Chapter: 6

A Review of the Recent Internet Based Document Selection and Acquisition

• Introduction
• Internet collection and analysis
• User needs analysis for electronic and Internet collection
• Evaluation of Internet resources
• Collection Development policy for electronic and online resources
• A model for Internet based Collection Development
• References
6.1 Introduction

Internet has taken the information world unawares with the magnitude of information it contains and with the possibility of various ways of communication and data exchange. Internet has tremendous prospects for collection development as it is defined as the global community of information resources. A number of commercial databases are available for the librarians to exploit such as the CAB abstracts, Agricola, Medline, Agris, Biological Abstracts, Compendex, etc., of Dialog and BRS Information Technology (1).

Publishers offer their journals electronically to libraries through services such as First Search Electronic Collection Online. First Search Electronic Collection Online is one of the first online systems to address the key issues necessary to make the transaction from paper to electronic journals. The system can accommodate thousands of journals. Libraries can choose the journals they want to include in their electronic collection and journals will be loaded in their entirety on or before their publication date (2).

6.2 Internet Collection an Analysis

The Net has established itself as the storehouse of all world's resources in the electronic form ready for accessing. Various kinds of sources exist on the Net. The nomenclature of these electronic documents is comparable to that in any traditional collection though some documents may be new incorporating multimedia, hypertext and built-in processing codes. But for the general purpose of developing a collection it suffices that the kinds of documents available on the Net conform to the kind of collection in libraries and information centers like daily reference books, reports, periodicals, textbooks, maps, and the like (3). The following section is an
attempt to cover the various kinds of documents that are available on the
Net and examples of some titles for each and the addresses to access them

6.2.1 PRIMARY SOURCES

Primary documents may be monographs or research reports that give the
first published data or information on a topic. Full text of monographs and
research reports are available on the Net. For examples
(a) Electronic Journal of Differential Equations
   \url{http://ejc.math.gatech.edu:8080/journal}
(b) PC Magazine
   \url{ftp://ftp.cco.caltech.edu}

6.2.2 SECONDARY SOURCES

Textbooks, reference books, guides to primary documents, reviews, and
digests are also available on the Internet. Though organizing the mass of
information that is available on the Net is nearly impossible, there are some
tools to keep track of what is available where. These are referred to as
servers, which give information of files and their location. Archie is an
example of such a tool and it helps the users locate the information they are
looking for through simple commands like what is and where is. Some
of the documents falling under this category available are
(a) Technical Report Index
   \url{http://cs.indiana.edu/cstr/search}
(b) The Whole Internet Catalog
   \url{http://nearnetsmn.com/wic/newrescat}
(c) Book Reviews
   \url{ftp://ftp.csn.org/path/pub/altbooks/reviews}
(d) The Internet Resource Guide
   \url{ftp://ftp.una.hb.urnich.edu/path/metdirs}
6.2.3 TERTIARY SOURCES

Tertiary sources of information act as guides to the primary and the secondary sources. Tertiary sources like guides to indexes and directories are also available on the Net. Some examples are as below:

(a) Directory server — Directory of all directory servers
ftp://ftp.gopher.colorado.edu

(b) List of gopher sites
ftp://ftp.cwts.usc.edu

6.2.4 OTHER SOURCES

Apart from the above mentioned kinds of electronic documents other sources of information that are usually discussed as non-conventional documents human and institutional resources, discussions and debates and corporate notes are also part of the information of the Net. These are in the form of newsgroups and discussion forums on various topics. The examples are:

- Newsgroup on women in science technology Bionet women in bioinfo wisenet
- Newsgroup on JFK case grind.isca.uwowa.edu lmb/jfk
- Newsgroups on cataloguing bit.listserv.autocat and
- Bulletin Board System on Environment cue.bc.ca login.cosy on Internet cyberneticse.fau.edu login bbs

6.3 Users Need Analysis for Electronic and Internet Collection

The information needs of the users are very fluid in nature. More so with the trends in modern environment. Information needs of users in the modern environment need to be analyzed in terms of the following parameters (2)
6.3.1 INFORMATION CONTENT/ITEM

In a digitized environment and distributed fashion of functioning the information need demands a pinpointed capsule of information in return for a query. Search algorithms which retrieve a large set of items in the generic area of the query are really not of much use. Let alone the other search engines which are widely available on Internet which make no efforts to correlate the scope of a query to the retrieved set! In the process of analyzing the needs of the users it is to be noted that the information requirement of the user of a digital library and that of the traditional library are similar while considering the content. The difference is in the expectancy levels. Digital libraries by definition promises to be a confluence of the user information item and an intermediary at the time of the search. In the light of this the user needs are expected to be answered in more precise terms and in much lesser time.

6.3.2 FORMAT OR FORM OF SERVICE

The digital environment has had a profound impact on the form and format of information services. The emphasis is on the network centric services. That is to say that the information items are retrieved and made available to the end user at the work place itself. Again each user and instances of the use of the systems may be unique. In a case it becomes very difficult to design a reasonably acceptable model across the sections of the users. The first consideration is whether the information itself or the information regarding the item will be delivered. The traditional forms of bibliographic services of course have their significance. But in an online distributed system such secondary information services should also give a real time linking to the documents.
The second consideration is the time factor. As emphasized earlier, the need of the moment is the information itself less often the items containing the information. The user does not have the time to go through a larger retrieved set to locate the appropriate information. In such a case, the responsibility of analyzing the information needs and supplying the pertinent information lies upon the digital library.

The third factor to be considered is the portability and flexibility of the output. Once a user gets a set of items retrieved, it should be in form and format that is acceptable by most systems in use and must be easily adaptable to other systems. Standardization of the bibliographic information of data interchange is much beaten track.

6.3.3 ACCESS

The access points to system should be created. The search language should be flexible. The system maybe supplemented with a list of standard terms or a thesaurus. The different data elements included in the database maybe displayed so that users can decide their access points.

6.3.4 LIABILITY ON USERS

The system should be available to users without much liability on their part. The system should expect the least upgrades if any in terms of hardware and software. In any case, a system with an Internet browser as a front end would make access possible to the users who already have Internet access.
6.4 Evaluation Internet Resources

The relevance of the search result maybe ensured to a great extent by ensuring the quality of the resources that is first of all included in the domain that is to be searched. Subject gateways could achieve efficiency by undertaking an evaluation of resources available on a given subject. The steps suggested by a study in the evaluation of Net resources are as follows (4):

1. **Step 1** follow any links to find out as much as you can about a Resource
2. **Step 2** analyse the URL
3. **Step 3** examine the information within the resource
4. **Step 4** consider the accessibility, design and layout, and ease of use of the source
5. **Step 5** obtain any additional information and
6. **Step 6** compare the resource to other similar materials

A systematic approach would be to draw up a set of parameters for the evaluation. According to Joan Ormondroyd, learning how to determine the relevance and authority of a given resource for research is one of the core skills of the research process (5). The same criteria for determining relevance could well be adopted for evaluating resources for domain of subject gateways. The set of parameters to be considered are divided into two categories: I Initial Appraisal, II Content Analysis.
INITIAL APPRAISAL | CONTENT ANALYSIS
---|---
Author | Intended Audience
Date of Publication | Objective reasoning
Edition or Revision | Coverage
Publisher | Writing Style
Title | Evaluative Reviews

**Table 6.1** Comparison of Initial Appraisal and Content Analysis

A more familiar list for library science professionals for evaluating information sources is the Louis Shores checklist. Though this checklist was originally not meant for evaluation of online sources such as Internet resources, it could serve well as a basis on which other required parameters might be worked out. The various criteria for evaluation improvised on the Louis Shores list applicable to Internet resources are (6):

- Authority
- Accessibility
- Arrangement
- Currency
- Response Time
- Stability
- Accuracy
- Target Audience
- Coverage
- Completeness
- Style
6.5 Collection Development Policy for Electronic and Online Resources

A study of the different collection development policies has been undertaken to understand the process and procedures in electronic and online collection development. Based upon the experiences and policy statement of various libraries, a collection development policy for electronic sources for Indira Gandhi Memorial Library (IGML) University of Hyderabad can be formulated. Some of the explicitly discussed policy statements are presented in the following sections.

6.5.1 American Library Association (ALA) Core Elements of Electronic Collection Policy Statements

From 1991 to 1994, the ALA Collection Development Policies Committee solicited sample collection development policy statements for information in electronic format. Based on these policies, the following core elements were derived.

Their Collection Policy Committee found electronic policy statements contain more detailed administrative elements than were usual in print collection policies. However, like print policies, they give an explanation of which materials are purchased, the audience they serve, and the major elements which would affect whether a source is selected. Ideally, evaluation criteria are kept separate.

Suggested core elements which were found in most policies are listed in section one. In the second section, are listed evaluation criteria, which also appeared regularly, listed under a corresponding number.
Core elements/criteria

1. Definition of terms: CD/Tape Drive/Online
2. Schedule for policy revision
3. Relationship to overall library policies
4. Relationship to print sources and other electronic sources replace or augment current sources

Selection
- Audience/Clientele served
- Who selects/deselects software who selects hardware who has overall responsibility

5. Information Criteria
- Coverage/scope
- Accurate/current

6. Hardware considerations
- Conforms to industry standards
- Printed documentation and other technical support provided

7. Software
- Conforms to industry standards
- Appropriate documentation and other technical support

8. Cost
- Where does money for software hardware and maintenance agreements come from?
- Who tracks/coordinates?
9 Staffing
   • How are sectional /departmental /agency /consortia responsibilities divided?

6.5.2 EVALUATION CRITERIA THAT MAY BE PRESENT

1 Formats which will not be selected why

2 Overriding library policy concerns which would effect selection decision Consortia considerations

3 Why format selected over other material lease/purchase considerations ability to archive comparison of data in print and electronic sources

4 Selection
   Computer literacy of audience ease of search methodologies intellectual level of material
   Who is responsible for licensing and maintenance agreements and compliance who does in house repair and updating who signs contracts? Copyright considerations

5 Information Criteria
   Ability to archive dropped citations availability of back files for purchase format of back files comparison with paper product
   Vendor reputation/ performance updates of material are timely Hardware considerations Networkable number of stations matches anticipated use house support expandable
6 Software Quality of search options access points (helps in comparison of like products) search methods compatible with currently used retrieval consistent with back files display screens

7 Cost significant benefit provided over print or other electronic resource will fee for use feature cause copyright problems Limits on pricing lease/purchase priorities

8 Staffing What level of staffing is needed where does it come from who handles training of staff/clientele?

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6531 General Purpose

The University Libraries select house and provide access to information published in many formats In recent years traditional formats for information such as books and microfilm have increasingly been supplemented by information which is accessible only through the use of a computer This policy addresses collection parameters for electronic media which the University Libraries expect to collect Further the University Libraries staff are aware that however flexible this policy the speed with which technological changes are occurring with respect to information access will necessitate frequent revision of this document (8)
6 5 3 2  Subject and Language Modifiers

There are no exclusions based on language, chronological period or geographical area but materials should reflect the present and expected future curricular and research needs of the University.

6 5 3 3  Description of Materials Collected

The University Libraries view acquisition of electronic media as a natural expansion of existing collection development activities. Materials are selected in all formats for which the University Libraries own or expect to own in the near future the equipment for their use.

6 5 3 4  General Selection Criteria

Electronic media considered for acquisition by selectors should

- Follow all current collecting guidelines as represented by the subject collection development statements and other appropriate documents.

- Represent materials useful and important to a significant segment of the library's user community and reflect current curricular and research needs.

- Be available in formats for which the University or the University Libraries own appropriate hardware.

- Be sufficiently user-friendly in that it provides or permits design of such amenities as introductory screens on screen tutorials, prompts and menus, function specific help, novice and expert.
Chapter 6 A review of Internet based searching levels helpful error messages ease of exiting from one point in the database

- Be evaluated in light of other potential acquisitions and weighed against acquisition priorities for other formats

- Provide improved access to or be an enhancement or enrichment of current library collections

- Reflect the excellence comprehensiveness and authority expected of materials in other formats

- Have adequate documentation available

- Not require an excessive amount of staff time to provide adequate use of the media. Individual cases may be negotiated with faculty

- Avoid duplication of print or microform holdings unless the electronic resource is not archived satisfactorily (does not provide for permanent retention) or provides better access to the information or when different formats meet different needs for different user groups

- Be broadly accessible under current copyright laws and licensing agreements
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654 UNIVERSITY OF CALIFORNIA LIBRARIES

6541 Collection Development

- Conventional collection development criteria should be paramount and should be applied consistently across formats including digital resources (9)

- Principal considerations include
  - establishing a coherent rationale for the acquisition of each resource
  - meeting faculty and student information needs providing orderly access and guidance to the digital resources and integrating them into library service programs
  - ensuring that the advantages of the digital resource are significant enough to justify its selection in digital format

- Balance must be maintained among
  - disciplines
  - information formats (i.e., printed, audio visual, and electronic media have different but equally essential purposes and audiences)
  - instructional and research tools
  - different needs of each campus

- Priority should be given to digital format acquisition of those resources which offer economies of scale by benefiting the most faculty and students (locally and/or system wide)
• Priority should be given to digital resources when they offer significant added value over print equivalents in such ways as
  ➢ more timely availability
  ➢ more extensive content
  ➢ greater functionality such as the ability to invoke linkages to local and/or related resources
  ➢ greater access because they can be delivered rapidly remotely at any time
  ➢ improved resource sharing due to the ubiquity of digital resources
  ➢ ease of archiving replacing preserving

• UC should retain authority for selecting and deselecting materials (content and format) and provider defined linkages between print and digital products should not compromise sound selection decisions

• A digital collection must contain a sufficient critical mass to evaluate its utility and to justify its selection

6 5 4 2 Costs and Pricing

• Electronic content should cost less than its print analog unless there is substantial added value

• Content and access costs should be separated. The information provider should inform UC how much of the total cost is attributable to
  ➢ licensing the content
  ➢ providing access
6 5 4 3 Licensing

• The license should include permanent rights to information that has been paid for in the event that a licensed database is subsequently canceled or removed.

• Information providers should employ a standard agreement that describes the rights of libraries and their authorized users in terms that are readable and explicit.

6 5 4 4 Functionality

Data formats should follow industry standards and must be fully documented. Data should be platform independent and available in a multiplicity of formats (e.g., ASCII, PDF, SGML, etc.).

6 5 4 5 Archiving

• As research institutions, UC and its libraries have a legitimate interest in maintaining archives and a mission to ensure archival access. Agreements should clearly state archival responsibility.

6 5 5 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 survey also emphasises 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:

- Feasibility
- Access
- Cost Considerations
- Evaluation
- Technical Issues
- User/Service Issues
- Legal Issues

6.5.6 MODEL FOR INTERNET BASED ACQUISITION IN ACADEMIC LIBRARIES

In the automated library environment, the operations are managed through database operations. The model suggested here is an integrated model to supplement to the existing library database. It uses the web-based vendors input and also the decision making of the KBS system described in the earlier chapter. There are many software solutions for such a problem in the public domain. Alternatively, there are also proprietary software which are customised accordingly to the customers' needs. In this chapter, a basic model for Internet based acquisitions is described. The components of the model such as the web interface module or software the database management system maybe different in different environments.
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6.5.1 Technological Overview

With the advent of Internet lot of new gateways particularly the client server has opened a complete new arena. We can design an online acquisition module with existing web module. Recently the server technology i.e. scripting technology has made the things more easy.

6.5.1.1 Web Interfacing

6.5.1.1.1 Client Server Technology

Client/Server is definitely a popular buzzword lately. Client/Server technology is a means for separating the functions of an application into two or more distinct parts. The client presents and manipulates data on the desktop computer. The server acts like a mainframe to store and retrieve protected data. Together each machine can perform the duties it is best at.

The term client/server was first used in the 1980s in reference to personal computers (PCs) on a network. The client/server software architecture is a versatile message based and modular infrastructure that is intended to improve usability, flexibility, interoperability, and scalability as compared to centralized mainframe time sharing computing.

A client is defined as a requester of services and a server is defined as the provider of services. A single machine can be both a client and a server depending on the software configuration.

Client/server Architecture

As a result of the limitations of file sharing architectures, the client/server architecture emerged. This approach introduced a database server to replace the file server. Using a relational database management system (DBMS), user queries could be answered directly. The client/server architecture
reduced network traffic by providing a query response rather than total file transfer. It improves multi-user updating through a GUI front end to a shared database.

**Benefits**

The following are what are considered to be the benefits of client/server computing:

- Many times easier to implement client/server than change a legacy application.
- New technology and the move to rapid application development such as object-oriented technology.
- Long-term cost benefits for development and support. Easy to add new hardware to support new systems.

### 6.5.6.1.2 Internet Database

Internet databases are a collection of information in electronic form which is accessible through the Internet. There are free Internet databases and subscription databases where users must pay a fee.

An Internet/Web database implementation interacting with a database uses the Web as a means of connection and a Web client browser on the front end. Typical Internet database implementation is facilitated by HTML forms for gathering user input, Common Gateway Interface (CGI) to pass data to the server, and a script or program that access database to submit or retrieve data (Fig 6.1). There are some other alternative approaches to the use of CGI supporting faster transaction such as FastCGI, PowerCGI, Netscape API (NSAPI), and Internet Server API (ISAPI).
The generic architecture of an Internet database contains four components:

**Browser Layer**

The browser is the client of the Internet database implementation. The browser displays HTML and executes client side extension functionality such as JavaScript, ActiveX, and JAVA for enhanced user interface and input processing capabilities. Web browsers (e.g., Netscape Navigator or Internet Explorer) commonly use forms for the collection of user input and sending it to the appropriate server for processing.

**Application Logic Layer**

The application logic layer exists as a CGI program, server API program, or JAVA Applet. The application logic obtains data for a query in the form of a keyword, SQL statement, or natural language expression. The query is prepared and sent to the database via a connection piece. It also retrieves result from the connection piece and formats them as HTML for display.
Database Connection Layer

The database connection layer provides a link between the application logic and the database management systems (DBMS). The database connection must provide access to the underlying database in an easy to use, fast, flexible, robust, and reliable fashion. JAVA database Connectivity (JDBC) defines the ways that a JAVA application or JAVA applet accessing databases (Fig 6.2) Open Database Connectivity (ODBC) works along with JDBC, making it possible for users to access different databases from different software packages.

![Database Layer Diagram](image)

**Fig 6.2** Database Layer

The database layer consists of the DBMS that is responsible for storing data efficiently, retrieving it based on user-defined queries. The DBMS consists of a database engine that is responsible for optimizing query execution in the shortest possible time.

**656113 Z39.50**

Z39.50 is an international standard for communication between computer systems, primarily library and information-related systems. Z39.50 is becoming increasingly important to the future development and deployment of interlinked library systems.
Benefits

- Modern Z clients can send requests to several libraries simultaneously either the same request or different ones. This feature allows tremendous time saving when searching for rare items or for large numbers of records.

- The basic record format used for interchange is MARC. The Z client is presented with a MARC record for display and possible further processing. All libraries trade in bibliographic records one way or another. Z39.50 opens up that trade by making standardizing the basic search and retrieve functions.

- Extended services for ordering documents, updating databases, and storing searches can be defined and controlled via Z39.50. By using Z39.50 as a basis, many other library processes, particularly ILL, can become open.

Search Features

- Complex Boolean statements involving all the standard operators AND, OR, NOT
- Comparison operators for dates e.g., Greater than, equal to, etc.
- Proximity searching
- Truncation
- Completeness, e.g., part of field, complete field, etc.
- Authentication allowing the Z server to control who accesses their databases
- Accounting/resource control to allow access to be charged for
- Explain facility to allow information about the remote database services available etc. to be transmitted to the Z client
- Index browsing as typically available in OPAC systems
• Defining record formats e.g. MARC format

Z39 50 Products and Systems

Z39 50 can be incorporated into all sorts of products and systems only a few of which are currently being exploited. Z39 50 can be implemented on any computer system and so opens the way for true interworking.

OPACs

Integrated into a Library Management System (LMS) a Z39 50 OPAC allows users to search the local library catalogue and also to select from a set of library defined external library catalogues. This is the commonest use for a Z client. OPAC Z clients can be on the desktop on a local private LMS server or publicly available over the Internet. They can be built as Windows, UNIX, Java or Web clients independent of the systems that they are accessing.

Cataloguing and Other Clients

A cataloguing client normally communicates with the database in an LMS via a proprietary piece of software and/or SQL. Geac’s GeoCAT is the only example so far of a Z client being used for catalogue update purposes. It works with Geac’s Advance and Plus but could work with other systems in theory. By using a Z client it is possible to

• use one cataloguing tool against several databases from different vendors
• update two databases at once
• catalogue items remotely over the Internet e.g. to catalogue collections before they are physically transferred
• Notify a bibliographic utility that a record has been used rather than just viewed for accounting purposes
Geac have also built extended services for accessing patron records so a user may request look at account information and place ILLs etc from a Web Z client. Here the use of a Z client is not apparent to the user but it has paid dividends to Geac since they have only one client to maintain against ADVANCE and PLUS.

Personal Bibliographic Tools

Several personal or stand-alone Z39 50 clients are available as desktop tools for librarians and researchers whose local LMS does not have a Z39 50 capability. BookWhere SLS PC Browser and ZNavigator are good examples. Reviews of these products appear in Bibliotech Review.

6.5.6.2 Model Design

There are various options while considering a model for Internet based document acquisitions. One option is to keep track of the web-based document vendors and evaluate and order the books as when they are available. But due to the highly distributed nature of the resources available, a considerable amount of time and energy will have to be invested for such a system. Hence, the proposed model will have an interface for the vendors to interact with the library acquisitions system online.

6.5.6.2.1 System Components

The following are the essential components of the system.

Vendor Interface

The interface provides the interaction forum for the vendors to upload the latest resources they are interested to market. The interaction maybe...
Chapter 6 A review of Internet based restricted to authorised vendors by means of establishing authentication procedures

**Vendors Database**

The details of the vendors and the documents entered are collected into the vendor information database.

**Library Databases**

The library databases mainly consist of the user subject profiles and document subject profiles. At this stage a matching is performed if the title upload by the vendor falls in the subject purview of the library. Only those titles that fall in the subject areas are passed on to the expert selector for approval.

**Expert Selector Module**

The expert selector explained in the chapter six of this work then proceeds in the routine procedure to select the book according to the selection criteria and priorities. It outputs the list of approved titles.

**Ordering Module**

The ordering procedure is taken care here. It traces back the title to the vendor and then places the order as per procedure. Refer figure no 6.2 below.

**Acquisitions Module**

After the approval and the ordering, the system shifts the workflow to the acquisitions procedure.

The procedure discussed above refers to the ordering the bibliographic material through Internet mode. However, the acquisitions of the electronic resources such as online journals and internet resources should follow other appropriate procedures but the evaluation criteria and other factors in electronic collection development will still be the same as discussed within this chapter.
Fig 6.2 Model Design
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6.6 Conclusion

As more and more publishers are announcing their catalogues on the Net and as the documents can be acquired through Internet (one of the advantages of e-commerce) many libraries have started using Internet in the process of book selection and acquisition. However, even though this is a new phenomenon, a few libraries have evolved statements of policy in acquiring electronic resources. This chapter presents such policies evolved by library and information science professional bodies like ALA (American Library Association) and some of the Universities like State University of New York at Albany, University of California Berkeley where extensive studies were undertaken to arrive at electronic collection development policy.
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