Chapter: 7

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The importance of information in the history of mankind cannot be overemphasized. From the dawn of writing system, mankind has felt the usefulness in establishing libraries. Modern libraries are offering many services to users which could not have been thought of in the ancient past. But again, acquisition has always played the most important role in all ages. A library can only be as good as its collection. Document Selection is the single most crucial task in building a good collection.

With the advent of printing press and in recent times the emergence and popularity of computers have enabled an era of proliferation of massive quantities of information. A typical problem the library managers face is that of being able to give the documents most appropriate to the needs of clientele. It goes without saying that the user should be an integral part of the document selection process.

An adhoc decision of the users or library managers in selection document can only result in a lopsided collection building. Obviously this calls for developing certain criteria or even document selection policy wherein balanced objective and more scientific decisions can be arrived at. Document selection is a continuous process of the many routines of the library or information center. Computers are now used in library services to replace many a task of the library that are essentially repetitive chores. Though the role of computers in a library cannot be undermined, it was always felt that automation of intellectual tasks is essentially human burden as computers were thought to be not suitable for decision making.

Building machines capable of doing all the human activities has always been the dream of mankind. When computers were found to be useful in calculating, storing, processing and retrieving information, the hopes have
risen to extend the applicability of computer to more and more human tasks. Hence the birth of Artificial Intelligence (AI).

Two most important subfields of Artificial Intelligence viz. Expert Systems otherwise known as Knowledge Based Computer Systems (KBCS) and Natural Language Processing (NLP) have been presented in Chapter 2. Perhaps the ultimate goal of human-machine interaction is Natural Language Interfaces which may replace presently popular menu-based application and even the Graphic User Interface (GUI) as it promises to the so-called computer illiterate also to use computers. The dream is to converse with the computer just as we converse with people.

Although the outcome of research in the area of Natural Language Processing indicates that still we need to go a long way, the research in Expert Systems are quite impressive especially after a paradigm shift to domain-specific expert systems. The three models of expert systems viz. hierarchical, frame-based, and rule-based expert systems have much promise to capture human knowledge in many disciplines. In case of hierarchical and frame-based models, the components of knowledge are viewed as objects and the various possible relations among the objects is identified and defined. The rule-based expert systems advocate that much of the human knowledge can be reduced to sets of rules. This kind of knowledge includes causal, empirical, etc., and even latent knowledge. Capturing empirical knowledge has evolved into a mature subject called Heuristics.

Building expert systems is a different task. The very identification of knowledge and capturing such knowledge and representing it
computational form brings the various players into picture. The most important human components of an expert system are domain expert and the knowledge engineer. The domain expert is the person who has expertise and knowledge in a specific area (5). The knowledge engineer is the person who interacts with the domain expert to extract knowledge and build computer-based expert systems.

The present work is an attempt to build an expert system for document selection in a library or information center. It has been attempted to incorporate knowledge pertaining to document selection from the literature of library and information science and also from that of the users who are experts in their own subject field.

After a thorough analysis of the document selection process, the essential criteria for document selection have been evolved. However, it should be noted that in such a system, each of the criteria couldn't have the same importance or weightage. A system of weightage has been evolved in statistical terms to arrive at the best solution for the selection process. These criteria have been presented in Chapter 3.

Identifying the criteria for document selection is one task, and building computer-based expert systems incorporating such criteria is yet another process. The Chapters 4 and 5 present two approaches of building expert systems for document selection. The system has been developed using the programming language PROLOG (PROgramming LOGic) that is one of the two most favorite languages in the area of Artificial Intelligence (the other being LISP – LISt Processing) (6). Two demonstration sessions have been presented in the Appendix where the first demo takes one extreme of choosing the highest score for each of the question shot at by the expert system.
whereas the second one takes the diagonally opposite way assigning the least score for each question. The decisions of the expert system in document selection are found to be totally in conformity with the expectations. It could not have been better even if we adopt a manual approach for such a decision making process. The system makes sound judgments whether a particular document should be acquired as first priority or second priority etc. many a test runs were made to ensure the system is consistent in all possible situations.

7.1 Future Work

Very few scientific breakthroughs have direct and significant impact on the society in general. The transport telecommunication technologies have definitely changed the way we live. The computer technology coupled with Internet has brought in major societal changes. Internet as a massive information channel poses many a challenges even to the libraries of remote regions. The library and information professionals are quick to realize the importance of Internet. The Net has many things to offer to the information professional to serve their clientele better. The immediate role the information professional plays is to serve as an intermediary between the gigantic web and the bewildering clientele by providing various infrastructure services using search engines and by developing subject gateways. Even the background chores of the library can make use of the Net.

Although the Internet was popular in its early days only in the academic realms with the emergence of E Commerce it has brought much of the marketing banking into its fold. Book publishers vendors are quick to catch up with the advantages of Internet. By making best use of Web
technology and E-mail. The benefits offered by Internet are too tempting and it is hard to ignore the advantages. Although the traditional methods of acquisitions may last a few more years, the Internet based acquisitions will have more and more favour in the near future. This is typically reflected in the statements of acquisition policy of American Library Association, Library of Congress and a few American Universities. Hence these policies are presented in Chapter 6.

An analysis of these statements coupled with the long experience in document selection and acquisition and the insight acquired by the present work of building the expert system an attempt is made to envisage a computational model for Internet based document selection and acquisitions. The following discussion deals with policy statement for electronic document selection in the context of Central Universities in India and in particular the Indira Gandhi Memorial Library of the University of Hyderabad.

7.2 Electronic Collection Development Policy for the Indira Gandhi Memorial Library (IGML), University of Hyderabad

Based upon the detailed studies of the various collection development policies with respect to electronic collections the checklist of points for formulating a policy of electronic collection in IGML is drawn. Electronic documents are still considered a collection to supplement the traditional collections of university libraries in India such as the books and journals collection. User surveys also emphasise the fact that electronic collection should be built to supplement the present one and not replace it. In addition other problems arise due to the peculiar of the forms and formats of the
electronic resources However a comprehensive check list of the various issues arising are discussed in the sections that follow

7.2.1 FEASIBILITY

This involves the study of the possibility of the inclusion of electronic sources and assessing the available infrastructure policies and other resources for revamping the collection with electronic and online resources. In case the library plans to acquire the online web resources as part of the collection it should have the necessary connection and speed and the facility to archive the important resources. By the infra structural facilities and the location point of view IGM library is well equipped to acquire and handle the electronic resources in the areas of interest of the clientele. Moreover certain documents in highly specific research areas are only available as copies for review online. It is felt that the faculty who wishes the services of such publications should have access to it wherever permissible.

7.2.2 ACCESS

It is needed to establish the access to the documents that are to be part of the collection. IGM library has the facility to ftp and telnet access along with dedicated Internet connection. But it is necessary to acquire the access to databases of library. The IGM library plans to join a consortium which jointly subscribe and use journal publications through the J gate and other services. The SUN sponsored Digital Library project has already made it possible to subscribe to several databases apart from creating in house digital resources. Library has online access to MathSci Net under consortium arrangement. Over 2600 full text e journals are available for
accessing covering Humanities Arts Business Management and all the science disciplines (EBSCO and Science Direct) Access to these journals is provided through a campus vide LAN to the individual departments and programs

7.2.3 COST CONSIDERATIONS

Cost is the single most important criterion. It is to be determined whether the users would be agreeable to stop a journal subscription and prefer to order individual articles from the services such as uncover. The policy is to explore the ways and means to minimising the costs and providing such services wherever feasible. Apart from the subscription cost the electronic collection also warrants a set up cost for the servers and Internet Connectivity. IGM library is well equipped with the basic infrastructure through central government funding and also through the externally funded projects and also the funds provided under the Interface Studies Research Program under the University with Potential for excellence scheme. Hence the policy is while considering the cost as one of the main factors the resource should be obtained and maintained if it is adequately found important to the core activities of the respective departments/programs.

7.2.4 EVALUATION

Stringent selection criteria are to be followed in acquiring the electronic and online resources of value to the library users. Since the electronic documents are peculiar by their form and format and accessibility a checklist of criteria are evolved to assess them. The criteria have been discussed in detail in chapter 6.
7.2.5 TECHNICAL ISSUES

There are various technical issues that arise. The main ones are the decision regarding the hardware and software. In addition, it is important to consider the networking options available and affordable. A crucial concern relates to the availability of technical support and maintenance of the product response time for remote networked environments. Reliability of telecommunications servers etc. The hardware related concerns include reliability, upgrade ability, scalability, maintenance, compatibility with peripherals, and flexibility for other uses/networking. They should be compatible with existing systems in the library. The software and hardware should be user-friendly and ease of installation and handling should be ensured. Over and above these, there should be adequate in-house and professionals technical support for the system. IGM Library has highly skilled and technical staff in handling the systems, apart from State of the art hardware and application software for various operations.

7.2.6 USER/SERVICE ISSUES

Users apprehensions regarding the electronic collection and reliability of the services based upon such collection are to be addressed. This is to be achieved through interactions and workshops in user orientation to the new services and collection. The knowledge and skills of the staff are to be upgraded by in-service training programmes. Adequate expert advice is to be solicited in the design and dissemination of services based upon the electronic collection. The system is to be evaluated in fixed time slots and the feedback to be incorporated into the system. IGM Library has ongoing in-service on job training programs and also training programs to the users under orientation programs apart from conducting special sessions. All the library users are comfortable in using computers in accessing OPAC.
journals e-mail and Internet browsing. About thirty systems are provided in the entrance lobby of the library for the users. This facility is over and above those provided within their own schools or departments.

### 7.2.7 LEGAL ISSUES

The University library should acquire electronic resources by paying for the usage of the resource. The copyright laws covering the resources vary by the provider. And hence the policy is to study or enquire and acquire permissions or rights as and when the acquisition of the electronic resources is done. The resources in the public domain are to be evaluated and then incorporated.

Lastly, no research is an end in itself. A solution to a research problem shoots more problems to the researcher to further their understanding of the corpus knowledge.
7.3 References

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8 KNOWLEDGE representation in computer-supported environment

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9 KNOWLEDGE representation

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