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Marina Mihalić
The National and University Library, Zagreb, Croatia

END USERS OF DIGITAL INFORMATION RESOURCES AND SERVICES – SUMMARY AND REVIEW OF RESEARCH RESULTS FROM CROATIAN LIBRARIES

Abstract: The article focuses on provision and delivery of electronic library services and resources as the main challenge in digital libraries with regards to user satisfaction. The measures presented rely on definitions of the international standards for library statistics including the access to electronic resources and services as well as on the theory of information seeking behaviour, referring to some similar empirical research. The study was based on a sample of end-users of digital library services and resources in twenty three Croatian libraries distributed in ten cities.[1] The study had confirmed the usage patterns of end users and potential users.

Keywords: end-user of digital library resources and services, empirical research, Croatian libraries

Introduction

During the last fifty years, social changes, which were influenced by the information and communication technology, have considerably impacted libraries worldwide. However, the most remarkable impact on libraries concerns the change of printed media and the appearance of multi formats of electronic publications, influencing the implementation of a new organizational model of access to library collections and services. Libraries as organizations need to remould themselves to a very complex and a long term process of integration of digital media in new ways of acquisition, cataloguing, usage and long term preservation, affecting services and end-user as well.

During the last fifteen years the development of digital libraries, at first slow and invisible, has been inconsistent; it is partly due to economic and political reasons. We can determine that especially scientific libraries have been developed as a hybrid type, combining traditional as well as electronic services and resources.

Easy - to - use digital libraries enable users to access information on their own. As a result, the paradigm of information searching is shifting away from professional-mediated mode to end-user-self-services mode [14].

Due to economic and business reasons, libraries are concerned with quantitative measuring of their outcomes and efficiency, including e-metrics of input and output data.

Concerning the digital library resources, the key changes and the challenge for libraries could be followed up most directly in the services for end users enabling them to access resources and services at distance globally, not only in their nearest library.

The complexity of information environment usually in the societies, and in libraries as smaller communities, means that users more than ever need assistance in navigating the resources and finding and using information. The questions as "*to what extent are they actually being used*", or "*who is using them*", or "*who is not using them*", are some of the questions that libraries need to ask themselves if they want to be sure of market penetration of their services.

The theory is that the customer driven systems waste less, because they match supply to demand [16]. The new paradigm for library sustainability, endurance and adaptability of user services is the main goal and indicator of library performance, relying considerably on gathering and interpretation of reliable data about the satisfaction of library users.

[1] The results presented in this paper are partly from the dissertation of the author, *Evaluation of Digital Information Services and Resources in Libraries*. University of Zagreb, Zagreb, 2011.

1. Digital Library - Towards Development of Consistent Standards and Models for Evaluation

Almost twenty years since their appearance, digital libraries are a prevailing theme of numerous articles. Library professionals have matured in their expertize but the most known definitions (Lesk, 1997; 4; Francisco-Revilla *et al*.2001; Greenstein, 2000; or 3] view digital libraries as ”managed collection of information, with associated services, where the information is stored in digital formats and accessible over a network.” Borgman [4] mentions the importance of digital content, specially the *creation, use* and *searching*, and [7], sees digital libraries as a new infrastructure and environment that has been created by the integration and use of computing communications, and digital content on a global scale destined to become an essential part of the information infrastructure.

Due to a complex and multifaceted domain of the digital library, it is difficult to set and systematise activities for evaluating and comparing the digital libraries. In January 2005, the DELOS Network of Excellence on Digital Libraries decided to initiate definition of a reference model for digital libraries as an essential step towards a more systematic approach to the research on digital libraries in order to understand relationships between entities.

The Digital Library Manifesto[2] sets three relevant systems: *Digital Library*, *Digital Library Systems* and *Digital Library Management System*. The Manifesto presented the main concepts in the digital library *content*, *user*, *functionality*, *quality, policy* and *architecture* and the main roles of actors (end-user, designer, administrator and application developer). The independent concepts in the digital library are: *Architecture*, representing the technological design on which the library system is based, than the *User*, representing the external humans or hardware interacting with the Digital Library, and the *Content*, representing the material handled by the Digital Library. On the top of these is *Functionality*, representing primarily the means for connecting *User* to content, meaning all procedures, transformations, actions and interactions that bring Content to User or vice versa. The operation of the Digital Library its Functionality is based on policy and the aim to achieve Quality.

2. Reference and Electronic Services in the Digital Libraries

Information and reference services as a major component of library services even in the digital library are constantly evolving and developing.

Bopp and Bunge [5] have categorized reference services according to practices into three groups:

1. Information services that take the forms of ready reference questions, bibliographic verification, interlibrary loan and document delivery, information and referral services, research questions and fee - based services and information brokering;

2. Guidance, including readers' advisory services, term- paper counselling;

3. One-to-one or group instruction.

There is no doubt that digital reference provides more alternatives and flexibility to users, especially those operating within a virtual learning environment and providing resources and tools online as well as integrating this with student record database.
Access and *assistance* are constant over time and all types of libraries.

The service on the other hand represents the sum of functions and their related processes (for example, information services). Evans and Heft [10] view the library services as: bibliographic, physical and intellectual access to library materials, where the access and assistance are the *core* requirements of services.

3. Some Usage and Customer Measures

[2]The Digital Library Manifesto was set to identify the entities of discourse within the universe of digital libraries. [8].

Usage statistics are now available for many e-resources from suppliers. At the same time, information professionals and librarians ought to perhaps try to ensure greater clarity and uniformity of these statistics across different providers [17]. Above all, the quality assurance in the electronic or digital library still remains the major issue, meaning that the processes are set down, and that they are being surveyed and supervised.

International standard for library statistics defines several appearances of the digital library services and products.

According to standard ISO 2789:2006 (E) [12], libraries can provide the following electronic services: OPAC-s, web site or portal, electronic collection, electronic document delivery, user training for usage of electronic resources and provision of Internet in the library.

Usually, the session activity logging as a method, collects: the number of sessions, average session length, average number of items accessed, maximum number of windows open at on time, maximum number of sessions in one day, sessions where record details were viewed, etc.

Customer expectations and perceptions are also primarily quantitative but can measure the width of the gap between perceptions of library performance and customer expectations. Some standard techniques are already implemented in libraries, the most known is SERVQUAL.[3] It measures five dimensions of *services* - assurance (knowledge and courtesy of employees), *empathy* - caring and individualized attention, *reliability* - ability to perform the promised service, *responsiveness* - willingness to help customers and provide prompt help, *tangibles* - physical facilities, equipment, and appearance.

The best results in user studies could be achieved if combining several methods (log analysis, satisfaction questionnaire and contextual inquiry).

4. Measures of Evaluation

Almost everything can be the subject of measurement. For instance, the use as a method of measurement shows the way that customer interacts with the library (circulation data, or the access with the online public access catalogue, electronic resources, equipment and staff). The focus is on directly generated activities by the library customer. Those measures usually measure the volume of use but not the perception or the quality.

According to Hernon and Altman [13], most librarians have a strong desire to connect the user with books and information, which is considered the core criteria specially when thinking about service quality. Sometimes in this endeavour profession is caught in bean-counting: how many of this and how much of that, but libraries can select from among the methods those which are the most appropriate to their particular situation.

Because technology offers new methods of information delivery, counts of productivity underestimate that actual volume of business performed. The library community needs to shift its focus from measures reporting volume business, such as for circulation, to more meaningful indicators of customer loyalty, expectations, preferences and satisfaction.

The new indicators should report about present and potential customers, their needs, expectations and preferences as well as the problems they encounter and how library staff handles those problems. Elliot [9] cites a number of marketing experts, *satisfaction* is (the emotional reaction to a specific transaction or services encounter).

Satisfaction, as seen by Applegate [2] ultimately is a state experienced inside the user's head, and may or may not be directly related to the performance of the library on the specific occasion.

Service quality is multidimensional, two critical dimensions being *content* and *context.* Content refers to obtaining what prompted the visit, that is particular materials or information, or study space. Context covers experience itself - interaction with staff, ease or difficulty in navigating the systems, or comfort of physical environment. Customers or the users who come to the library or who visit it on distance, through an electronic gateway, web pages, experience both the content and the context. Customer expectations may or may not match what the library thinks is appropriate, but

[3] SERVQUAL was originally developed for the marketing profit sector, but it has been used in academic, public and special libraries in the USA, Canada, Australia and the United Kingdom.

nevertheless, they represent reality for the customer. But the service quality is far more complex concept and is beyond the two dimensions content and the context, or performance or performance expectation gap. Service quality is both personal and individual and collective experience among customers. When customer collective experience becomes known, those opinions create a *reputation* for the library and for the service quality the traditional statistics does not measure relevance or the library's performance in terms that are important to the customers.

5. Evaluation Models of Digital Library Services and Resources

Every organization is shaped by its values and philosophy, and revealed by the manner in which the library operates, or by its interactions with customers and by attitude of employees toward the organization of work and its management. Those attitudes are usually associated to organizational culture and in most cases they determine the quality of service.

General systems theory views organizations as being composed of three parts: *input*, *feedback* and *reality* and they evaluate the relationship among the components of the organization and between the organization and its environment [6].

While digital libraries are still under constant development and change, evaluation is therefore very complex. What every system must fulfil - if it tends to survive and provide positive results - is its acceptance by the user, and community in general.

Flexible systems need flexible evaluation frameworks allowing for multi-level evaluations [18]. With the increasing use of electronic information and the existence of virtual customers, librarians need to collect information about the electronic interactions between library resources and customers.

Digital library services can be evaluated against *usability, quality* of the digital collection, or the *efficiency* of support. The most advanced reference model is DELOS,[4] developed by the Working Group on Evaluation and Development of the DL concept. Because the „*content is the king"*, the nature, extent and forms of the collection predetermine both the range of potential users and the required technology set [11]. At the second DL workshop in Padua [1], the attention was given to relations *User-Content*, *Content-Systems* and *User-Systems*.

6. End-Users and User Needs

Castells[5] and his metaphor of the *Networked society* involves all activities which are organized around electronically processed and networked information. Castells refers to the *structural transformation* of political and production relationships aiming at appearance of the new culture.

The central part of any information system focuses on access, such as finding certain types of content, retrieving specific information, locating known items, accessing material that a customer doesn't know or knows little about. Those are both some content and motivation driven user interactions.

DL End-users exploit the DL functionality for the purpose of providing, consuming and managing the DL content and some of its other constituents, serving the functional needs. DL resources and collections are of primary importance, and are always activated by the input of the end-user.

[4] DELOS initial version was discussed at the first DELOS evaluation workshop held in Budapest, 2002.

[5] Castells, M. Informacijsko doba: ekonomija, društvo i kultura. Kraj tisućljeća. Knjiga 3, Zagreb: Tiskara Znanje, 2003.// Uspon umreženog društva. Zagreb: Golden Marketing, 2000.

7. Research

The goals of the empirical research were to define usage patterns of library electronic resources and services, to evaluate them against the availability and reasons for use, motivation, expectations and perceptions of end-users and usefulness of the information content, or how users perceive the *relevance* of resources.

The research method[6] was user satisfaction questionnaire (2 studies) and two samples. The distribution of study on users of digital library services and products included 23 libraries in 10 cities. The methodology and data collection were based on the international standard ISO 2789.

Two separate questionnaires had been created - one for registered users of the library and the second one for distance users. The link to online questionnaire with introductory text was sent to personal e-mails of the physical library users who consent to participate in the study. Its results were based on 581 responses, from which 316 were of distance users.

The survey included 11 open sources of electronic information available in Croatian libraries[7] for evaluation on motivation and reasons for use, satisfaction and expectation.

8. Measures used

I applied 4 measures. Measure 1 was *availability of resources and services.* The results of answers to the question about the reason for using the electronic resources: 85,7 % of the respondents state that they are using Internet for literature search, online catalogues and databases, 87,78 % are using Internet for e-mail and 83,99 % are using Internet for reading online news.

The question about the most frequent way of *finding the resource or service*: 78,49 % responded that they are searching the internet, 71,94 % are searching the online catalogues by author, title or subject and 54,36 % are following the citations and known resources, 45,44% through communication with a colleague or the professor.

The answers to the question about the place of *access to electronic resources* or services, 82,96 % access it from home, 58,86 % from the library.

The question about the *frequency of use* of open source (online portals and resources), showed that the most heavily used electronic resources were the catalogues 38,21 %, and web pages of their libraries – 18,93 %, portal HRČAK[8] is used frequently by 14,11 % of the respondents.

Measure 2 was *user expectation as related to perception of quality and satisfaction of use* and the results show the average 30%. The users declared to be mostly satisfied with the online catalogues of their library, the web pages of their library or the full-text portal HRČAK.

The analysis of the factors influencing the impact and satisfaction of using the electronic resources, the users confirmed that the most important were the search capabilities (64,99 %), user interface (60,59 %), search results (57,83%) and education and training (51,12 %).

Measure 3 – was about the *reasons for use* of the electronic resources and services. Among the main reasons were: research (65%), teaching and lecturing (25%), seminar assignment (53%), and projects (49%).

Measure 4 – *demographics*. Information about users is diverse and structured. As evidenced by Marchionini [15] there are two important issues that must be taken into account; the need for longitudinal evaluation in order to capture the reliable data set for analysis, using combination of methods. Evaluation must consider types of users, different levels of knowledge and expertise, various information needs of a user, different factors such as task accomplishments, representation of work domain and environment, collaboration between users.

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[6] Methodologically similar research of users and information resources were conducted by Tenopir, Saracevic and Talja.

[7] Online catalogue of the National and University Library in Zagreb, local library catalogues, web pages of NUL, web pages of other libraries, portal of the Centre for online databases-foreign resources, Portal HRČAK- offering full-texts of Croatian articles, portal CROSBI, Digital archive of Croatian web resources, Croatian digital heritage portal, e-service (Ask Librarian) and local history digital collections.

[8] HRČAK is the portal where users can access Croatian articles online. Available at:http://hrcak.srce.hr

The survey respondents (female 70% and male 30%) were physical and distance users of the national and university library, university libraries, faculty, public and special libraries; 60% were up to 25 years old, 24,27% were up to 35. More than 40% declared that their research interest was in social science field, and 30% in humanities.

9. Comments and Results

Library resources proved to be very important source of information for scientific and informational needs. Libraries in Croatia are not recognised enough as important electronic content providers, but those resources are used by the users with clearly defined information needs (online catalogues and full-text databases).

Majority of respondents valuated rather high their "local" resources, driving to conclusion that Croatia doesn`t have critical mass of digital content. Correlation was significant between all electronic resources and frequent academic users.

10. Conclusion

This overview of some results shows that library users in Croatia are still focused on local library resources and services. Beside the provision of access at distance, digital libraries are perceived as content providers (especially full texts). Users evaluated importance of content higher than the access. A small number of open access resources and services are used for various educational purposes. The libraries should organise training for end users and promote the usage of resources and services.

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mmihalic@nsk.hr