Evaluation of Next Generation Online Public Access Catalogue (OPAC) Features in Library Management System

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Abstract

The paper presents an outline of evolution of Online Public Access Catalogue (OPAC) comparing to the various generation of computer. An attempt is being made to evaluate some of the simple and advance OPAC features supported by different Library Management System (LMS).The evaluative criteria is also proposed which helps library and information centers to further evaluate the features of OPAC presented in various LMS.

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Keywords: OPAC, Web OPAC, Online search, Next Generation Catalogue.

1. Background

OPAC is an acronym for "On-line Public Access Catalogue". Unlike printed catalogue, it is an access tool and resource guide to the collection of a library or libraries which provides bibliographic data in machine readable form and can be searched interactively on a computer terminal by users. Pierre Le Loarer (1993) defined OPAC as "a database describing documents via bibliographic entries composed of fields some of which may be queried essentially the author, title and subject fields for querying by the public -

- a query function providing access to the data base indexes : the user specifies the field (i.e. criterion) via which he or she wishes to query the catalogue. Either that or the system implicitly chooses several criteria (access to a general index) and then suggests the entries found under the different', criteria, according to the result of the search.
- and (in some cases) a set of referential or authority lists that allow a given item (a document's author, subject or language) to be consistently expressed in the same way, in the database and consequently retrieved in the same form."

Gorman (1982) has characterized an on-line catalogue as an "integrationist" and defined it as, "a bibliographic control system that allows access by means of a number of access points (conventional and "unconventional"; single and in combination) to bibliographic data stored in machine-readable form. Thus OPAC is a systematic record of the holdings of a collection. Its purpose is to enable a user of the collection to find out the physical location of the information in the collection. It is an access tool and resource guide to the collection of a library or libraries which provides bibliographic data in machine readable form, facilitates search interactively on computer terminal by a user. Broadly online catalog fall into three categories, each representing a different perspective or model of the library catalog as the systematic record of a library holdings or as an access mechanism. The first category requires that the online catalog provide at least as much data content, organization, and access as the card catalog. The second category limits the online catalog to the data content, functionality, or usability of the card or book catalogs. The third category points beyond the traditional

catalog forms and prescribes more data access, functionality, guidance and usability than is possible with the pre-online, manual catalogs".

According to Wells (2007), the library OPAC has at least three distant functions. First, it acts as bibliographic database, an electronic version of the card catalogue that it replaced, acting as an index for users in search, for example of a particular book. As a logical extension of this, OPAC increasingly also provides links to electronic texts, freeing the user from the necessity of physically locating material on the library's shelves. Second, it functions as a 'portal" in a way not dissimilar to a library homepage, providing links to non-bibliographical data, either relating to users themselves - information about overdue books, fines etc or to other library information such as opening hours. In principle, this portal function could be extended indefinitely to connect to a variety of data considered to be of interest to library users. Third, OPAC functions as a promotional artifact, advertising the presence of the library and the services it can provide and at the same time making a statement of authority about communicative links that are supported and facilitated.

The paper presents an outlook of the online catalogue based on cutting and emerging technologies used extensively for the OPAC information retrieval systems.

2. Paradigm Shift: Print Catalogue to Catalogue 2.0/3.0

The evolution of catalogue is basically a technological deployment of the computers and information communication technologies in the printed catalogue. It has gone through lots of technological development since first international conference on cataloguing principle, Paris. For the systematic study, it may be characterized in four generations such as:

  I. First Generation of OPAC
  II. Second Generation of OPAC
  III. Third Generation of OPAC
  IV. Fourth Generation of OPAC

The technological advancement can be view by two perspectives. The first paradigm in searching techniques, which shift from First Generation alphabetical phrase search (printed catalogue) to Forth Generation faceted search and browsing. Second technological changes are related to the Interface i.e. from Information Retrieval System to Web 2.0 based interactive interface.

Web 2.0 thinking and technologies have influenced libraries and library services, where the application of Web 2.0 principles has been widely framed as "Library 2.0". Web 2.0 encourages users' creativity and sharing but at the same time supports and emphasizes the role of personalization and individualism. All these qualities could also be included in the library catalogue to make it more interactive and interesting and to gather additional data that could also support the functionality of the catalogue. Web 2.0 trend is the collaboration of users in the creation of content on the web (Merčun & Žumer, 2008). The following table -1 presents a bird's eye view of the features of OPACs of various generations.

Table – 1: Features of Library Catalogue Generations

	Card Catalogue	First Generation	Second Generation	Third Generation	Fourth Generation
Chronology	Pre-1960s	1960s-1970s	1980s	1990s	Present
Computing	Drawer and cabinet	Vacuum tubes	Transistor	Integrated circuits	Very large

power					integrated circuits
User interface	Handwritten, then typewritten on card	Text-terminal base, green or amber screen	Graphical user interface(GUI), graphical icons and visual indicators	Web-based technology, browser plugins and hypertext linking	Web-based services with Web 2.0 AJAX technology
Catalog display	Cards with various sizes and colors	Display was card-like, with labels and searches that mimicked the appearance and access points of a card catalog	Display began to be used not just to identify what the library owned, but to track orders, check out material, give detailed location and holdings information	Other databases integration tools that have always been acquired from a publisher are now part of menu display along with the library's catalog	Aspiration to be like an online bookstore
Metadata	Semi-standardization with editing done to meet local practices such as call number and subject headings	ISBD standards	ISBD to linear display	Metadata records enriched with book cover, abstract and contents page	Embedded metadata citation with sharing of metadata enabled
User search	Sort through alphabetically arranged cards in a drawer	Exact left-to-right matching of word or phrase	Keyword searching and Boolean operations exact match	Advanced search and partial-match techniques	Browsing by faceted search
Issues	• Physical space limitation • Labor intensive and time-consuming • Tiresome for patrons to search through tightly-packed drawers of filing cards • Expensive and hard to maintain	• Only short bibliographic records were displayed in a format that resembled the catalog card • Users seemed more inclined to conduct subject(in contrast to know-item)search • Inferior search capabilities due to exact words or phrase-matching	• Difficult to browse through records • Too many searches suffer from false drops and/or too many hits • Boolean is still a retrieval technique designed for trained and experienced searchers	• Catalog remained primarily an inventory of library holdings with passive exchange of information • Little change to the underlying search and retrieval functionality • Newer and more appealing products(like Google or Amazon) have entered the information market	• Social and participative rich system may not be for everyone
Importance of it	•Information resources were relatively scarce •A systematic system to allow patrons quickly identify books they wanted and find them on the shelves	• Bring a generation of library users into the online world • Eliminate users tiresome need to search through drawers of cards • Reduce labor and time intensive task of maintaining card catalog	•More usable for untrained user through GUI •Search process both more intuitive and direct •More access points as any field or world in the bibliographic record can become an entry point •Vast numbers of remote users through network technologies	• Do not need to be physically at the library as it is accessible • Book covers and other features aimed at improving the interface • Access to resources of other libraries expanded users' information scop	To be determined.

2.1 Features of Catalogue 2.0/3.0

Web 2.0/3.0 enabled catalogue offers several features and functionalities which make a completely different searching experiences. Some of the latest emerging technologies associated with catalogue 2.0 are discussed as under:

i. **Faceted Navigation:** Faceted browsing is an exploratory technique for structured database based on the facet theory of classification. It enables library catalogue to display the search results as sets of categories based on some criterion such as dates, languages, availability, formats, locations, etc. Users can conduct a very simple, initial search by their preferred keyword method and then refine their results by clicking on the various results facets (Yang & Wagner, 2010). Faceted navigation may group the searched results into various categories and sub categories. Any information displayed may be filtered through facets and groups with possibilities of the users able to retrieve and re-engage the same search for future reference. An example of faceted navigation is shown in Fig1.
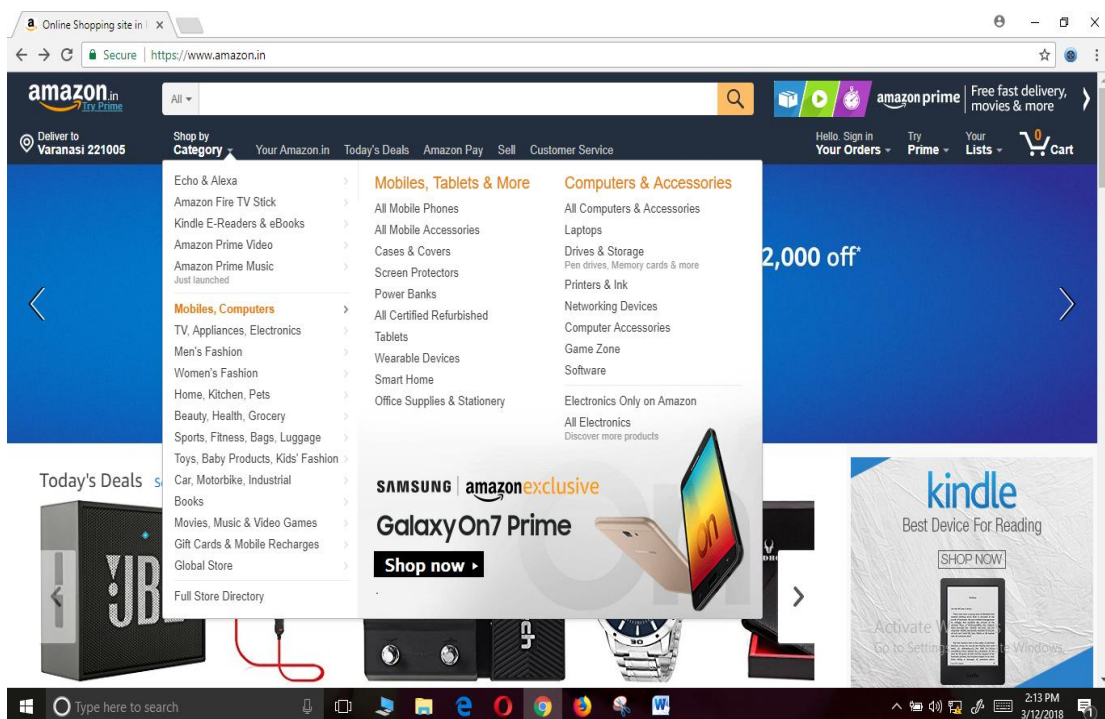

Fig1. Faceted Navigation System of Amazon.com

ii. **Relevance Ranking:** Another cutting edge technology which is aim to retrieve most relevant results and ranking of all the results based on predefined algorithms.

iii. **Feedback:** Feedback mechanism is associated with users of information retrieval systems. Feedback features is already being adopted by many of the information retrieval system including a search engine Google to retrieval. Feedback mechanism for the retrieval results may be deployed in practice in OPAC, so that IR system learns from feedback and can do alteration/modification in existing results. It is also useful for relevance ranking.

iv. **Tag Filtering:** User generated /assigned keywords in integrated features of the most of modern day OPAC may use tag filtration to provide more specific search results such

as it may filtered with their query, based on the tag, the retrieved results filtered. Tag filtering feature is offered by NDL to facilitate their users, through this more specific material may be provided to the searchers which can be helpful for saving their time too. Fig 2 presents the tag filtering feature adopted by NDL.
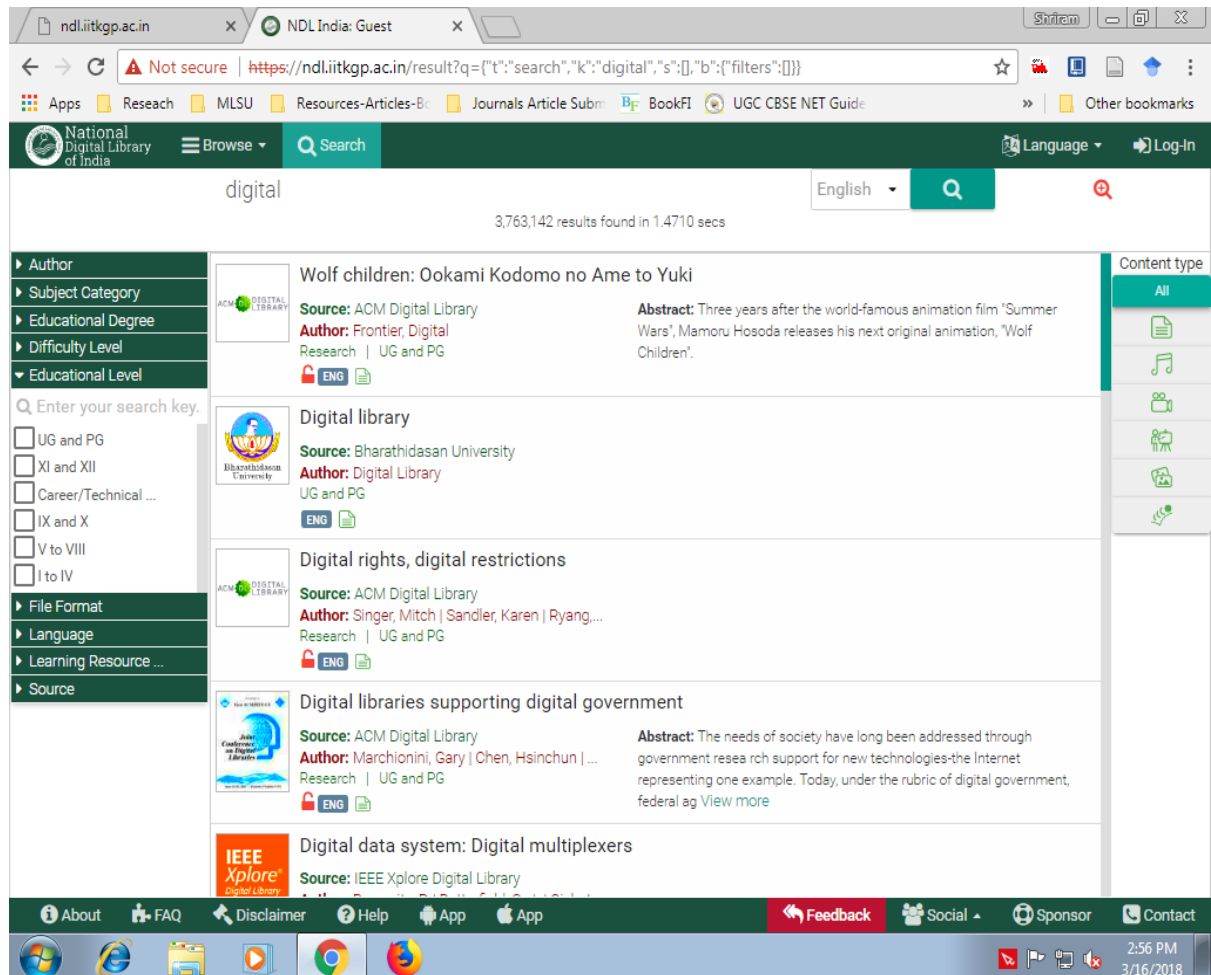

Fig 2. Tag Filtering feature of NDL

v. **FAQ** (Frequently Asked Questions)**:** FAQ is not a new but a very useful guide which helps users to access the catalogue, features and retrieval mechanism. In general, it offers a series of questions with answers.

vi. **Spellchecker** (Did you mean?): It suggest related terms for misspelled words or search terms as *"did you mean…?"* Which may be helpful? This feature must be deployed in current OPAC and this could be helpful features for the users.

vii. **RSS** (Really Simple Syndication): RSS is a family of Web feed formats used to publish frequently updated works – such as blog entries, news headlines, audio, and video in a standardized format. An RSS document includes full or summarized text, plus metadata such as publishing dates and authorship. RSS feature is an integrated part and supported by most of the LMS.

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viii. **Tag Cloud:** This is similar to the tag filtering feature but instead of filtering the results by faceted navigation system, if offers tag cloud which contains all the terms index for searching and retrieval.

ix. **Book Jacket:** This is an interactive feature offered by many of the publishers and organisation including Amazon, Google, and OCLC etc. The cover image of book/documents can be linked up with the OPAC through a valid ISBN. Users can choose from OPAC Amazon Cover Images, Google Jackets, Open Library Covers, which are free or paid services, like Baker and Taylor cover images or Syndetics Cover Images.

x. **Table of content/summaries**: TOC is an important feature of modern age Publishers Databases which provide table of content for the newly arrived articles or books. Generally, these services are offered using RSS.

xi. **Borrowing suggestions/Recommendations:** It may suggest the users to go through some other related books which are being concerned by other users. As Amazon suggest their buyers to list of recommendations. Fig 3 Suggest the suggestions and recommendation features.
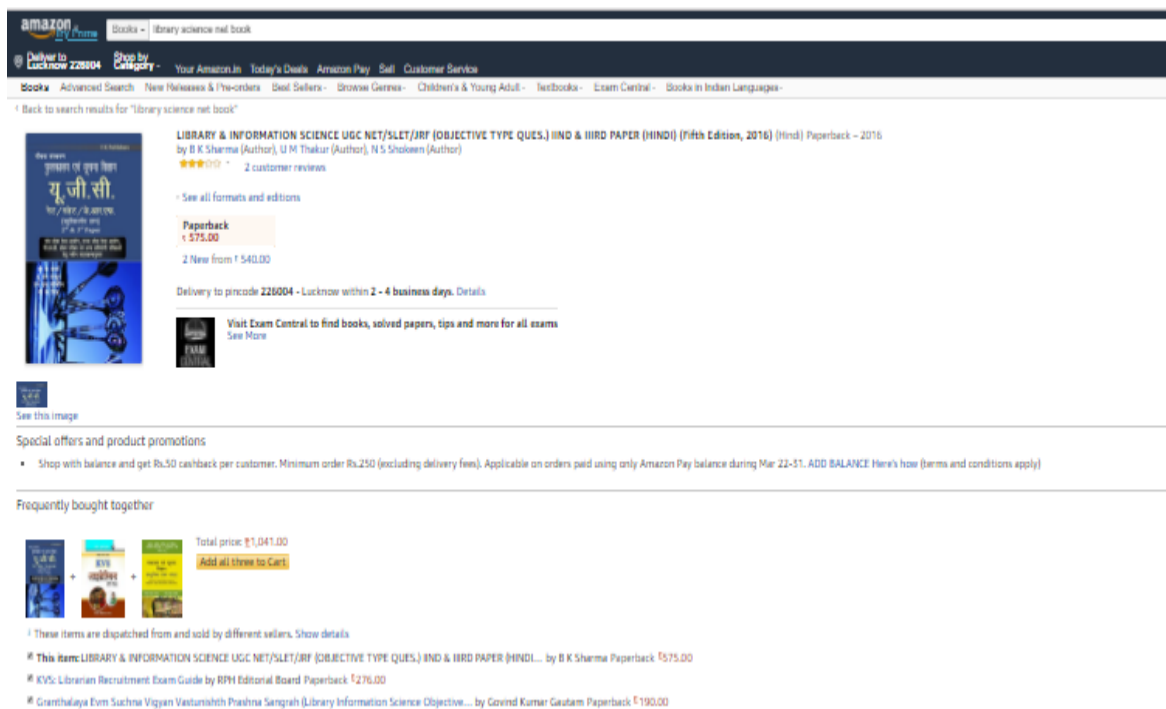

Fig 3. Browsing suggestions and recommendations

xii. **Online Reservation:** Under this feature a user may place reservation for any book or document he/she wish to borrow in the future. This facility may be provided with the detail for a copy of a document, like: title of the document, author, name of the borrower etc.

xiii. **Discovery Services:** Integration of services may be provided through OPAC, as we may link our library documents with Library Links and Library Search by Google Scholar. Where, library links provides facility to link articles to subscribe full text for

users affiliated with the library and Library Search links book catalogue which can be used by users to find out the availability of books and to request for library loan.

xiv. **Semantic Search:** The term was coined by Tim Berners-Lee for a web of data (**or data web**) that can be processed by machines that is, one in which much of the meaning is machine-readable. Semantic search is now becomes integrated part of the information retrieval systems and some of the LMS started experimenting semantic search deployment. ("Semantic Web", 2018).

2.2. Catalogue 2.0/3.0 Features in LMS

Presently most of the LMS support all the important features mainly user friendliness, ranking, filtering etc. The following table - 2 presents an evaluation of these features among popular LMS.

Table – 2: Catalogue 2.0/3.0 Features in LMS

Features of Next Generation OPAC	Library Management Software					VTLS/ OPAC
	NewGenLib/ OPAC	e-Granthalaya/ OPAC	SOUL/ OPAC	Koha/ OPAC	LibSys/O PAC	VTLS/ OPAC
Faceted Navigation	✓	✓	✗	✓	✓	✓
Relevance Ranking	✓	✓	✓	✓	✓	✓
Feedback	✓	✗	✗	✓	✓	
Level of understanding/Tag Filtering	✗	✓	✓	✓	✓	✓
FAQ	✓	✗	✗	✗	✓	✓
Spellchecker (Did you mean?)	✗	✗	✗	✗		
RSS(*really simple syndication*) Feed	✓	✓	✓	✓	✓	✓
Tag Cloud	✗	✗	✗	✗		
Recommendations	✗	✗	✗	✗	✗	✗
Book Jacket	✗	✗	✓	✓	✓	✓
Table of content/summaries	✓	✓	✓	✓	✓	✓
Borrowing suggestions/ recommendations	✓	✗	✗	✓	✓	✓
Online Reservation	✓	✗	✓	✓	✓	✓
Discovery Services	✓	✗	✗	✗	✗	✓
Semantic Search	✗	✗	✗	✓	✗	
Shelf check	✗	✗	✓	✓	✓	✓
Persistent URLs	✓	✗	✗	✗	✗	✓
Zotero Compatible	✓	✗	✗	✗	✗	✓

Scale: ✓ (Present); ✗ (Not present).

This is an exploratory study to check and evaluate the features based on the software demo/website of the various LMS. Some of the features may change and varies based on the advanced/professional versions of the LMS.

3. Conclusion

This paper presents a conceptual framework of various generation of OPAC and cutting and emerging features supported by LMS OPAC. Most of the LMS makes use of web2.0/3.0 features in the OPAC systems. Integration of these features enables library users to explore information according to latest means of navigation systems like faceted/collaborative, recommendation, tag cloud etc. It enables information seeking process specially searching and browsing more intuitive and interactive. Awareness about these features will definitely creates a new way of searching the library OPAC and library users get quickly access and retrieve high relevant documents with minimal effort.

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