been developed.

To conclude, as Best¹ puts it "The field of Information Management has never been more exciting than it is today; our pressing needs, the technologies (and techniques) available to us, and the demands of our business, governments and society as a whole present a challenge to us to find ways of satisfying demands for ever more relevant, up-to-date and accurate information at an economic cost. Whether we succeed or fail is up to us".

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