

# Information Services in Academic Libraries: Browsing Services vs. Searching Services

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**Abstract.** *Information services encompass services through which librarians directly supply users with information but also interfaces created by librarians and adjusted to users through which users could independently find needed information. Information services in this study were categorized into reference services and searching & browsing services. Research results in regards to ratio of browsing services versus search services of academic libraries in two English speaking countries, Ireland and New Zealand, revealed that browsing services overcome searching services. In-depth analysis shows similarities and differences between searching & browsing services in these two countries.*

**Keywords.** Academic libraries, content analysis, data mining, information services, reference services, browsing services, searching services

## 1 Introduction

The great boom in development of libraries happened in field of libraries' services where existing services were enriched with new functionalities and completely new services were introduced. Traditional library services as information services and learning and teaching services, enriched by communication and information technology, have developed rapidly in recent years. Nowadays, when average user is overwhelmed with huge amount of information it is very important that librarians systematically transfer knowledge and skills about information seeking and organization of information to their users. Recent analyses confirmed also that researchers are not mentioning the library website as their first choice for accessing online resources [3]. It is of crucial importance for every academic library to present information seeking tools through functional and user-centric information services. Development of

new libraries' services is necessary to adjust with changes and needs of university. New trends such as open source contents, social networks, cloud computing etc. would influence a directions development of library services. Undoubtedly, new challenges are in front of librarians because necessary new skills would be beyond current librarians' competencies. That's why librarians should permanent learn and include also experts from other fields in a development of new library services.

## 2 Information services

Although concept of information services could encompass different segments of libraries' activities in literature it is usually related to reference services [5]. American Library Association gives following description of information services: „...the goal of information services is to provide the information sought by the user. Information service should anticipate as well as meet user needs. It should encourage user awareness of the potential of information resources to fulfill individual information needs. [9]“ According this definition information services should be offered in regards to users' needs. Furthermore, information services could be divided into two main categories: assurance of information needed by users and awareness of users about available information resources and ability to find the information appropriate to given needs by themselves. Information services are usually overlapping with teaching and learning services because librarians often educate users while offering information services to users. Information services encompass services through which librarians directly supply users with information but also interfaces created by librarians through which users could independently find needed information. According this statement information services include reference services and browsing & searching services. This approach is

supported by Katz who classifies information services into direct and indirect services[10]. Namely, direct services include communication of users and librarians replying to users questions. Indirect services include activities “behind scene” such as preparation and development of catalog, bibliography and all other tools which assure access to libraries’ collections. Experts accentuate that concept of information services is necessary to connect with the concept of digital libraries and suggest three levels of information services[4]: first level on which technology, sources and services are integrated into digital library and user has available portal for support of their information needs; second level on which librarian teaches user about use of digital libraries, using FAQ, online help, directions and preparing user for independent searching for answers; third level on which librarian waits on users' questions which can be through telephone, e-mail, some interactive tool etc. This research will focus on searching & browsing services.

## 2.1 Searching & browsing services

Concerning searching & browsing services libraries are getting aware that users often rely on Google Search in their quest for information. Library users accustomed to the simple Google interface and “relevant” search results and they do not want to tolerate something more complex than one searching row and one unified list of searching results [11]. At the beginning of development of libraries' web sites searching services were oriented to libraries' catalog with records describing mostly printed libraries' collections. Libraries' catalogs are still important part of every library web site and its' development engages a lot of librarians efforts. Libraries' catalog user interface is usually located on libraries' homepage and depending on integrated library system which is used can have different functionalities. Although catalogs are very important their interfaces were not user friendly enough so average users mostly choose web search engines like Google instead of libraries' catalogs. That's why in recent years great changes can be noticed in representation of libraries' catalogs such as integration into library or university web sites; integration several catalogs through single interface; more user friendly interfaces; besides printed resources digital resources are included (digital books, digital journals etc.); integration of different searching possibilities beyond traditional vision of libraries' collections; integration of Web 2.0 technology. Namely, today's library catalogs look completely different than ten years ago and information which they are offering include wide spectra of information about printed collections and subscribed digital content, sometimes even a content in open access. Federated search tools are much contributed to quality of information access but federated search tools were actually meta search engines and were slow and had complex interfaces

and that's why they were not suitable[2]. Users' needs of searching and browsing fulfilled so called discovery tools which allowed unique access point to all information, facet navigation, keyword searching, sorting results according to relevance, overviews, RSS feed etc.[7]. Besides discovery tools encourage users to contribute with its' knowledge to quality of information system through comments, evaluation, tagging and building folksonomies[12]. Four main discovery tools are currently present: OCLC Local, SUMMON (Serial Solution), EBSCO Discovery Service and Primo Central (Ex Libris). Today's searching services and browsing services encompass collections on all carriers, media, types and formats. Searching are consisted from following components[8]: searching interface; query language – Boolean operators, other operators, selection of searching field; help tools during creating query – checking correctness of inserted words, upgrading words, synonyms from thesauri etc.; searching algorithms-part of system which determines which content matches users' query; searching zones-searching parts of content; searching results-result representation to users, number of results, order, grouping, added possibilities of results manipulation. Browsing can be divided into following categories: organization system grouping content according to topic, users' group, chronologically, tag cloud etc.; university navigation system; library navigation system; sitemap – summarized view of main content categories; site index – alphabetical list of links to contents; guide through library web space-gives overview of the most relevant content; contextual navigation systems-links to certain content usually inside texts; Browsing also can be categorized into general browsing, subject dictionaries, indexes and lists. Besides searching services, browsing services allow access to libraries collections. Browsing services are important for users who do not know what exactly do they search. Following these statements research question in this paper is to find out which information services are more present at library web sites: browsing or searching?

## 3 Method

The results presented are part of a bigger study which covered other aspects of academic library services and collections. However, this paper focuses only on searching & browsing services which are part of the information services in academic libraries.

### 3.1 Sample

For content analysis was chosen purposive sample of academic libraries from two English speaking countries: Ireland and New Zealand. From the list of higher institutions were included institutions which organize undergraduate, graduate and doctoral study and have license for giving academic degrees.

### 3.2 Data gathering

For the purpose of this research a harvester was developed which gathered data into MySQL relational database located on local server. Harvester started from given URL address, namely homepage of the library, and after storing the URL, web page content, metadata, anchor texts and links, and messages about errors during harvesting, followed each link inside domain of library going to next page and repeating the process. Harvester did not followed external links but anchor text from web page's code was recorded. Harvester was programmed to harvest till fourth hierarchical level in web site's structure and homepage was considered as a first level. Data were harvested in period of April and May 2011. Data were stored in MySQL relational database structured in seven tables. For managing data from MySQL database command window of program Putty and program package HeidiSQL for Windows platform was used. In purpose of data gathering, academic libraries' web sites of total of 14 libraries in sample were harvested, 7 from Ireland and 7 from New Zealand, and data about 2415 web pages were gathered.

### 3.3 Content analysis

Content analysis is research method which objectively, quantitative and systematically describes written, verbal or visual communication [1]. Krippendorff describes content analysis as "a research technique for making replicable and valid inferences from texts (or other meaningful matter) to the contexts of their use" [6]. Content analysis is used to determine the presence of certain words, phrases or concepts within texts or sets of texts. Researchers quantify and analyze the presence, meanings and relationships of such words, phrases and concepts, then make inferences about the messages within the texts. Texts could be from books, speeches, interviews, essays, historical documents, advertisements, pictures, videos and from web pages. Content analysis can be applied to every written or some other form of human communication and in recent decade is usually used in marketing, cultural studies, journalism, sociology, politics, psychology, cognitive science, economy, information sciences etc. Although content analysis depends strongly upon research questions usually it consists of three steps: sampling, defining unit of analysis, developing categorization scheme for coding. For this research sample was formed from 14 academic libraries from Ireland and New Zealand, and unit of content analysis was web page of academic library namely text of web page which is visible to users through web browsers. Categorization schema (taxonomy) was developed covering instances of information services in six hierarchical levels. Searching & browsing services category was part of the information services category which included also reference services, not considered

in this paper. Two categories, *searching* and *browsing*, were recording searching and browsing instances appearance on Web pages. Searching category included terms like search, find, retrieve, multisearch and metasearch. Browsing category included three subcategories: browsing by index (A-Z index, site index and site map), browsing by subject (subject guide, subject gateway, subject portal, pathfinder, etc.), and general browsing. General browsing subcategory, besides generic term "browse" with variations included also "quick links" offering the user possibility to browse quickly most popular resources at library Web site. To record searching & browsing delivery tools two categories, searching & browsing by catalog and searching & browsing by search engine, were added for the analysis. As a tool for content analysis Provalis software QDA Miner and WordStat were used providing a tool for hierarchical taxonomy creation, frequency tables of keywords and content categories and Keyword-In-Context (KWIC) tool for displaying the context of specific words, phrases or rules.

### 3.4 Research limitations

Web pages of academic libraries are sometimes scattered among universities' web sites which made harvesting incomplete or impossible. Also, some parts of libraries' web site content were not harvested because access was limited to registered users. Lack of standardized code or java script and flash technology in some cases caused problems in harvesting with used harvester. Also this research was focused on a part of the information services only, purposely omitting collections to avoid possible overlapping.

## 4 Interpretation of results

According to content analysis of 14 academic libraries' web sites and applied taxonomy information services are equally distributed through *reference services* (45%) and *searching & browsing services* (55%) in both countries which can be seen on Fig. 1. Some form of reference service is present on 93% of academic library web pages in both countries, and *searching & browsing services* are present on 89% of Irish library web pages and 81% of New Zealand's library web pages. Further analysis in this research would specially focus on searching & browsing services as an important part of information services.

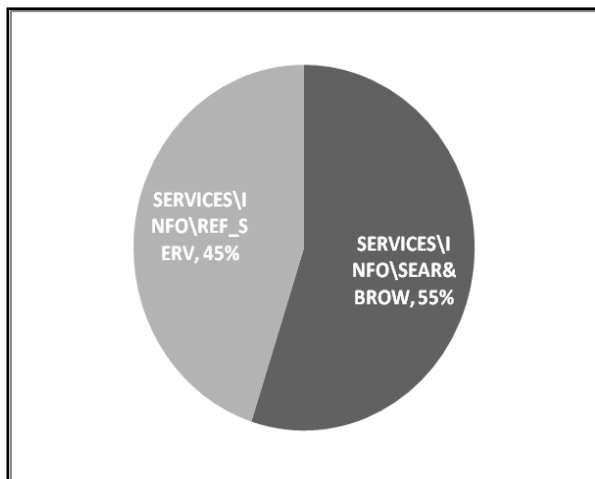


Figure 1. Information services on academic library web sites in Ireland and New Zealand

Comparison of searching & browsing categories appearance in two countries is given on Fig. 2. Namely, *browsing* services are present on 67% library web pages in New Zealand and 75% in Ireland, and *searching* services on 67% library web pages in New Zealand and only 41% in Ireland. According to the results Irish academic libraries offer a lot of browsing possibilities for their users.

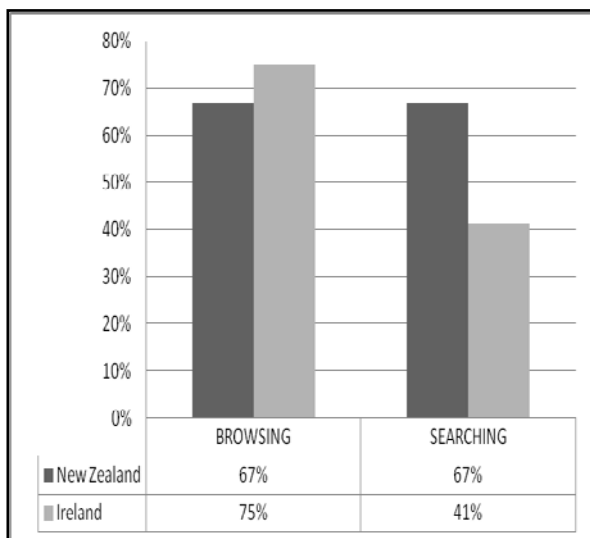


Figure 2. Ratio of searching services and browsing services on academic library web sites in Ireland and New Zealand

More detailed look at browsing services can give us a distribution of a three subcategories including: *browsing in general*, *browsing by index* and *browsing by subject* presented in Fig. 3. In New Zealand's academic libraries for general browsing use terms like "quick links" (48%) and "browsing" (19%), and in Irish academic libraries for general browsing use terms like "quick links" (34%) and "browsing" (2%). Some Web pages are mentioning "quick links" and "browsing" at the same time, and that is the reason of the representation of the general browsing category with 54% for New Zealand and 36% for Ireland.

*Browsing by index* is in Ireland mostly represented by *site maps* (53%) and *A-Z indexes* (49%). In New Zealand *site maps* and *A-Z indexes* are less popular (27% and 32% respectively) but still present on academic libraries web sites.

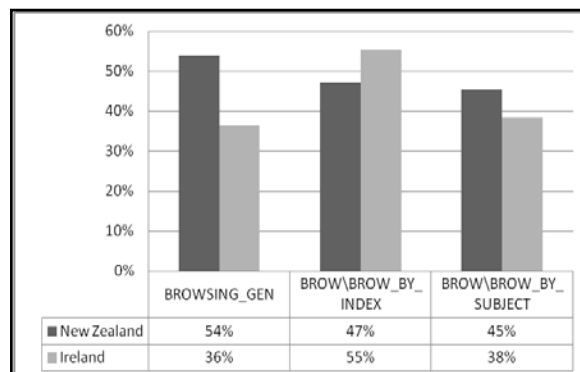


Figure 3. Distribution of subcategories of browsing services on academic library web sites in Ireland and New Zealand

*Browsing by subject* is in New Zealand's libraries present at 45% web pages, and most popular are *subject guides* and *subject portals* (32% and 13% respectively). In Irish libraries *subject portals*, *subject gateways* and *subject guides* (19%, 13% and 5%) mostly represent subcategory of *browsing by subject*. Irish libraries are offering Intute and Infomine subject portals. The term "pathfinder" which can be find often in the literature is not present neither at Irish nor at New Zealand's library web sites.

Searching services are mostly present through term "finding" than term "searching" in New Zealand. Also in Irish academic libraries is similar situation. Academic libraries are migrating their searching options from "search" to "find" which is more appropriate for library users.

Searching & browsing services can be delivered through *searching & browsing by catalog* or *searching & browsing by search engine* and this distribution is presented on Fig. 4.

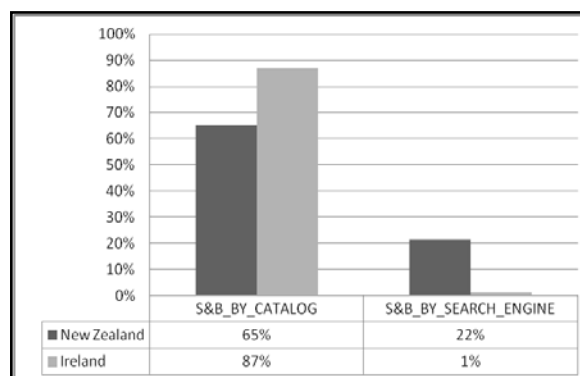


Figure 4. Searching & browsing delivery distribution

The term "catalogue" is used in New Zealand's academic libraries and Irish academic libraries too. Some Irish academic libraries are using the term

OPAC (Online Public Access Catalogue) which becomes recently less popular and in New Zealand is not used at all. The presence of different ILS (Integrated Library Systems), commercial, not-for-profit, and open source, was recorded. The most present company which produces commercial ILS in New Zealand is Ex Libris with his products Aleph and Voyager (12%). Five out of seven libraries are mentioning Ex Libris in New Zealand. Also, both countries are mentioning not-for-profit company OCLC (9% in New Zealand and 2% in Ireland).

Detailed look at *searching by search engines* shows that New Zealand's libraries often use term "*internet search*" and Irish libraries do not mention search engines except on few web pages. Absence of Google search engine including services like Google Scholar and Google Books was a little bit surprising.

## 5 Discussion and conclusion

Content analysis of library Web pages can give a good insight into the presence of specific library services. According research results information services are well represented on academic library web pages and the ratio of reference services and searching & browsing services is identical in two analyzed countries. Research results in regards to ratio of browsing services versus searching services of academic libraries in Ireland and New Zealand revealed that browsing services overcome searching services, which is the proof that libraries take care about visibility of their collections and about users who do not know what exactly do they want to search and how. Browsing options are improving the access and usage of the library collections. Almost all academic libraries' web pages consisted library catalog within searching & browsing services.

Distribution of information services on academic libraries' web pages among two countries and 14 academic libraries in research sample shows a lot of similarities like extent in which browsing services are represented. Differences are noticed within searching services which are less present on Irish library web pages. Browsing services are very frequent because of so called „*Quick Links*“, generic term „*browse*“, subject guides within „*Browse by subject*“, A-Z indexes and so called „*site map*“ within „*Browse by index*“. Within searching services the most frequent terms are „*find*“ and „*search*“.

Further researches about searching & browsing information services could encompass Croatian academic libraries' web sites to find out characteristics of their presence. Croatia is a small country and could be easily compared with New Zealand and Ireland in many aspects.

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**APPENDIX.**The list of the academic libraries

University	Town	Country	Homepage title	Homepage URL
<b>IRELAND</b>				
<b>Trinity College Dublin</b>	Dublin	IR	Trinity College Library Dublin	<a href="http://www.tcd.ie/Library/">http://www.tcd.ie/Library/</a>
<b>University College Cork</b>	Cork	IR	UCC Library	<a href="http://booleweb.ucc.ie/">http://booleweb.ucc.ie/</a>
<b>Dublin City University</b>	Dublin	IR	Library - Dublin City University Library	<a href="http://www.dcu.ie/~library/">http://www.dcu.ie/~library/</a>
<b>National University of Ireland Galway</b>	Galway	IR	James Hardiman Library - NUI Galway	<a href="http://www.library.nuigalway.ie/">http://www.library.nuigalway.ie/</a>
<b>University of Limerick</b>	Limerick	IR	Library - Library - University of Limerick	<a href="http://www2.ul.ie/web/WWW/Services/Library/">http://www2.ul.ie/web/WWW/Services/Library/</a>
<b>National University of Ireland, Maynooth and Saint Patrick's College Maynooth</b>	Kildare	IR	NUI Maynooth Library	<a href="http://library.nuim.ie/">http://library.nuim.ie/</a>
<b>Dublin Institute of Technology</b>	Dublin	IR	DIT Dublin Institute of Technology - Library	<a href="http://www.dit.ie/library/">http://www.dit.ie/library/</a>
<b>NEW ZEALAND</b>				
<b>The University of Auckland</b>	Auckland	NZ	The University of Auckland Library	<a href="http://www.library.auckland.ac.nz/">http://www.library.auckland.ac.nz/</a>
<b>University of Waikato</b>	Hamilton	NZ	The Library	<a href="http://www.waikato.ac.nz/library/">http://www.waikato.ac.nz/library/</a>
<b>Massey University</b>	Palmerston North	NZ	Library - Massey University	<a href="http://library.massey.ac.nz/">http://library.massey.ac.nz/</a>
<b>University of Canterbury</b>	Christchurch	NZ	Library	<a href="http://library.canterbury.ac.nz/">http://library.canterbury.ac.nz/</a>
<b>Auckland University of Technology</b>	Auckland City	NZ	Library Home - Library University	<a href="http://www.aut.ac.nz/library/">http://www.aut.ac.nz/library/</a>
<b>Victoria University of Wellington</b>	Wellington	NZ	The Library   Victoria University of Wellington	<a href="http://www.vuw.ac.nz/library/">http://www.vuw.ac.nz/library/</a>
<b>Lincoln University</b>	Lincoln	NZ	Library, Teaching and Learning Home	<a href="http://library.lincoln.ac.nz/">http://library.lincoln.ac.nz/</a>