ANALYSIS OF ACADEMIC LIBRARY WEB SITES FOR SERVICES

Jadranka Stojanovski

University of Zadar, F. Tuđmana 24i, 23000 Zadar
Ruđer Bošković Institute, Bijenička c. 54, 10000 Zagreb
jadranka.stojanovski@irb.hr

ABSTRACT

Services are the most growing and the fast changing segment of academic libraries nowadays. This paper aims to discuss the present status of academic libraries' services according to their appearance on the library Web pages. The author investigated 366 library Web sites using content analysis and has summarized the presence of main library services: information services, education services, services for providing an access to the information, circulation services, and services providing facilities and equipment. A detailed insight into a specific service has been given. Less represented services like special user groups services and technical services were presented too. A small presence of the new library services like research services, administrative services, conference&events services, data services, counselling services, career and publishing services was discussed. It was concluded that content analysis of library Web sites can give a good overview of different kind of library services.

INTRODUCTION

Academic libraries are nowadays using web environment to provide high quality information for their users mostly in digital format, but their most important role lies in numerous and enriched library services. From Association of College and Research Library (ACRL) review of the literature and resulting top ten trends in academic libraries half of them are considering a development of library services: new services for mobile devices, scholarly communication services, intellectual property services, repurposed physical space, expanded virtual space, and other technology driven services (Petrak & Aparac-Jelušić, 2005). We are the witnesses of new functionalities added to the common library services, such as information and education services. At the same time libraries are developing new services pushed by constant changes at the universities, and supported by developing and powerful ICT. The user requirements and service expectations form the libraries are growing and advancing,

and library professionals need to use them as a base for user-centric library services development (Dahibhate, 2009). In the competitive environment of the modern universities it is necessary for libraries to develop services which will contribute to the university excellence (Petrak & Aparac-Jelušić, 2005). Popularity of mobile devices and applications launched a set of new library services focusing primarily on the goals of the academic programmes. New trends, like cloud computing open access to publications, open source software, and social networks, are influencing a broad diversity of the present library services and will probably guide the direction of the services development in the near future. Library services require new librarian's skills and engagement in their own continuous learning, as well as strong cooperation with professionals from library and information science (LIS) as well as other disciplines.

ACADEMIC LIBRARY SERVICES

There is a large research literature concerning a variety of academic library services. The most important among them are information services which have very broad meaning. According to the American Library Association *„...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."* (Reference and User Services Association (RUSA), 2004). In this research information services included services by which librarians are providing necessary information according to users' needs, as well as services by which library user can find needed information independently. This approach was supported by Katz who defined two categories of information services: „direct", including communication between a librarian fulfillig user request and user, and „indirect", including all activities „behind the scene", as development and building of catalogue and bibliographies, user interfaces, and other tools which allow user access to information (Katz, W.A. (1969). Introduction to reference work: Vol. II. Reference services. New York: McGraw-Hill., pp. 35, according Smith, 2002).

Education services are probably the most growing part of library services, strongly interlinked with other library services and activities. Academic libraries are actively

involved in teaching and learning processes at the university, and according to the study about researchers' use of academic libraries and their services the majority of researchers believe that teaching the information literacy will be a core role of the academic libraries in the future (Sheridan & Swan, 2007). Libraries ar also recognizing the importance of supporting curriculum, teaching information skills, facilitating learning, supporting research, providing continuing education for staff, and other main activities presented in their mission statements (Bangert, 1997).

The mission of the academic library to serve the teaching and learning processes of its parent institution is still meant by acquiring, cataloging, housing, preserving and making information accessible to the academic comunity (Carter, 2010). The fact that information is nowdays mostly digital, often requiring some sort of authentication, lead us to the relatively new type of library service: access provision. Easy access to catalogs, databases, subject guides, and research tools will ensure that library Web site will remain a valuable information portal (Schrecker, 2008). Also, the number of mobile device users has increased with a startling pace over the past several years, and mobile phones are now used, not only to connect people, but to access information as well. Esspecialy smartphones with 3G technology, allowing high-speed broadband access to data services, improved usage of mobile devices to access a wide variety of information (Bridges, Rempel, & Griggs, 2010). Therefore libraries need to develop their mobile Web sites, including catalogue, in order to ensure their collection and services are used to their fullest advantage, and to fulfill users' needs.

The circulation of books, serials, and other materials has been one of the major measures of library use for decades (Martell, 2008), and despite of a significant decline during the last decade it remained one of the most important library services. Having in mind there is no library which can afford all needed resources, interlibrary loan remains also a very important part of library services.

Services concerning usage and lending of the library facilities and equipment included a broad range of services like *reprographic services* (photocopying, digitization, microfilm readers, etc.), *printing services* (document printing, poster printing), *media services* (ecquipment for the usage of different types of audio, video and multimedia collections), hardware and software provision (computers, laptops, wireless network, programmes, e-book readers, storage), etc.

There are also numerous services in academic libraries, not so well represented or new, like supporting career and employment, advisory services, organization of conferences or other events, administrative services (editorial support, Web pages creation support,

photography, public relations, etc), data services (provision of the different types of numerical data, statistics, questionnaire design, etc), publishing services (journals, conference proceedings, books, peer review, consulting, distribution, marketing, hosting, preservation, etc.), technical services (selection, acqusition, cataloguing, classification, indexing, dissemination), and services for a special groups of library users.

PURPOSE OF THE STUDY

Although many published papers are considering specific academic library services, there are not published papers presenting results of a comprehensive study of academic library services in general. Services offered by academic libraries are of the great importance, and are reflecting the state of library, development stage, and the most recent changes if present. There are many ways in which information about academic libraries' services could be collected, but it is well known that librarians' and users' perspectives can be quite different. An academic library Web site can be considered a virtual representation of the library. This representation is dynamic, registering all changes, and has a strong interaction with library users. There are also tools available to harvest the Web pages from Web sites, as well as good content analysis tools. On the other hand, academic library services are interlinked with library collections, and between themselves, which could be an obstacle for such a content analysis driven study. According all mentioned, the research question addressed here is the following: is it possible to identify different academic library services by analysis of the content presented on the library Web pages?

PROCEDURES

2.1 Selection of library Web sites

To select Web sites, a list of academic libraries was first compiled from LibWeb[1], lib-web-cats[2], Australian-Universities.com[3], National Qualifications Authority of Ireland, South Africa's universities[4], List of Eligible Institutions for Canadian Universities[5], New Zealand Vice-Chancellors' Committee[6], The University of Texas at Austin[7], and University of Wolverhampton[8]. Given that universities from the United States (US) and United

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Kingdom (UK) tend to dominate, stratified sampling method was used to identify well-ranked universities from each country and for this purpose popular international and national university ranking systems were used: *Academic Ranking of World Universities* (ARWU), *QS World University Ranking*, The Times Higher Education World University Ranking, *The Compete University Guide (*UK), *The Guardian (*UK), *The Sunday Times University Ranking (*UK) and *U.S. News & World Report College and University rankings (USA).*

A total of 366 academic libraries' Web sites from seven English speaking countries were chosen: Australia (24), Ireland (7), South Africa (11), Canada (30); New Zealand (7), United States of America (210) and Great Britain (77). Websites not available in English language, as well as Web sites not clearly separated from the university Web site were excluded from the sample.

2.2 Methods and data analysis

Selected Web sites were harvested during April and May 2011 using the TOMAHAWK harvester which was built for the purpose of this research in collaboration with the University JJ Strossmayer in Osijek. The harvester started from the library homepage, and after storing the Web page content, followed each link inside the library domain going to next page, and repeating the process. The harvester did not follow external links, but recorded its data from the Web page code. The harvester was programmed to store all Web pages till fourth hierarchical level in Web site's structure, where homepage was considered a first level. All together 65.570 Web pages were harvested and organized as relational tables using MySQL database on a local server at the Ruđer Bošković Institute.

Content analysis method was chosen following three steps: sampling, defining unit of analysis, and developing a categorisation scheme for coding. Unit for the analysis was Web page, and additional variables like library_ID, country_ID and web_tree_level made possible insight into distribution of the content categories by each of the variable, which was very useful at deeper levels of the categorisation scheme. The content analysis was performed using only text which was visible to the reader of the Web pages.

Categorisation scheme was built according to the literature review and preliminary findings based on an initial data set. Library services were categorized in five top categories: *access, circulation, equipment&facilities, education services, information services*. All other not so well represented services were categorized as "*other services*". Every category included several subcategories at six hierarchically organized levels. The last level included words, phrases, and rules. Content analysis was done using the Provalis software QDA Miner and WordStat.

FINDINGS AND DISCUSSION

The most popular library services on academic library Web pages were *information services* and *education services* present on 96 percent, and 94 percent respectively, of a total number of library Web pages. Services providing *access* to the library materials was present on 83 percent, *circulation* services on 63 percent, and services related to library space, *facilities, equipment* and infrastructure on 51 percent of library Web pages. All other library services, including services for different user categories, research services, publishing services, technical services, data services, career services, counselling services, organisation of conferences and events, and administrative services were under category "*other services*" which was present on 63 percent of all library Web pages (Figure 1).
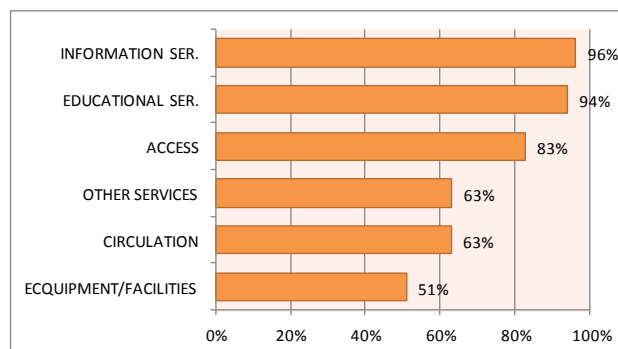

Figure 1. Distribution of top categories services.

3.1. Information services

Following Katz's arguments information services are including *searching&browsing services* (92 percent) and *reference services* (90 percent). *Searching by library online catalogue* and *browsing* options were more present then general *searching* options and *searching by search engine*. Reference services were mainly revealed by different Web 2.0 services (64 percent), first introduced by O'Reilly (Lee, 2005), and today widely used by academic libraries. With their innovative features libraries can introduce more user focus services, provide personalization, engage users more in the content creation and exchange, develop online communities, and offer information enriched with aggregated information from other sources (Wang & Gao, 2004). Many libraries implemented live reference service "*Ask a Librarian*" (60 percent). *Alerting* systems, including *news*, were present on more than a half of all library Web pages (58 percent). Reference services described by generic terms as "*information service*", "*reference desk*", "*reference service*" and "*information desk*" were identified on 14 percent of the library Web pages (Figure 2).
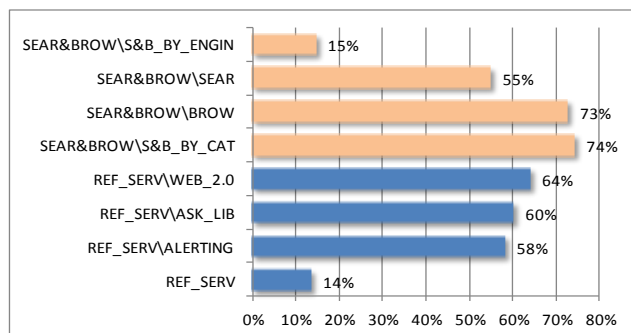
Figure 2. Distribution of information services subcategories

Searching and browsing services

In subcategory *searching by catalog* two terms "*catalog*" and "*catalogue*" were equally present (35 percent). The term "*Catalog*" was more used in US and Canada, and "*catalogue*" in UK and Ireland. New Zealand and Australia were using both terms, and slightly more the term "*catalogue*". South Africa is using both terms equally. Once very popular terms OPAC and WebPac were not used more. Instead of the term "*catalog*" libraries were often using a catalog name or abbreviation like WorldCat, Melvyl, Summit, Merlin, Homer, Socrates, Libros, and BobCat which was not helpful for the content analysis. Catalogs by name were present on 10 percent of the library Web pages, with limited number of 54 identified catalog names included in the categorization scheme. The analysis of the *searching by catalog* subcategory included also integrated library systems (ILS) categorized in not-for-profit and profit subcategories. From not-for-profit companies the most popular was OCLC and its product WorldCat, and from profit companies Ex Libris and its product Voyager. The only well represented search engine was Google (6 percent). The terms "*find*" or "*finding*" present on 58 percent of the Web pages reflected "from searching to finding" trend in academic libraries. The terms "*search*", "*searching*", "*retrieval*" or "*retrieving*" were present on 22 percent of the Web pages.

There are numerous possibilities for browsing library resources, but two could be considered as most popular on the library Web pages: *browsing by index* (59 percent) with *A-Z listings* and *sitemaps*, and *browsing by subject* (22 percent) with *subject guides* (Figure 3). *Quick links* were also considered as browsing option and stated on 12 percent of the Web pages, and together with term "*browsing*" mentioned on 9 percent of the Web pages, constituted *browsing_general* subcategory (19 percent).
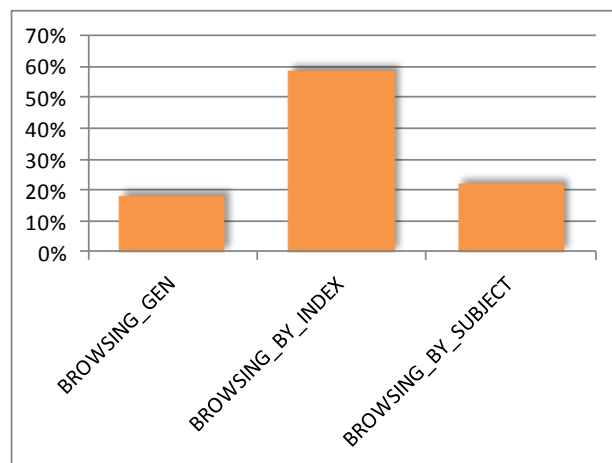

Figure 3. Browsing services.

Browsing by subject subcategory was identified mostly by terms "*subject guides*" (17 percent), and "*resources by subject*" (3 percent). "*Subject portals*", "*subject gateways*" and "*pathfinders*", phrases often mentioned in the literature, were present very rarely on the library Web pages. Regarding *browsing by index* subcategory a term "*A-Z*" *index* or *list* was very popular (41 percent), followed by "*site map*" (23 percent) and "*site index*" (8 percent).

Reference services

As mentioned earlier, reference services subcategory consists from a group *reference general* mainly represented by a generic phrase "*reference service*", *alerting services* with general *news* (40 percent) and *news about new items* (24 percent), and *ask a librarian* services including enquiries (39 percent)

As a part of reference services a subcategory *Web 2.0* was added including main Web 2.0 applications, which are supporting a majority of analyzed reference services, and interwine with them. Web 2.0 applications have a great potential to improve communication and collaboration between librarians and users, and to create additional and valuable content. According to this study Web 2.0 application mostly adopted by academic libraries was XML-based format for aggregating and distributing web content Really Simple Syndication known by its popular abbreviation *RSS*[9] (22 percent). RSS is often used for distribution of news, communication of new events, new resources and services. RSS feeds are also usually incorporated into library blogs to update readers on the latest postings (Ghaphery, 2005). Other very popular Web 2.0 application was *instant messaging (IM)* present on 19 percent of the Web pages, which is used to handle users'

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[9] RDF Site Summary (RSS 0.9, RSS 1.0), Rich Site Summary (RSS 0.91, RSS 1.0) or Really Simple Syndication (RSS 2.0)

enquiries. Often incorporated in *Ask a librarian* service, IM enable synchronous communication between librarians and library users. Social *calendar* service, using Web 2.0 technology letting a library to share events and activities with users, was recorded on 16 percent of the Web pages. Blogs in academic libraries are commonly used to generate interest in different topics. Blogs can be used to introduce discipline specific or user category specific materials or topics. *Blogs* were present on 16 percent of the Web pages. Distribution of all Web 2.0 services represented on at least 3 percent of the library Web pages is displayed in Figure 4.
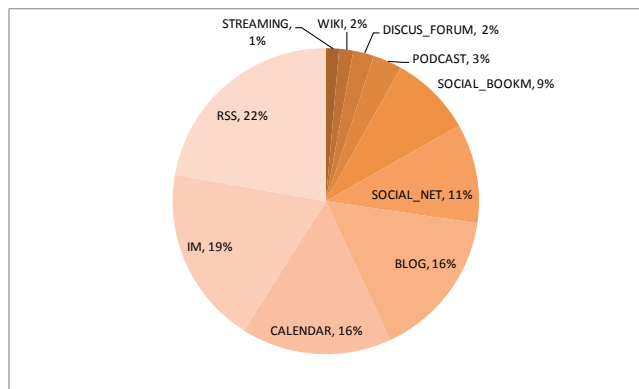

Figure 4. Web 2.0 reference services

Social networks as alternative channel of communication were represented equally by *Facebook* (8 percent) and *Twitter* (7 percent). Social networks based on video content like You Tube were present on 5 percent, and social networks based on photo content like Flickr on 2 percent of the library Web pages. Tools for distributing multimedia files like *podcast* and *streaming* were not well presented, as well as *Wiki* as collaboration tool. *Discussion forums*, formerly popular ways of sharing opinions, nowadays are replaced by IM, blogs and social networks.

Looking at seventh categorisation scheme level consisting of words, phrases, and rules, top five terms in Web 2.0 subcategory were chat (IM) on 17 percent, blog and RSS feed (RSS) on 15 percent, calendar on 12 percent and RSS on 8 percent of library Web pages. Many libraries are using thumbnails and icons for Web 2.0 tools, which were not included in the content analysis. Therefore these numbers could be considered as underestimated.

3.2. Education services

To cover all aspects of education services, three levels of categories were used:

- *education services by topic* – what subjects are libraries teaching their users about?
- *education services by context* – how well are represented distance and continuing education?

- *education services by delivery* – in which form are education services delivered to the user?

Education services by topic

Libraries are covering topics according to their user's needs. Different topics have been taught in libraries, and some of them were recognised as more important than others: *writing & citing, copyright, searching, plagiarism* and *bibliometry*. Although information literacy as a concept could embrace all of the above mentioned topics, separate subcategory was added to record phrase "information literacy". Distribution of topics on the library Web pages is displayed in Figure 5.
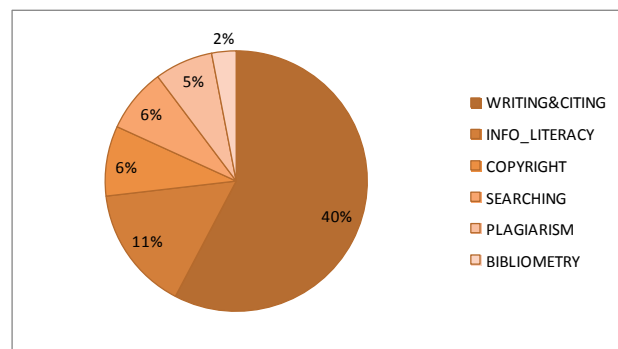

Figure 5. Education services by topics.

W*riting & citing* subcategory (40 percent) was represented with *citing* (29 percent), *writing* (12 percent), *information literacy* (11 percent), *copyright* and *searching* skills (6 percent), *plagiarism* (5 percent) and *bibliometry* (2 percent). Libraries are teaching also about *reference management tools*, namely RefWorks (15 percent), Endnote (8 percent), and Zotero (1 percent). A social network for researchers and reference management tool Mendeley was barely mentioned in analysed set of library Web pages.

Education services by context

Content analysis of education services by context showed that *distance education* was present on 9 percent of the Web pages and the most used term is "*distance learning*". Teaching and learning processes at universities are often supported by different *distance education tools* which were also present on the library Web pages: Blackboard on 7 percent, Moodle on 6 percent, and WebCT on 2 percent of the Web pages. *Continuing education* was identified on 2 percent of the Web pages only, and the most used terms were "*lifelong learning*" and "*e-learning*".

Education services by delivery

Libraries were delivering educational materials using different ways of delivery, and among them very popular

were *help* (60 percent), *support* (44 percent), *guides* (38 percent), *information about different topics* (30 percent), *Frequently Asked Questions – FAQ* (29 percent), *research assistance* in the form of questions and answers (28 percent), *training* (23 percent), *instructions* (21 percent) and *tutorials* (20 percent). Less used delivery tools were *manuals* and *starter kits* (4 percent each), and *library courses* (3 percent).

3.3. Access

Supporting access to their collections and services is relatively new library service. Today's library collections are built mostly from subscribed resources which licences are limiting the access to specific groups of library users. By signing a licence agreement library is responsible for taking care about the restricted usage. To justify expenses for purchased resources libraries are at the same time promoting usage trying to provide an access as easy as possible. As the result of the analysis, libraries were taking care about *authentication* processes allowing access to eligible users only, *off-campus* access and *mobile devices* access (Figure 6).
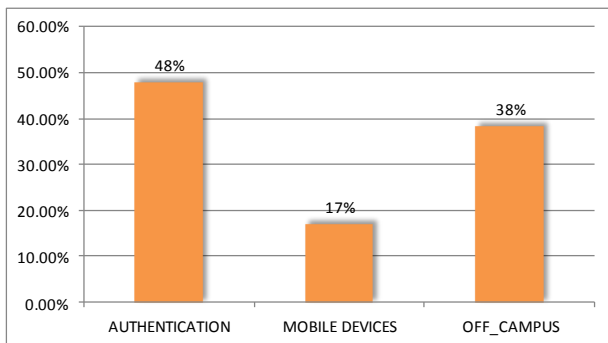

Figure 6. Access services

3.4. Circulation

One of the traditional and core library service is circulation with *lending&borrowing* and *interlibrary loan* subcategories.
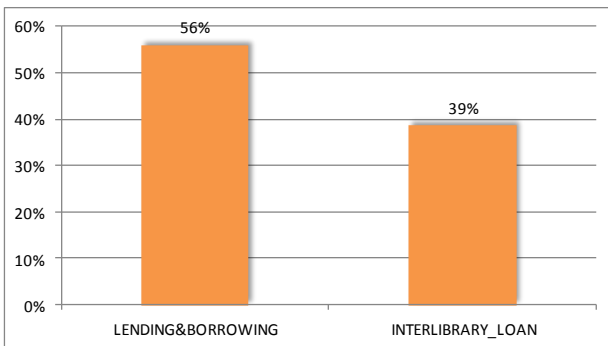

Figure 7. Circulation services

Although learning&borrowing and interlibrary loan services are declining last ten years, due to migration towards mostly digital content, they were still well represented on the library Web pages.

3.5 Equipment and facilities

Providing and lending different kind of *equipment and facilities* in this research included subcategories like *hardware* (computers and network), *reprographic services*, *printing services* and *booking services*, which were presented well on the library Web pages. Other equipment and facilities subcategories like *media services*, *binding services*, *computing services*, *lending e-book readers*, *hosting* and *ancillary* services, although identified by content analysis, were presented only with few percent of the library Web pages.
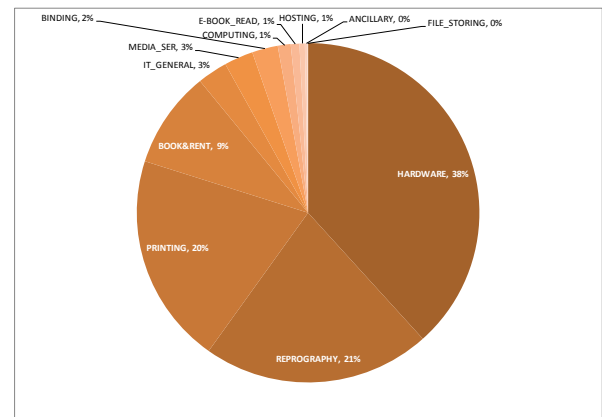

Figure 8. Equipment and facilities

3.6 Other services

All other services which were not recognized as core services were categorized as "*Other services*". In this category *technical services* and *user categories services* were presented well. *Technical services* were mostly presented by *acquisition, catalogization* and *classification*. Between user categories most attention has been given to the category of users with special needs. New services mentioned in the literature like *research services, administrative services, conference&events services, data services, counselling services, career* and *publishing services* were present very rarely.
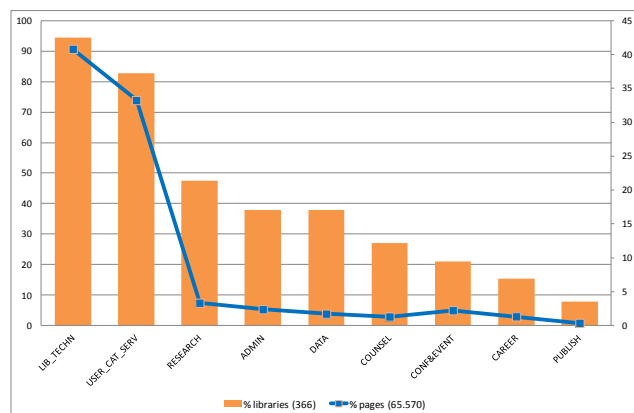
Figure 8. Other services

Distribution by libraries, which was done by using library_ID variable, show a slightly different picture. Namely, although *other services* were relatively well represented at library level, with regard to the total number of the Web pages the percentages were pretty low, with the exception of library technical services and services for different user categories (Figure 8). Even if the library was mentioning some of the service inside this category, this was done only on few library Web pages.

CONCLUSION

Some of the core library services "from the printed world" also remained very important in the virtual world. We can consider services like information services, education services, and circulation as traditional services, but they are transforming very successfully to IT based services. Supported by new technologies these "traditional" services become modern online services.

A content analysis of collected library Web pages could well represent the traditional library services, like information services, education service, and circulation, as well as new, but well established services, like services providing online access to the information resources and services providing facilities and equipment. Hierarchically organized categorization scheme gives deep insight in all parts of services and presence of the terms used on libraries' Web pages.

Although academic libraries are constantly developing new kind of services, according to this study, it's not to a satisfactory extent. New library services described in the recent literature, like research services, administrative services, conference&events services, data services, counselling services, career and publishing services, cannot be recognized well from the library Web pages, and were present only at a small number of library Web pages. One of the reasons for such a low representation could be also related to the limitations of the study, which is lacking a semantic meanings. Representing recently developed

services libraries are using a terminology which could significantly vary from site to site. According to the content analysis, academic libraries were considering the individuals' specific needs, presenting services for the specific types of library users, like category of users with a special needs.

Academic libraries should keep in the focus further improvements of their core services: information and education services. It is very important to provide well organized user education programmes and online tutorials to improve user information skills, and ensure they make full use of the available resources, services, technologies. Further decline in circulation services can be expected, but access to the digital information must be more easy and convenient. Also access from the mobile devices should become an unavoidable part of the library services. Libraries had shown they can successfully transform their traditional services into virtual ones. Introduction of the new services is more demanding, requires new competencies, but the process of implementation could still be faster.

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