

Slovenian Researchers: What Influences Their Information Behaviour?

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Abstract: *The paper presents a segment of a survey of information behaviour of Slovenian scientists. Results show that, in most areas, Slovenian researchers exhibit usual characteristics of scientists elsewhere, with the exception of a rather weak use of Web 2.0 tools for research purposes, and weak use of open-access materials. This survey confirms that information and communication technologies (ICT) strongly impact professional activities of scientists, in relation to the choice of resource formats, access to information, means of information exchange, organization of one's own resources, reading, writing, and the use of library services. Most of the characteristics in behaviour are research-field-specific. Other factors of influence are age, area of employment, and available time; gender difference was important only in one case.*

Keywords: *Information behaviour, scientists, researchers, Slovenia, surveys*

Introduction

Exploration of user behaviour has become an important element of studies dedicated to the use of new information technologies. Among different groups of users, researchers show some special characteristics. They use particular information resources, many of which have become increasingly available online during the last decade. But such availability has also produced special developments in information behaviour in this user group. There exist variations in which resources are used, how they are used, and when they are used. Recently, some significant changes have occurred in the ways of communication among researchers (Maron & Smith, 2008), in the ways of publishing (Maron & Smith, 2008; Muench, 2011), collaboration (Borgman, 2009; Veletsianos & Kimmons, 2012), and searching and using information (Rowlands & Fieldhouse, 2007; Information Behaviour, 2008; Palmer, Tefteau & Pirmann, 2009). It is quite certain that such transformations have to an important extent been brought about by the developments in the field of information and communication technologies (ICT).

To evaluate some characteristics of information behaviour in the scholarly circles, at the end of 2011 we carried out a broad survey in Slovenia. A part of the preliminary results of our investigation is presented in this study. The aim was to identify the patterns of information behaviour of this group of users, in order to offer some possible directives for libraries and information centres, which provide access to information resources, and also for publicly funded research agencies which provide financial means for acquisition and subscription to such resources. The results may serve to understand better some phases in the research activities, as well as help plan more efficient future library policies. For example, more balanced acquisition may provide better distribution of resources and thus facilitate activities of research organizations.

The preliminary results presented in this paper thus focus on information behaviour of researchers. They tackle the types of resources and media utilized in support of research activities. Some special emphasis is placed on types of use and user preferences regarding the types and formats of information resources. In general, we have investigated the impact of information and communication technologies on various aspects of the information process. The study was conducted as a part of the project V5—1016, funded by the Slovenian Research Agency.

Review of the Literature

Information Behaviour of Researchers

The aforementioned studies note, as was also observed by Vilar and Zumer, 2011, that while scholars still carry out activities addressed in earlier studies, e.g. browsing or berrypicking (Bates, 1989, 2007), some new patterns of researchers' information behaviour have occurred. Rowlands and Fieldhouse (2007) note the following activities: skimming (looking at one to two pages at a time); navigating (looking around at what is available, i.e. 'the electronic sweet shop'); power browsing (reading abstracts and titles, even indexing terms, rather than full text); squirreling (downloading material to 'read' later); cross-checking (collecting information from different sites). Similarly, Palmer, Tefteau and Pirmann (2009) provide a two-layer model of scholarly information activities, each of the activities consisting of two or more 'primitives'. In this case, primitives are defined as basic or initial functions common to scholarly activities across disciplines, whereas activities are broader in scope, and have an explicit role of information in researching and producing new knowledge. Palmer, Tefteau and Pirmann (2009) identify five core information activities: searching, collecting, reading, writing and collaborating. Based on these studies we decided to focus on:

- skimming (looking at one to two pages at a time),
- power browsing (reading abstracts and titles, even indexing terms, rather than full text),
- squirreling (downloading materials to 'read' later),
- cross-checking (collecting information from different sites),
- chaining (linking citations in references in order to find new information),
- berrypicking (evolving queries as a result of finding new information during searching), and
- bouncing (leaving a resource very quickly upon realization of its non-relevance).

Besides explaining some other information-related activities, these studies present findings with respect to the use of various information sources and in various formats. It is becoming increasingly clear that the extraordinary impact of new digital information and communication technologies has brought about new patterns in the ways the researchers look for, acquire, and subsequently organize thus obtained information. Some scientific communities, for example High Energy Physics, need immediate access to information; sometimes even open access is not speedy enough.

One of the most important consequences of changes is the influence of information behaviour on library services. Libraries, and research libraries in particular, are dedicated to the needs of users, or the perceptions of such needs. Information behaviour studies tend to identify a characteristic set of information needs and reveal the way that those users locate and access the information that is needed for their work. Finding and choosing an appropriate source of information is an important activity of researchers. If basic information activities bypass the traditional library services, the functions of the research libraries can no longer advance. It is therefore indispensable for the libraries to be attentive to the changing world of the needs and methods of research work (especially with the younger researchers); otherwise they will no longer contribute to the competitiveness of research (Haglund & Olsson, 2008).

Research

Methodology and Sample

We employed data from the central database of Slovenian researchers, which is maintained by the Slovenian Research Agency (ARRS, henceforward referred to as Agency). The Agency, which was established by the Government of the Republic of Slovenia in 2003, is a public funding organization which performs tasks relating to the national research and development program. The Agency is in charge of the information system SICRIS (Slovenian Current Research Information System; website: <http://sicris.izum.si>). The system monitors and assesses selected research activities of every publicly funded researcher in the country. Within this system, every researcher is registered with a unique research ID number. In the year 2011, some 4.800 active¹ researchers were registered in the system. In Slovenia, research fields are organized in the following research groups: Natural Sciences, Technical Sciences (Engineering), Medical Sciences, Agricultural Sciences, Social Sciences, and Humanities (and also Interdisciplinary Research). In the period 1998-2008, significant growth occurred in the numbers of research groups as well as researchers. In 2001 and 2008, there were 753 and 1128 (an increase of almost 50%) research groups, respectively, in Slovenia, with the following breakdown by discipline or area: Natural Sciences (121/181), Engineering (346/558), Medical Sciences (75/95), Agricultural Sciences (60/80), Social Sciences (98/142), and Humanities (53/72). The age structure of researchers in 2008 was as follows: younger than 35 years of age (39%), 35-44 years (31%), 45-54 years (19%), 55 years of age and older (11%). Women accounted for 38,9 % of researchers

¹ The 'Active' status means that in the year 2011 a researcher was allocated at least 100 publicly funded research hours.

(Peclin & Juznic, 2012). In the year 2011, some 4,800 active researchers were registered in the system. The Agency provided us with the contact data of the researchers.

We used a random sample of all currently active researchers who had been officially registered in Slovenia by the Agency. The research ID numbers of researchers were used for sampling. Sampling included every eighth researcher. Thus among almost 5000 researchers, 592 received, on the basis of this sampling, a personal email invitation to participate in the online survey (open from September 14th to November 14th, 2011). Response rate, as of October 24th, when we finished collecting the results (although the poll remained open), was 33.1% (196 researchers). 119 researchers (or 20.1% of the total sample) provided answers. Although not all questions were answered by all participants, the 119 completed surveys nevertheless allow for a comprehensive analysis of results.

Methods of Data Collection

The online questionnaire involved 25 questions: 18 content questions (Likert scale type) and 7 demographic questions. Demographic questions related to gender, age, type of current occupation (research, teaching), years of experience (referring to either research or teaching), employment status (independent researcher, employed at a research organization, university, commercial organization), and research area (provided in the preceding section and in Table 1).

Content of the survey (the 18 content questions, mostly Likert scale type) addressed various aspects of information behaviour. In this paper we present the following:

- types of information seeking: cross-checking, power browsing, bouncing, berrypicking, skimming, squirreling, chaining,
- amount of time dedicated to various aspects of information process (searching, organizing information, quick reviewing of sources, thorough reading, writing, collaborating),
- preferred format of information sources (printed, electronic, either),
- opinion on the impact of information and communication technologies on various aspects of research work (searching and gathering of information sources, relevance judgment, organization of acquired sources, citation checking, reading, communicating, independent writing, collaborative writing),
- number of printed and electronic sources in the personal archive,
- frequency of the use of information sources in a personal archive,
- instances when the researcher in question uses electronic tools to search for sources, but then prints out these sources for the purpose of reading,
- how much they use (i.e. cite in their publications) the following types of sources: publications in scientific books and journals, publications in open-access, publications in electronic format,
- ways of acquiring scientific publications (personal subscription to printed or electronic journals, subscriptions to printed or electronic journals by an institution, from e-archives or repositories, interlibrary loan or document delivery services, directly from colleagues) and the frequency of each,
- types of sources used in research work (e.g. formal (conventional) sources, such as books, journals, reference material, or informal (non-conventional) sources, such as project reports, dissertations, social networks, blogs, forums, websites) and the frequency of each,
- tools used to begin a search for information for research purposes (e-journal providers, specialized bibliographic databases, specialized information portals, web search engines, library catalogues).

As explained above, the respondents, who were selected on a random basis, received an email invitation to participate in the survey. The data were assessed as collected by October 24th, 2011. SPSS software was used for statistical analysis. In addition to descriptive analysis, we also conducted bivariate statistics in order to identify some possible relationships between demographic and content variables.

Results

The share of women among the researchers was 46.5%. The age of respondents was as follows: 20-30 years (27.6%), 31-40 years (36.7%), 41-50 years (17.3%), 51-60 years (12.2%), more than 60 years of age (6.1%). The distribution of respondents by research area is shown in Table 1. Among the 119 respondents (all are active researchers according to the Agency database), 91 are involved in research, 60 in teaching and 16 in other activities (more than one current activity is possible for an individual; for example, besides being active researchers, many are also university teachers, medical doctors, etc).

Table 1. Distribution according to research area

	n	%
Natural Sciences	30	25.2
Technical Sciences	20	16.8
Medical Sciences	12	10.1
Agricultural Sciences	8	6.7
Social Sciences	21	17.6
Humanities	15	12.5
Interdisciplinary Research	13	10.9
Total	119	99.8

Note: Total does not add up to 100% due to rounding errors.

In general, most have experience in both research and teaching. These data are presented in Table 2. In terms of their current employment, only 3.4% work as independent researchers. Most are employed either at an institution of higher education (52.9%) or some other type of public institution (32.7% are currently employed in research organizations which are part of some larger institution, and 5.9% in other, smaller research organizations); 2.5% work in the business sector; and 4.2% in other organizations, such as hospitals (again, one individual can be employed in one or more institutions). When asked about their current work tasks (multiple answers were possible), 91.9% responded that they conduct research, and 60.6% that they also teach. We can thus infer that two thirds are actually involved in both activities.

Table 2. Experience in research and teaching

	Research experience		Teaching experience	
	n	%	n	%
Less than 1 year	1	1.0	16	19.3
1-5 years	29	29.6	27	32.5
6-10 years	24	24.5	13	15.7
11-15 years	15	15.3	9	10.8
Over 15 years	29	29.6	18	21.7

Information Behaviour

In the first section we present some general characteristics of information behaviour. All “new” types of (scientific) information behaviour which were addressed in our research, show strong presence (Table 3). The most prevalent are cross-checking, bouncing and squirreling. The first two are typical of scientists. It is not surprising for scientists to refuse to check a source if they estimate that it is not worth their time. Bouncing is one of the two types of behaviour for which none responded that they did not perform. Squirreling is the third most common type of behaviour. We assume that the researchers collect a large quantity of information and then extract later what they really need. But this can be linked to information overload. The other three types of behaviour, skimming, berrypicking and power browsing, are performed often or occasionally. Skimming – simultaneous looking at more than one source – seems to be in line with cross-checking. Berrypicking has been known to occur only in certain search situations (when it suits the searcher). If we judge from the frequency of power browsing (performed by all researchers), the researchers are obviously satisfied with such services that provide only a summarized description of a content (e.g. abstracts, keywords). This may indicate lack of time on the part of the researchers.

Table 3. Types of information behaviour

	Almost				
	Never %	never %	Occasionally %	Often %	Always %
Cross-checking	1.9	2.8	15.7	49.1	30.6
Skimming	0.8	10.1	19.3	47.1	13.4
Bouncing	0	1.9	10.2	39.8	48.1
Power browsing	0	8.4	43.0	42.1	6.5
Berrypicking	0.9	3.7	51.9	36.1	7.4
Chaining	0.9	7.4	29.6	47.2	14.8
Squirreling	0.9	4.6	26.9	47.2	20.4

Researchers were also asked how often they really looked at what they had saved when squirreling: 44.4% often look at stored sources, and 8.3% very often which probably means that, for many researchers, squirreling produces

relatively good results. However, it seems that often researchers collect many more sources than they really need or eventually use. Thus, 38.9% of the respondents only occasionally look at what they save, 7.4% almost never and 0.9% never.

Researchers are time-stressed. This is evident from their answers to questions on time available for various aspects of the information process (Table 4). Not surprisingly (and in accordance with what was shown above) they seem most often to have enough time for quick reviewing but they do not have enough time for thorough reading, writing, and organizing information in their personal archives.

Table 4. Frequency of occasions when researchers have enough time for various aspects of information process

Enough time for...	Never enough %	Almost never enough %	Occasionally enough %	Often enough %	Always enough %
Searching	9.2	24.5	34.7	27.6	4.1
Organization of information	13.3	37.8	32.7	14.3	2.0
Quick overview	2.1	14.6	47.9	29.2	6.3
Thorough reading	8.4	41.1	37.9	10.5	2.1
Writing	8.2	33.7	40.8	13.3	4.1
Communicating	2.1	17.5	51.5	25.8	3.1

If we look at the use of types of information sources (Table 5), we can observe that researchers intensely use formal sources (understandable). The use of informal sources is also quite strong, however. Over one third of researchers use informal sources always or often, and another fourth occasionally. Research reports and dissertations are used often by one fourth and occasionally by half. Over one fourth often/always acquire information from e-archives. If we add those researchers who use such resources occasionally (38.5%), this accounts for more than two thirds.

Personal contacts are also a strong source of information. Communication provides important information within an organization, other institutions in the country, and abroad (Table 5). International contacts are also important, which is indicative of the international character of sciences. Table 6 shows that colleagues are frequently used as a source of information.

Table 5. Types of information resources used

Resource type	Never %	Almost never %	Occasionally %	Often %	Always %
Print books	2.0	11.1	36.4	30.3	20.2
E-books	3.0	12.1	48.5	24.2	12.1
Print journals	0	21.2	34.3	28.3	16.2
E-journals	0	3.1	12.2	43.9	40.8
Reference sources	5.1	20.4	46.9	19.4	8.2
Patents, standards, reports	22.2	41.4	24.2	11.1	1.0
COBISS/OPAC (Slovenian union cat.)	0	13.1	33.3	34.3	19.2
Bibliographic databases	10.1	14.1	28.3	33.3	14.1
Raw data sources	39.8	26.5	15.3	15.3	3.1
Proceedings	4.0	23.2	40.4	27.3	5.1
Preprints	9.1	41.4	29.3	20.2	0
Reviews	14.1	44.4	30.3	11.1	0
Research reports, dissertations	2.0	21.2	51.5	25.3	0
Communication with colleagues in own org.	2.0	12.1	37.4	40.4	8.1
Communication with colleagues in Slovenia	4.0	22.2	48.5	19.2	6.1
Communication with colleagues abroad	4.1	20.4	46.9	20.4	8.2
Social networks	65.7	19.2	12.1	3.0	0
Forums, discussion groups	28.3	36.4	23.2	11.1	1.0
Library	16.5	18.6	41.2	17.5	6.2
Email alerts	19.2	18.2	34.3	21.2	7.1
Blogs	51.5	31.3	10.1	6.1	1.0
Invisible college (conferences, meetings, etc.)	3.0	19.2	44.4	27.3	6.1
Web portals	30.6	29.6	24.5	12.2	3.1
Websites	5.1	14.1	41.4	32.3	7.1
E-archives	17.3	30.6	33.7	14.3	4.1

Table 6. Ways of acquiring resources

How resources are acquired	Never %	Almost never %	Occasionally %	Often %	Always %
Personal subscription to print journal	63.3	17.4	11.9	6.4	0.9
Personal subscription to e-journal	68.8	18.3	10.1	2.8	0
Organizational subscription to printed journal	7.3	21.8	33.6	24.5	12.7
Organizational subscription to e-journal	5.5	1.8	16.5	45.0	31.2
E-archive, repository	13.8	20.2	38.5	23.9	3.7
Interlibrary loan	13.6	36.4	39.1	10.0	0.9
Colleagues	5.5	23.6	47.3	20.9	2.7

As for library services, researchers use them less frequently (Table 5). Libraries are used occasionally (41.2%) or never/almost never (35.1%). The use of ILL (interlibrary loan) for acquisition of resources is also weak. Table 6 shows that 13.6% never use it, and 36.4% almost never. However, we can see that some library services are employed more frequently: 53.5% use OPAC (Online Public Access Catalogue) often/always; 44.8% often/always start search with OPAC (Tables 5 and 7).

Table 7. Information resources used to start research-related searches

Resource	Never %	Almost never %	Occasionally %	Often %	Always %
E-journal sites (e.g. Science Direct, Sage,...)	3.2	8.4	27.4	33.7	27.4
Specialized bibliographic databases (e.g. Medline, Inspec,...)	9.4	12.5	25.0	33.3	19.8
Information portals, cross-search engines (e.g. DiKUL – search portal of UL)	28.1	31.3	24.0	11.5	5.2
Web search engines (e.g. Google)	2.1	9.3	11.3	45.4	32.0
COBISS/OPAC (Slovenian union catalogue)	4.2	20.8	30.2	31.3	13.5

Impact of Information and Communication Technologies

The new technologies have had a profound impact on Slovenian researchers and their information seeking. This, however, is not much different from researchers elsewhere as researchers are known to use electronic materials extensively. They are strong users of web search engines (77.4% use them often or always), and websites (39.4% are frequent or regular users). This, on the one hand, shows that researchers in some areas behave much like the general public. On the other hand, the use of e-journals clearly characterizes them as scholars (61.1% use e-journals often or always). E-preferences are also evident from other data:

- 49.6% prefer to have resources in electronic format (compared to 5% who prefer print resources),
- 51.3% have over 200 electronic papers in their personal archive,
- 38.1% of researchers cite 81-100% e-resources in their publications.

We also asked researchers how often they print out electronic materials. Half do it often and 14% always. Regarding the estimations of which areas were made easier or harder by ICT, the results (presented in Table 8) are as follows: the great majority search and acquire resources more easily (99%), organize them (83.5%), chain citations (91.3%) and communicate (93.9%). Writing in collaboration (84.8%) seems to be easier than writing alone (71.9%). Areas which are more difficult for many are relevance judgment (23.7%) and reading (25%). Very few think that ICT does not have any influence.

Table 8. ICT makes easier/harder

Activity	Much easier	Easier	No change	Harder	Much harder
Search & acquisition	80	19.1	0	0.9	0
Relevance judgment	22.8	40.4	13.2	19.3	4.4
Organization	48.7	34.8	13.0	3.5	0
Citation chaining	54.8	36.5	6.1	2.6	0
Reading	6.9	28.4	39.7	22.4	2.6
Communicating	61.4	32.5	5.3	0.9	0
Independent writing	26.3	45.6	22.8	2.6	2.6
Collaborative writing	45.5	39.3	12.5	1.8	0.9

Some Other Findings

The use of Web 2.0 tools for research purposes is almost non-existing: social networks are never or almost never used (84.8%), nor are weblogs (82.8%). Web forums are never or almost never used by 64.6% of respondents (Table 5). Also, it seems that quite a significant share of researchers (20%) use (and cite) a relatively small share of resources in electronic format (Table 9). As explained in the methodology section, researchers were asked to estimate how much they use (i.e., cite in their publications) the following types of sources: publications in scientific books and journals, publications in open-access, publications in electronic format.

When we look at other types of information resources (Table 4), we see that a half never or almost never use preprints and, similarly, a good third never or almost never use email alerts. Cross-search services and specialized portals (Table 5) are perceived as equally unimportant (60.2% never or almost never start their search using those). Interestingly, open-access materials do not seem to get used much either. Data show that open-access materials comprise less than 20% of citations for 58.3% of researchers (Table 9). All these findings differ from usual findings for contemporary scientists and would need some exploration.

Table 9. Shares in citations

Shares in citations	Below 20%	21%-40%	41%-60%	61%-80%	81%-100%
Share of scientific publications	3.7	2.8	10.1	20.2	53.8
Share of open-access publications	58.3	15.6	13.5	6.3	6.3
Share of electronic sources	20.0	14.3	7.6	20.0	38.1

Note: By 'citations' we mean resources which are cited by researchers in their own publications.

A Closer Look: Information Behaviour in Relation to Demographic Variables

We performed bivariate statistics (Chi-Square test) to investigate some links between demographic and content variables. Links can be identified between the age of respondents and certain types of information seeking, as well as with the perception of various aspects of digital tools, formats, ways of communicating and acquiring information. Generally, younger researchers tend to express higher digital preferences. Also, younger researchers prefer skimming, which corresponds to findings in some other studies (e.g. Rowlands & Fieldhouse, 2007). Time was again confirmed as an important factor. In terms of employment, researchers from the business sector more often express the lack of time. This is also the case with the researchers who are employed at independent research organizations. This group also lacks time for communicating and thorough reading. Those who are currently involved in two main activities (both research and teaching) most often lack time to search for and organize information. Gender of respondents has no influence on behaviour, excepting squirreling which is preferred by women. This is interesting, as, generally, gender is rarely identified as influential in information seeking.

We highlight some selected characteristics which are more strongly expressed in the respective research disciplines:

- Natural Sciences:
 - mostly collaborate with colleagues abroad,
 - don't acquire their information from print journals or by interlibrary loan,
 - use raw data,
- Social Sciences:
 - mostly collaborate within own institution,
- Technical Sciences:
 - don't use raw data,
 - use standards, patents.
- Humanities:
 - show preference for individual work,
 - if they do collaborate, they mostly do so within their own institution,
 - prefer printed sources, for example print journals,
 - cite lower share of e-sources and lower share of open-source materials,
 - use ICT less extensively in organization of resources.
- Interdisciplinary Research:
 - show tendency to more frequent berrypicking,
 - use e-archives to acquire their resources.
- Medical sciences:
 - show tendency to chaining,
 - collaborate mostly within their own institution,

- use websites,
 - use colleagues to acquire resources and information (invisible college),
 - use raw data, but are skeptical in terms of ethical dilemmas of its use,
 - believe that ICT assist in independent writing.
- Agriculture:
- show tendency to squirreling,
 - show tendency to later using the sources saved during squirreling,
 - prefer e-sources,
 - support availability of raw data,
 - use ICT to communicate and organize resources.

Other demographic variables that exhibit some influence: employment status, experience in teaching and research, and current job tasks.

Discussion and Conclusions

The results in this study confirm that the Slovenian researchers in most scientific fields do not differ significantly from researchers elsewhere. Since this is the first such study in Slovenia, it may serve to provide some insight into the behaviour of end users of scientific and similar information, in order to provide some guidelines for the policies of libraries and information services. The most important factors in user preferences seem to be age, research discipline and sector of employment. There are some areas which show additional differences – primarily the use of Web 2.0 tools for research purposes. While it can be inferred that researchers rely strongly on personal contacts, this has for some reason not transferred to digital environment. Digital scholarship has in recent years been gaining importance, both in research and teaching (see for example Veletsianos & Kimmons, 2012; Researchers of tomorrow, 2011; Maron, Seaman & Tinti-Kane, 2011). Non-use of weblogs and digital social networking tools by Slovenian researchers can to a large extent be attributed to work overload (majority of researchers also teach, and some of them (medicine) work as professionals), lack of motivation and maybe also to some possible negative general connotations of social networking. The researchers are expected and required to publish scientific results through regular scientific channels such as journals, so this form of communication has an absolute priority.

Another issue which obviously has not as yet received much attention from Slovenian researchers is open access. We plan to extend our future research also in this area to gain some insight. The lack of concern with open access may perhaps be attributed to the traditionally well-organized access to academic journals in Slovenia (Juznic, 2009), through different consortia, supported by THE Slovenian Research Agency.

There is no doubt that information and communication technologies have had a strong impact on the life and work of researchers, involving many issues: resource formats, access, means for information exchange, organization of resources, writing, reading, etc. We also noticed that, quality of infrastructure notwithstanding, researchers are, as always, independent, innovative and creative in finding ways to acquire the necessary information and use it appropriately.

In some respects, Slovenian researchers show behaviour that is similar to that of the general public. However, there are some areas which clearly distinguish scientists, such as reference judgment, which characterizes some specific types of information seeking, such as cross-checking or skimming. As shown by our results, scientists are (for obvious reasons), much more than average users, concerned with judging the content and quality of their information sources.

The increasingly expanding utilities of e-resources represent a challenge for research libraries. The libraries must adopt new technologies which they need to provide for users. Library space is being redefined. User education and information competencies (information literacy) must also be promoted by academic libraries. But are all libraries successfully adapting to these developments? Based on statistics which focused on circulation and reference among different academic and research libraries, simple advice was offered, “Follow the user” (Martell, 2008). Users might be absent (from the library perspective) but they are far from being inactive.

It is becoming increasingly frequent for researchers, as the users of academic libraries, to have increasingly little contact with the library, and little knowledge about what value a librarian’s competence can add to their work (Haglund and Olsson, 2008). In our research, no differences could be traced to age or gender; the most common differences were discipline-specific, such as between researchers in the humanities and those in the sciences. Other studies find that researchers make little use of traditional library services and perform, instead, many traditional library functions by themselves (Haines, et al., 2010), which is also supported by our findings. Namely, over half of the surveyed researchers keep more than 200 electronic papers in their personal archive, which is basically a small private library. This supports the tendency whereby the researchers acquire relevant information by themselves, and

thus less frequently (as we have found) employ the direct service of the libraries. We cannot support a rather generalized opinion that the Web search engines are the utility of choice in information seeking. It is very common, however. Most scientists start their searching (often or always) with Google. But this does not mean that Google has an absolute monopoly over searching and that researchers have stopped using other information venues. E-journal portals do not lag much behind, followed by bibliographic databases and, most surprisingly, library OPAC (online public access catalogues). Almost half of the researchers in our survey often or always start their search with OPAC – what is a unique result. Slovenia has a centralized and unified system of researchers' bibliographies that make up part of the Cooperative Online Bibliographic System and Services (COBISS). COBISS is also a centralized system that includes almost all libraries in Slovenia (not only academic and research libraries but also general public libraries). It has nevertheless become obvious that researchers have begun to carry out many of the previously traditional library services.

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