

STATISTICS AND EVALUATION IN LIBRARIES

Cvetana Krstev*

University of Belgrade, Faculty of Philology

Milan Vasiljević**

Belgrade City Library

Abstract: In this paper we present the scope and aims of the use of statistics and evaluation in libraries and how they are supported by the IFLA – International Federation of Library Associations and Institutions. We give the overview of library activities that can be measured and what methods can be used perform it. International standards and initiatives propose indicators and measures as well as methods for their use that enforce the compatibility of statistical data locally collected and enable their aggregation on the national level. Software for library statistics and evaluation facilitates the work of librarians and enables the better promotion of the role of libraries in the society. For many libraries free open source software for library statistics is especially interesting. Finally, we illustrate how is formal education of librarians for producing and using library statistics performed in some Library and Information Science schools in the Balkan region and elsewhere.

Keywords: Statistics in libraries, standards for library statistics, software for library statistics, statistics of e-resources, teaching statistics to librarians

*cvetana@matf.bg.ac.rs

**milan.vasiljevic.bgb@gmail.com

Clarifying the terminology

“Statistics and Evaluation Section” is one of many sections that work in the frame of IFLA – International Federation of Library Associations and Institutions. Its aims are “to promote the compilation and use of statistics both in the successful management and operation of libraries and in the demonstration of the value of libraries outside the profession. It is concerned with the definition, standardization, collection, analysis, interpretation, publication and use of statistical data from all types of library and information service activity – including statistics of technically innovative services.” (IFLA-S&A).

Before entering into further discussion of the activities of this IFLA Section it is necessary to clarify the terms “Statistics” and “Evaluation”. All major English dictionaries distinguish between two senses of the term “Statistics”. The Webster’s Third New International Dictionary (Webster) gives as the first sense “a science dealing with the collection, analysis, interpretation, and preservation of masses of numerical data” and the second sense “a collection of quantitative data”. The definitions for two different senses are even more precise in the Collins COBUILD English Dictionary for Advanced Learners (COBUILD). The first sense is: “Statistics are facts which are obtained from analyzing information expressed in numbers, for example information about the number of times that something happens”, while the second sense is: “Statistics is a branch of mathematics concerned with the study of information that is expressed in numbers”. The reference to the term “vital statistics” added to the first sense additionally clarifies it.

The question rises which of these two senses is implied in the name of the IFLA Section “Statistics and Evaluation”. The answer can be deduced from studying the Draft IFLA Statistics Manifesto (Manifesto) proposed on April 9th, 2010. It states that “quantitative and qualitative data about library services, library use and library

users are essential for revealing and confirming the outstanding values that libraries provide.” This Manifesto also says that libraries should measure the *input* into libraries, count the *output* and compare these two sets of data. By doing so, these data can indicate the *outcome* of libraries and their influence on population. The libraries should collect their data individually, but collected data should be comparable to those of other libraries so that a new set of compiled data could be produced on the regional and national level, which could help authorities to perform strategic decisions more easily.

All these facts imply that “Statistics” refers to “collection of quantitative data” and methods of using them to improve library services and library position in society. This is compliant with our vision of librarians as professionals not usually trained in high mathematics. In any case, the Manifesto states that “teaching modules for library statistics should be developed through international cooperation.”

The sense of “evaluation” is less ambiguous. It is defined in the Collins COBUILD English Dictionary for Advanced Learners as “evaluation is a decision about the significance, value, or quality of something based on a careful study of its good and bad features.” This definition complies with the common usage of this term, for instance in information system domain where the evaluation step is the last one in the cycle of information system design and implementation.

Defining the field of the topic

Before entering further into the discussion it is necessary to highlight those of library services which can and should be statistically measured. Standards in the field of Library Statistics and Evaluation will be mentioned afterwards. Libraries which are financed by the public sector often have to struggle, on annual level, for funds with other cultural institutions financed within the same sector. To demonstrate the value that

libraries provide to their users and to society it is important to track and keep statistical data, and to use these data when applying for financial or other support. Statistics are also essential for future strategic planning of libraries' development.

On national level statistics can be used to track number of libraries, librarians, library collections and library activities. Proposals in IFLA's project "Global Statistics For The 21st Century" show which library services should be statistically measured. The services could be roughly grouped as follows:

- Library Collection
- Library as a physical place
- Staff
- Electronic services
- Users
- Use
- User training
- Expenses

These terms can be further divided into those related to the traditional library services and modern electronic services. Traditional services would be library as a physical place, staff, cultural activities, while electronic services would be all services within electronic domain. It's not easy to determine the line when it comes to other services because they can be viewed as both traditional and electronic services. All of these library services can be represented statistically. For example, library collection can be measured by its size, or more precisely by number of units, number of units per users, number of purchased or licensed databases, number of purchased or licensed e-books titles in a library collection. Library as a physical place can be measured by number of seats for reading or studying and number of opening hours for users per week. Measuring electronic services can indicate whether the library offers the possibility of Internet access in its building, both from a workstation owned by the library or from a user's private computer via library's network, and whether the library's cata-

logue is available on the web. Cultural activities can be measured through number of library events during the year (literary events, exhibitions, book promotions, workshops etc.). Libraries can also monitor staff statistics by measuring number of employees, including part-time staff and users statistics through number of registered users at the end of the year, as well as the number of user training sessions. Libraries measure usage through number of loans (books, CDs, and other library units), collection turnover rate, number of OPAC search, number of reference services. Also, statistics can include visits to the library, number of individual entering the library premises and visits to the library web site. Expenditures can be statistically represented through staff cost (total amount of money spent on salaries and wages), acquisition of new materials, and those related to electronic resources licensing and subscription.

If collected and used in proper way the statistical data can indicate which field of library services needs improvement and thus, help libraries determine strategic and other plans. Statistical data gathered from various fields of library services can be used for improvements of those fields. Apart from traditional library services, it is becoming more and more important to track usage and availability of new technologies.

Standards

ISO (the International Organization for Standardization) standard 11620:1998 "Information and documentation — Library performance indicators" is intended for the evaluation of libraries of all types. The main purpose of this International Standard is to endorse the use of performance indicators in libraries and to spread knowledge about how performance measurement can be carried out. The purpose of library performance indicators is to function as tools to assess the quality and effectiveness of services provided by a library and of other activities undertaken by a

library, and to assess the efficiency of resources allocated by the library for providing with such services and other activities.

In order to comply with this International Standard, a library performance indicator has to be thoroughly tested, validated and (preferably) documented in the literature. Performance indicators that are in widespread use in libraries may be accepted although they have not been explicitly documented. The standard also states that every library performance indicator must be precisely defined in order to avoid ambiguities. Performance indicators should be linked to systematic library planning and evaluation. It is recommended that measurement and evaluation processes should be carried out regularly.

As a library planning and evaluation tool, performance indicators have two principal objectives. One is to facilitate control in the management process, the other is to serve as a basis for reference and for dialogues between library staff, funding bodies and the user community. Libraries need to decide which indicators are most appropriate to a particular situation. Local factors important to the library can affect the selection of performance indicators. Further ISO standard 11620:1998 shows which performance indicators are mostly used in libraries (for example: User Satisfaction, Percentage of Target Population Reached, Cost per User, Percentage of Required Titles in the Collection, Correct Answer Fill Rate) demonstrates mathematical principle we can rely upon during the library services estimation process.

ISO standard 2789:2003 “Information and documentation – International library statistics” presents the third edition which annuls and replaces the second edition (ISO 2789:1991). This standard has been technically revised in order to identify and overcome problems in the practical application of ISO 2789:1991 and to take into account the rapid developments in electronic library services. In addition to the original purpose

of giving general guidance on the keeping of library statistics for the compilation of national statistics used for international reporting, there are particular requirements that specify data provision required by ISO 11620. The strong requirement to describe and publicize library activities can only be satisfied if data collection in libraries follows the lines of this International Standard. As far as possible, libraries should collect all data named in this International Standard that concern their activities. The standard further on precisely explains terms and definitions. The statistical data defined and described by this International Standard can be used for the evaluation and comparison of library and information services. While individual libraries mostly use statistics for strategic planning, decision making and funding bids, statistics on a national scale is needed in order to review and formulate library policy. Objectives for library statistics can be summarized as follows:

- to monitor operating results against standards and data of similar organizations;
- to monitor trends over time and the results of innovation;
- to provide a base for planning, decision making, improving service quality, and feedback on the results;
- to demonstrate the value of library services obtained by users, including the potential value to users in future generations;
- to inform national or regional organizations in their support, funding and monitoring roles;
- to emphasize the role of libraries both to politicians and to other external audiences

Library statistics have traditionally focused on inputs, holdings and expenditure. Recent extensions have concentrated on outputs, use and availability, outcomes and impact. While traditional library statistics are collected over the complete reporting period, this is not possible for all library services, e.g. in-house use or reference questions.

Therefore, this International Standard allows the application of sampling methods, in cases when data cannot be collected from automated systems, or where data collection over a reporting period would be too time-consuming. In recent years, there have been important developments in measuring and comparison of the quality and effectiveness of library services and the efficiency of the use of resources. For this purpose, performance indicators have been developed by the library community. This International Standard specifies data provision required by the performance indicators specified in ISO 11620. Not all statistical data named in this International Standard will be relevant for all types of libraries and there will be much additional data relevant for individual libraries. Statistics referred to in this International Standard should be drawn up at regular intervals, for example annually. Every item and activity should be counted as mutually exclusive, i.e. not in more than one category. Care needs to be taken that samples are representative as regards time, place and selection methods, and that bias is not present in the responses. It also needs to be understood that, even where samples are fully representative, the procedure produces estimates that are subject to some error, mainly depending on the sample size. Where appropriate, the error limits should be included into the published data. The standard further highlights which fields of library activities should be monitored depending on the type of library.

Annex A “Measuring the use of electronic library services” of ISO 2789:2003 is especially interesting. To a growing extent, libraries today provide electronic services beside the traditional services. While most traditional statistics can be produced by the library itself, statistical data for electronic services, especially for their use, to some extent need to be collected from different sources, some of which are not under the direct control of libraries (e.g. vendors and suppliers, computing centers and library consortia can be

involved). In contrast to conventional resources, electronic resources often have neither physical form nor boundaries, and this affects the measurement of both collection and use. Many resources such as electronic periodicals, databases and digital documents can be freely accessed via Internet, while some libraries even catalog and index those resources.

Standard defines the main questions:

- How many times have users accessed an electronic library service?
- How many documents (citations or elements of information) did they find that they thought relevant?

Four core datasets have been identified which should, if possible, be collected for all services, separately for each service as well as summed for all services (see A.5.4):

- number of sessions;
- number of content downloaded;
- number of records downloaded;
- number of virtual visits;

In addition to these core datasets which provide basic information on the use of electronic services, some additional data have been found relevant and should be collected when possible and appropriate:

- session time;
- number of rejected sessions (turnaways);
- number of searches;
- number of internet sessions.

All data refer to use of the library collection, the library’s website, the online catalogue and internet access via the library, and not to users accessing documents on the internet that are publicly available and free via the internet access in the library.

Currently it is hard to get, use and compare data about usage of electronic resources. Available data vary from one publisher to another. There are various initiatives for standardization of electronic resources, the best example being COUNTER and SUSHI initiatives.

If libraries want to rely on statistical data during the acquisition process the best way is to choose those statistical data that they collected during earlier subscriptions to electronic resources. Publishers, vendors and libraries are working together on development of standards that will ease the process measuring usage of electronic resources. One of those standards can be found in COUNTER initiative.

COUNTER presents an international initiative of librarians, publishers and intermediaries for setting standards that facilitate the recording and reporting of online usage statistics in a consistent, credible and compatible way. Its Code of Practice clearly shows which content, form and delivery mechanisms are necessary for one report. The first COUNTER Code of Practice, covering online journals and databases, was published in 2003. COUNTER's coverage was extended further with the launch of the Code of Practice for online books in 2006. Before COUNTER initiative was created, each publisher had to measure usage of its electronic resources, each of them using different terminology, form and delivery mechanisms for electronic resources. Guidelines given in this Code of Practice enables comparison of collected data among the libraries, chance for better acquisition planning and infrastructure planning for electronic resources. On the other side, guidelines give detailed specifications to publisher for generating data in a format that customers want, compare the relative usage of different delivery channels, aggregate data for customers using multiple delivery channels and learn more about genuine usage patterns. Publishers find that COUNTER is easy to implement and librarians find it very easy to use, thus it was quickly adopted by both sides. Downside of the COUNTER is that it does not automate counting process so librarians have to check data manually.

SUSHI initiative defines an automated request and response model for the harvesting of

electronic resource usage data utilizing a Web services framework. Together with COUNTER it makes the measuring process easier. SUSHI presents a protocol which can be used by systems for managing electronic resources for automated transfer of statistical data (e.g. obtained using COUNTER). It is intended to replace the time-consuming user-mediated collection of usage data reports. The protocol was designed to be both generalized and extensible, meaning it could be used to retrieve a variety of usage reports. An extension designed specifically to work with COUNTER reports is provided with the standard, as these are expected to be the most frequently retrieved usage reports. SUSHI protocol present client/server web service, and is built on SOAP (Simple Object Access Protocol) for transferring request and response messages which is further used for downloading of COUNTER reports in XML scheme. It is already mentioned that the biggest advantage of SUSHI is automated data collecting. Without SUSHI librarians would have to visit web pages of each publisher in order to get statistical data. Beside automatization SUSHI encourages publishers to put data about electronic resources usage in standardized form.

Software

Revolution of OPAC, which is becoming more user friendly, has been shaking libraries in last couple of years. Today there is no library without some kind of integrated library system. Constant collection growth demands detailed and professional cataloging and classification. Cataloging is accompanied by question: which is the best way to show library collection to patrons? Big companies which distribute integrated library systems are faced with growing population of open source communities. There are numerous blogs and web pages where librarians exchange experience and search for an adequate open source software to substitute high priced software which

they currently use. This is especially noticed in western countries where numerous libraries replace commercial software by free software. Libraries more often use Linux OS instead of MS Windows OS, Open Office (OO) instead of Microsoft Office, Apache Web Server (Apache) instead of Microsoft IIS, VirtualBox (VB) or Xen (Xen) instead of VMWare desktop virtualization software. Open source is also used for creation of library web site (WordPress) and for limited access to public computers on a network libraries uses Libki Kiosk Management (Libki).

Most of the open source software for cataloging and circulation have segments related to the collection of statistical data. This data are related to the acquisition, organization and circulation of library material. It can be also used to measure number or social structure of library patrons. At the same time they are very useful for future planning of these fields of library activities.

One of most used open source for cataloging and circulation is Koha Library System (Koha). It is developed by librarians and used worldwide in libraries of all types and sizes. Koha has great number of users, detailed documentation for installation and use, and numerous blogs and forums where people discuss about its improvement and where they post and search for solutions for possible errors. It possesses really good segment for measuring statistics where users can get relevant data in no time. One more very popular open source for cataloging and circulation is Evergreen Integrated Library System (Evergreen). It is used in more than five hundred libraries mostly in USA. It also has large community of users and moderators which constantly works on improvements. Apart from circulation and cataloging, Evergreen has models for measuring statistics.

As for the statistic data about use related to web locations of libraries, most of them choose Google Analytics. Google Analytics is a tool that shows users how to find the library website, how to move through it and which segments

to use. Like all tools Google initiates, Analytics is also powered and fully oriented towards the needs of users, in this case libraries. There are also charts available showing the location, number of visits, heavily used segments, countries from which the website is accessed and more. User only has to choose whether he wishes to see the biggest number of visits at the time, the average one or the minimum. Given data can easily be exported into different formats, and are associated with other Google tools as well, which further facilitates its use.

Library statistics provide powerful tool for monitoring all segments of library operations. None of the above mentioned software includes all of these segments, but libraries use different software, and finally the results obtained from different sources are presented in a single report.

Conferences and Projects

Recently, several major conferences were fully devoted or had special sessions or workshops devoted to statistics and evaluation in libraries and to related subjects. In 2008 IFLA's Satellite Meeting was organized at Concordia University in Montréal devoted to "Library Statistics for the 21st Century World." In 2009 the 8th Northumbria International Conference on Performance Measurement in Libraries and Information Services (PM8) was organized as an IFLA satellite pre-conference supported by the Statistics and Evaluation Section. The title of this conference was "Libraries Plus: Adding Value in the Cultural Community". Two workshops were held in the scope of this conference while 42 papers were presented in its main track.

IFLA's Conference in 2010 that took place in Gothenburg offered several activities from the domain of statistics and evaluation. Number of papers were presented on this topics in several relevant sessions: four papers in session 72 "Statistics and Evaluation – The use of statistics for promoting sustainable progress", five papers in

session 87 “Towards national library strategy: opening up access to research – Improving library advocacy” and three in session 97 “Towards national library strategy: opening up access to research – Looking for relevant research”. The insight in the presented papers shows that the topic of library advocacy was in the focus of the majority of authors.

The same topic was chosen for a one day workshop “Statistics for advocacy – a capacity building workshop for library associations” designed by a working group of IFLAs Statistics and Evaluation Section as a module of IFLA’s “Building Strong Library Associations Programme” (BSLA). This workshop was actually envisaged as a test for a coherent series of training modules for competence building in library associations with focus on advocacy. These modules covered the different questions by offering the following answers:

- *Why use statistics for advocacy?* Because arguments based on numbers have positive value, because advocacy based on statistics can be practically used, because statistics provide a new view on libraries and societies.

- *Which aspects of library work should we focus on?* On inputs, processes, outputs and outcomes of library units that provide services.

- *How can we process and interpret data?* By representing library qualities through quantitative indicators, by measuring with statistical data changes that libraries induce in society.

- *How can we collect relevant data?* By performing systematic measurement, by using basic (manual or automated) measurement techniques, and by avoiding typical errors.

- *How can we present the data to make our point?* By presenting data and relationships as time series and graphs and by combining graphs with convincing stories.

The main conclusion of this course can be summarized in one sentence: for advocacy, numerical and graphical data – minutely collected

and prepared – are crucial because decision makers do not have time to read long reports based on qualitative data.

A panel discussion “E-metrics: current challenges and activities” was held as a special session 143. The panelists were Sebastian Mundt from the Stuttgart Media University, Ngian Lek Choh from the National Library in Singapore and Abdolreza Noroozi Chakoli from the Shahed University in Tehran. Ms Choh in her discussion named “Statistics from database vendors and from the library’s microsites: the Singapore experience” introduced some very interesting points concerning the reliability of statistical data about database usage that are provided by vendors of databases themselves. The speaker stressed the inadequacy of a situation in which a same body provides and sells databases and supplies numeric data on the usage of these data bases upon which a buyer – a library, a consortium or their authorities – has to make strategically important decision.

This brief presentation of the presence of Statistics and Evaluation at the IFLA 2010 Conference is not exhaustive. There were several papers that presented interesting research done and based on statistical methods, e.g. “New paradigm, new educational requirements? Australian viewpoints on education for digital libraries” presented by Katherine Howard from the Royal Society of the Blind in Adelaide, South Australia. The author in this paper presents some results from a larger study which sought to determine the skills and knowledge required of library and information professionals to work in a digital library. Results were obtained from data collected through a questionnaire from two target groups: practitioners working in academic libraries and Library and Information Science educators across Australia.

Besides already mentioned “Building Strong Library Associations Programme” offering a strategic and coordinated approach to capacity

building and sustainability of library associations IFLA's Section on Evaluation and Statistics jointly with UNESCO Institute of Statistics and ISO Committee TC46/ SC8 (Information and documentation: Quality: statistics and performance measurement) launched a three-year collaborative programme "Global Statistics for 21st Century" (GlobalStatistics). The aim of this programme was to review the old UNESCO recommendations on library statistics from 1970 and to propose adoption of measures that facilitate the demonstration of impact and outcome and reflect the use of electronic information sources, to give guidelines on the use of appropriate non-library demographic and socio-economic measures and finally to construct the appropriate indicators using the recommended statistics.

Teaching statistics to (future) librarians

The strategies for professional education for tasks described in previous sections differ significantly among various schools that educate future librarians. Some of them have special courses devoted to these topics while others incorporate them in one or more general courses. Some of these courses are on undergraduate level while others do not have courses devoted to these topics before the graduate (or master) level. At some schools there are theoretical subjects devoted to mathematical statistics, while others give stress to the application of statistical methods. In this section we will give a brief and by no means exhaustive overview of the place of statistics and evaluation in libraries in the professional education in Balkan region, Europe and North America.

In the Balkan region there are several faculties with library and/or information sciences programs on various academic levels. For instance in Croatia, there are three such faculties: The Department for Information Sciences at the Faculty of Humanities and Social Sciences, University of Zagreb (FFZG), the Department for Information Sciences at the Faculty of Philoso-

phy, University of Osijek (FFOS), and the Department for Library and Information Sciences, University of Zadar (OZK). All of them offer a theoretical course "Probability and Statistics" either on undergraduate or graduate level, while first two offer applied courses as well: "Library statistics" at University of Zagreb and "Statistical data processing" at University of Osijek. The Department of Library and Information Science and Book Studies at the Faculty of Philosophy, University of Ljubljana (UNI-LJ) also has a course at undergraduate level "Basic Statistics for Librarians and Informaticians". At least part of the course "Research Methods" placed at the graduate level dedicated to the design of a survey of polls is probably connected to the application of statistical methods.

The Department of Information Science at Loughborough University (Lboro) offers in its postgraduate programme "Information and Knowledge Management" a course "Research and Management for IKM" in which students are taught to "select and apply statistical techniques;...use simple statistics; etc." The School of Information & Library Studies at University college Dublin (UCD) has at Master Library and Information Studies two courses named "Research Methods". L'Ecole nationale supérieure des sciences de l'information et des bibliothèques (National High School for Informations and Library Sciences) at Lyon University (ENS-SIB) offers at its graduate programme "Master Science de l'information et des bibliothèques" a course "Mathématique, statistique et logique de l'information" (**Mathematics, Statistics and Logic of information**).

International two-year Master programme in Digital Library Learning (DILL) organized jointly by three partner institutions: Oslo University College, Tallinn University, and Parma University offers to its students two interesting courses: "Research Methods and Theory of Science" that presents "... the research process from formulat-

ing a problem, via data collection and analysis, to result reporting...” and “Users and Usage of Digital Libraries: Quantitative and Qualitative Evaluation” in which students are taught to “how digital libraries are valued by their users, and explore ways of permitting the allocation of resources to areas of user-identified needs.”

On the other side of the ocean the situation is somewhat different. For instance, The School of Library, Archival and Information Studies at the University of British Columbia (SLAIS) in its master programmes offers a number of courses – obligatory, optional and on irregular basis. Among them are several courses dedicated to research methods in various areas; however, there is neither a theoretical nor applied course in Statistics. The School of Information and Library Science at University of North Carolina at Chapel Hill (SILS) offers in its Bachelor of Science curriculum as an elective course “Introduction to Statistical Computing and Data Management”. The Department of Information Studies at University of Albany, New York (Albany) offers in its Graduate Programme a course “Research Methods”; its short description in the curriculum reveals that it is partly dedicated to basic statistics covering “descriptive and inferential statistics through correlation and regression” and partly to topics not directly connected to usage of statistics for library evaluation like “the creation of grant or research proposals”.

This brief overview shows that European Schools, especially those in the Balkan area prefer more general courses and still give great value to theoretical knowledge. The Department for Library and Information Science at the Faculty of Philology, University of Belgrade (FIL-UB) still doesn't have a course dedicated fully to statistics and evaluation in libraries, although some topics of interest are covered by different subjects (e.g. “Organization of Libraries” and “Databases and Information Systems in Libraries”). The introduction of such a course was difficult with old curriculum; the new programme accredited in 2010 (in accordance with Bologna process) opens the door to introducing a new course that would be in line with those offered by other schools in region – theoretically well founded course with references to possible applications.

Conclusion

In this paper we showed that although library statistics has a long tradition, today its role becomes even greater. Reasons for that are various but maybe the most important is that libraries have to allocate considerable funds for acquisition of electronic resources and their use has to be justified. Carefully prepared and well presented statistical data can help them to achieve that goal. All this shows that the education of librarians has to leave the strictly humanistic environment in which it was performed in the past.

References

COBUILD. Collins COBUILD English Dictionary for Advanced Learners, 2001.

Webster. The Webster's Third New International Dictionary, Merriam-Webster

Web sites

Albany. Colleague of Computing and Information, University at Albany, Information Studies, Course Description and Syllabi. http://www.albany.edu/informationstudies/ist_courses.php. (visited in October 2010).

Apache. The Apache HTTP Server Project. <http://httpd.apache.org> (visited in November 2010)

BSLA. Building Strong Library Associations Programme. <http://www.ifla.org/en/alp/bsla>. (visited in October 2010).

COUNTER. Counting Online Usage of Networked Electronic Resources <http://www.projectcounter.org/about.html> (visited on 17.03.2010.)

DILL. International Master for Digital Library Learning. <http://dill.hio.no/> (visited in July 2010).

GlobalStatistics. Global Statistics for the 21st Century. <http://archive.ifla.org/VII/s22/project/GlobalStatistics.htm#Background> (visited in October 2010).

ENSSIB. Master Science de l'information et des bibliothèques. <http://www.enssib.fr/ecole/offre-de-formation/la-formation-initiale/master-sib>. (visited in October 2010).

Evergreen. Evergreen Open Source Library System. <http://evergreen-ils.org/> (visited in November 2010).

FFZG. Undergraduate curricula at the Faculty of Humanities and Social Sciences, University of Zagreb. <http://www.ffzg.hr/programi/preddiplomski.html>. (visited in October 2010).

FFOS. The Department for Information Sciences at the Faculty of Philosophy, University of Osijek, Undergraduate Information Science Studies. <http://web.ffos.hr/infonosti/?id=67>. (visited in October 2010).

FIL-UB. Faculty of Philology at University of Belgrade, Department of Library and Information Studies: Curriculum of Undergraduate Studies. <http://www.fil.bg.ac.rs/katedre/biblio/npp/200910/program-200910.pdf>. (visited in October 2010).

IFLA-S&E. IFLA – About the Statistics and Evaluation Section. <http://www.ifla.org/en/about-the-statistics-and-evaluation-section> (visited in October 2010).

(ISO 11620). ISO 11620:1998. ISO – Information and Documentation – Library Performance Indicators. http://www.iso.org/iso/catalogue_detail.htm?csnumber=19552. (visited in November 2010).

(ISO 2789) ISO 2789:2003. ISO – Information and Documentation–International Library Statistics. http://www.iso.org/iso/catalogue_detail?csnumber=28236. (visited in November 2010).

Koha. Koha Library Software Community. <http://koha-community.org>. (visited in November 2010).

LBORO. The Department of Information Science at Loughborough University <http://www.lboro.ac.uk/departments/ls/studying/studying.html>. (visited in October 2010).

Libki. Libki – Kiosk Management System. <http://libki.org>. (visited in November 2010)

Manifesto. Draft IFLA Statistics Manifesto. http://www.ifla.org/files/statistics-and-evaluation/publications/GB_10-04-2.3.1_IFLA_Statistics_Manifesto_0.pdf (visited in October 2010).

OO. OpenOffice.org – the free and open productivity suite. <http://www.openoffice.org/> (visited in November 2010)

OZK. The Department for Library and Information Sciences, University of Zadar. <http://ozk.unizd.hr/mu/> (visited in October 2010).

SILS. UNC – School of Information and Library Science, BSIS – Bachelor of Science in Information Science Curriculum. <http://sils.unc.edu/programs/undergraduate/bsis/curriculum>. (visited in October 2010).

SLAIS. The University of British Columbia, School of Library, Archival & Information Studies: Courses – Overview. <http://www.slais.ubc.ca/courses/courses-summary.htm>. (visited in October 2010).

SUSHI. Standardized Usage Statistics Harvesting Initiative. <http://www.niso.org/workrooms/sushi/> (visited on 17.03.2010.)

UCD. University College Dublin, Masters Library & Information Studies. <http://www.ucd.ie/sils/graduatestudents/mlisgraddiplis/mlisprogramme/>. (visited in October 2010.)

UNI-LJ. The Department of Library and Information Science and Book Studies at the Faculty of Philosophy, University of Ljubljana. The undergraduate programme of Library and Information Studies. <http://www.ff.uni-lj.si/fakulteta/Studij/BolonjskiProgrami/PrvaStopnja/Predstavitveni%20zbornik%20BIBLIOTEKARSTVO%20IN%20INFORMATIKA%20-%20prva%20stopnja.pdf>. (visited in October 2010.)

VB. VirtualBox.org <http://www.virtualbox.org/> (visited November 2010).

WordPress. WordPress – Blog Tool and Publishing Platform. <http://wordpress.org/> (visited in November 2010).

Xen. Xen.org, The Xen® hypervisor, the powerful open source industry standard for virtualization, <http://www.xen.org/> (visited in November 2010).