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### **Measuring the Impact of New Library Services**

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#### ***Abstract***

*Libraries today introduce many new services, either by converting existing services into e-services, or by developing and implementing entirely new services for search, delivery and use of information. Such new or converted services include e.g. online delivery, portals, personalized services, online teaching modules, online reference, digitised collections, or electronic publishing. In most cases, introducing new services requires special funding. For reporting to funding agencies, but also for management and further planning, libraries need to assess the impact of new services on users, staff and the library's organisation.*

*Positive impact of new library services could be shown by:*

- *Time saved in information search and delivery*
- *Enlargement of the scope of resources used*
- *Better knowledge of information seeking ways*
- *Lower costs for the delivery of services*

*On the other side, there might also be negative effects or consequences like information overflow, problems in using new services, or a high involvement of workload and/or costs for the library.*

*The paper shows methods for assessing the impact of new services like user and staff surveys, focus groups, time measurement, analysis of use data, or observation studies. Examples are given for illustrating the usefulness and problems of each method.*

## 1. Why should we measure impact?

No need to say that libraries are changing nearly from day to day. They offer totally new services like portals, change existing resources like journals to electronic form, or add online delivery forms to existing services like reference. As expenses and workload for new information resources and services are rising, libraries need to justify the investment into change and to prove the efficiency and positive impact of the new resources and services. This need is enforced by the fact that the development and introduction of new services can in many cases only be managed with special funding and that the funding institutions want evidence of positive effects.

Another reason for assessing the impact of new or enlarged services is to gain a basis for resource allocation. If the services are widely accepted and yield positive results, the library will have to shift more staff and financial resources into that sector and may plan to add other services of a similar kind. If there is no positive outcome apparent, services could be cut down again and resources set free for other activities.

## 2. New services

Introducing new services in libraries actually means in the first place implementing electronic services. This is not restricted to the electronic collection but covers online access and delivery and all reference, support, and training options that help users in the electronic information world. Such services are often not entirely new but replace or complement traditional services, e.g. offering web-based and remote access instead of only physical access.

New electronic services in this sense could mean:

- Regional or national catalogue databases
- Online ordering and delivery from local and remote resources
- Portals (of one library or groups of libraries, subject portals)
- Personalized services (“my library”, profile and alerting services)
- Online reference
- Collections digitized by the library
- Electronic publishing services
- Online self-paced training facilities
- Internet access via the library’s workstations or network<sup>1</sup>

Though electric media and activities are prevalent among new library services, there are also a number of new non-electronic services. In the last years, group work and problem-based learning have become more important for students. Offering group working areas or study landscapes for problem-based learning might be new services that attract users. Their impact on user behaviour would also be of interest.

## 3. Definition of impact

It is tradition in libraries annually to count the input into services (staff, collection building, rooms, facilities) and the output of the services (loans, visits, sessions on databases, ...). In the last decades, measures have been developed to assess the quality of library services and the cost-efficiency of the library’s performance. But quantity of use and quality of performance do not yet prove that users benefited from their contacts with a library. Measuring impact or outcome means going a step further and trying to assess the effect of the services on users.

A still valid definition of impact or outcome of libraries is given in the *Encyclopedia of Library and Information Sciences*<sup>2</sup>:

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<sup>1</sup> The actual range of electronic library services is defined in ISO CD 2789 (2005): Information and documentation – International library statistics

“Outcomes can be seen as the eventual result of using library services, the influence the use had, and its significance to the user.”

Other definitions imply a change of behaviour resulting from library use:

“Outcomes are the ways in which library users are changed as a result of their contact with the library’s resources and programs.”<sup>3</sup>

The existence of a library and the use of its services can effect a change in skills, competences, knowledge, behaviour, and judgement of its users, similar to changes effected by the use of media like newspapers or TV or the visits to museums or cultural events.

Generally speaking, such outcomes could be:

- Knowledge
- Information literacy
- Social inclusion
- Individual well-being

When measuring impact, and also when measuring the impact of certain new services, it is indispensable to have a clear perception of the library’s mission and goals:

- What is this library meant to achieve?
- What clientele has it been set up to serve?
- What special goals should be furthered by the introduction of new services, and how do those goals fit into the general objectives?

Most libraries are serving a special institution (a university, a community, a commercial firm). Library services should be aligned with institutional goals. Such goals will vary from institution to institution and also between countries. Library services should support these institutional goals, and the impact achieved by library services should be seen as part of the desired institutional outcome.

#### **4. Impact of library services**

The introduction of new – in most cases web-based – services can result in different outcomes, according to the type of library, the type of service, and the primary clientele of the library. Possible outcomes can be evaluated as to the following criteria:

- Changes in skills and competences
- Changes in attitudes and behaviour
- Changes in the structure of the library’s clientele
- Better social inclusion
- Higher success in research, study, or job

##### **4.1 Changes in skills and competences**

Changes in users’ skills and competences can concern basic skills like using a computer or searching in online catalogues or databases. Such skills could already be furthered by a single library visit, e.g. by using an Internet-connected PC in a public library or by attending an introduction to a new database.

More significant changes would show in an increase of what is called information literacy: the competence of formulating a search query, choosing adequate resources for the search, knowing ways for finding and procuring desired items, and above all being able to valuate information resources and to judge which of them are relevant and reliable.

##### **4.2 Changes in attitudes and behaviour**

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<sup>2</sup> Revill, Don: Performance Measures for Academic Libraries. *Encyclopedia of Library and Information Science*, Vol.45, Suppl.10 (1990), p.316

<sup>3</sup> ACRL. Association of College and Research Libraries. Task Force on Academic Library Outcomes Assessment Report. June 27, 1998 (<http://www.ala.org/ala/acrl/acrlpubs/whitepapers/taskforceacademic.htm>)

Influenced by the possibilities that new services offer, users can

- adopt new practices of seeking and using information,
- draw on a wider range of information resources than before,
- look at their problems from an interdisciplinary point of view,
- become aware of the importance of information literacy and make use of the library's help and training services,
- perceive the value of electronic resources and services,
- change to using library services from their working-place or private home.

#### **4.3 Changes in the library's clientele**

A new service offered by a library may attract former non-users that would not have come to the library without that service. A good example is the initiative "People's Network" in the UK, that introduced computers and network structure even in public libraries of small rural communities. It attracted into IT usage many who had not previously used that technology.<sup>4</sup> Other examples are starting regular events like exhibitions or authors' lectures or offering special courses for external users in university libraries. Such services can attract wider audiences.

Changing traditional to electronic services could meet the interest of user groups that would not have used the service in traditional form. Getting registered for manuscript or rare book departments in libraries may be a prohibitive procedure for potential users, but getting access to a digitized manuscript collection via the library's website may well attract new user groups and stimulate research projects. Thus, the digitization removes former barriers to access.

#### **4.4 Higher social inclusion**

New library services can have positive effects especially on low-income groups that cannot afford access to electronic information resources from their private home. Such impact could show in:

- Access to employment opportunities
- Increased civic participation
- Change in social connections
- Higher local identity
- Improvement in confidence<sup>5</sup>

#### **4.5 Higher success in research, study, and job**

New library services can further the success of users in their research, studies, or job. Evidently one of the most important problems of users in information seeking is the expenditure of time. Several surveys have assessed the time that academics and students weekly spend on finding and procuring the information they need: The average time proved to be half a day per week.<sup>6</sup>

Many electronic services that libraries are offering or introducing today can help to save users' time:

- Online ordering and electronic article delivery
- Integrated regional or national catalogues
- Databases
- Portals
- Personalized services
- Access to electronic resources and services from the working-place or from home

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<sup>4</sup> Brophy, Peter: The People's Network: Moving Forward. MLA (Museums, Libraries and Archives) 2004. (<http://www.mla.gov.uk/documents/id1414rep.pdf>)

<sup>5</sup> Durrance, Joan C. and Karen E. Fisher-Pettigrew: Toward Developing Measures of the Impact of Library and Information Services. *Reference & User Services Quarterly* 42, 1 (2002), pp.43-53.

<sup>6</sup> Poll, Roswitha: Assessing the Library's Role in Information Seeking. *Proceedings of the 5<sup>th</sup> Northumbria International Conference on Performance Measurement in Libraries and Information Services*. 2004. pp.117-126; Friedlander, Amy: Dimensions and Use of the Scholarly Information Environment: Introduction to a Data Set. Council on Library and Information Resources (CLIR) 2002 (<http://www.clir.org/pubs/reports/pub110/contents.html>)

Time saved for the research work can help to further academic success.

The second problem in information seeking is largely produced by the growing amount of electronic information: the information overload. Users feel that they cannot cope with the amount of information available. Library services like subject portals and profile and alerting services can help users to filter out the relevant information for their problem.

Other positive effects of new services on users' success could be:

- A better overview of topical developments in a user's research topic
- Better career chances by improved skills

#### **4.6 Impact of library services supporting institutional outcomes**

Most libraries are part of an institution – a community, a school, a commercial firm, or a university –, and the library's mission and goals must be adjusted to those of its parent institution. The impact of library services should therefore support the institutional goals and the outcome that the institution aims at.

A good example is the impact of libraries compared to the goals of universities. What universities want to achieve can be seen thus:

- Recruitment and retention of students
- Recruitment and retention of excellent academic staff
- Effective teaching, resulting in
  - high graduation rates,
  - high grades in examinations,
  - high employment rates after examination.
- Effective research, resulting in
  - high valuation and use of research results and publications,
  - renown of faculties or research groups,
  - high amount of special grants,
  - awards, honours.

In summary, universities aim at achieving independence of thinking and judging, competent use of information, and thorough professional knowledge for their students, and research results of high relevance.

Most of these goals can be supported by library services, and libraries should try to prove the connection between use of their services and the institution's success.<sup>7</sup>

#### **4.7 Negative impact?**

When libraries try to assess the impact of new services, they evidently hope for positive outcomes. But several surveys have also drawn attention to negative effects of the new possibilities that users have for seeking and retrieving information. In the focus groups of a German research project, sponsored by the Deutsche Forschungsgemeinschaft (German Research Association), academics discussed their main problems in seeking and retrieving relevant information for their subjects.<sup>8</sup> Their most urgent problem proved to be the "information overload", caused by the amount of accessible information on the Internet, but also via databases, integrated catalogues, discussion groups, or even by alerting services. This overload may lead to resignation and to restricting oneself to a small selection of material. Libraries can help in this dilemma for instance by selecting and structuring reliable information in subject portals.

Another negative effect of new electronic services is evidently, that users tend to an over-reliance on electronic resources. This does not only concern the "Google mentality" in information seeking, but also the preference given to the electronic library collection, while print material – though perhaps even more relevant for a topic – is ignored. Libraries try to join records of electronic and non-electronic documents in catalogues and databases and to use all training and reference services for pointing to the possibilities that the traditional collections offer.

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<sup>7</sup> de Jager, Karin: Impacts and Outcomes: Searching for the Most Elusive Indicators of Academic Library Performance. *Proceedings of the 4<sup>th</sup> Northumbria International Conference on Performance Measurement in Libraries and Information Services, Washington D.C. ARL 2002, pp.291-297*

<sup>8</sup> Poll, R., p.124

## 5. Methods of measuring the impact of new library services

While methods for assessing the quality and cost-effectiveness of library services are already well tested, standardized<sup>9</sup>, and in wide-spread use, the topic of assessing the impact of library services has only been taken up recently and methods are still in the test stage.<sup>10</sup> Especially in the Anglo-American countries different projects have tried to supply evidence for the effects of library use on users' skills, knowledge, and behaviour. In most cases, qualitative methods have been preferred.

### 5.1 Problems of assessing (“measuring”) impact

When trying to prove impact of libraries, the following problems are obvious:

- All methods that have been tested until now are time-consuming.
- Many data that could be relevant for proving impact are not available because of data protection rules (e.g. individual data about grades in exams)
- The data or correlations found in projects until now are in most cases not comparable, as differing methods have been used.
- A service can have different value and outcome for different user groups. Example: A training session in special databases will have less effect on freshmen than on postgraduates who need those resources directly for their work.
- The most exacting question: Influences on an individual are diverse, and it is rather difficult to prove that changes in competences or behaviour are indeed due to the influence of library services.

As it is often not possible to find proof positive for a direct influence of the library, surrogate measures have often been used that at least indicate a certain influence.

These problems are most troublesome when assessing the impact of a library and its services in general. They become less apparent in evaluating the outcome of one single activity like implementing a new service, as the behaviour and skills before and after the implementation can be measured.

### 5.2 Statistics of use as measures of impact

Libraries traditionally collect a broad range of statistics on the use of their collections and services. The standardization of statistics for the use of electronic library services has made great progress during the last years,<sup>11</sup> and in a growing number of countries such statistics are already collected on a regional or national scale. There is thus a rich fund of data that can be used when assessing the impact of a new library service. Though quantity of use is in itself no proof of impact, changes in the structure, form and quantity of use can well indicate such impact.

The following data could be relevant when assessing the effect of a new service:

- Use statistics for new electronic resources
- The range of resources used before and after introducing the new service
- Use statistics for a new service (e.g. online delivery)
- Change of use in traditional services (e.g. less in-house use, copying, or physical visits)
- Change in remote access
- Number of new users of a service that has been converted to electronic form (change of user profile)
- Number of new users that had not previously used the library
- Percentage of the primary user group that uses electronic library services

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<sup>9</sup> ISO CD 11620:2005 Information and Documentation – Library Performance Indicators

<sup>10</sup> For an overview of projects and the existing literature, see the bibliography put together by R. Poll on the website of the University and Regional Library Münster/Germany (<http://www.ulb.uni-muenster.de/outcome.html>)

<sup>11</sup> ISO CD 2789:2005 Information and Documentation – International Library Statistics

Such data – if available – can demonstrate a change in behaviour, in the attitude towards library services. They should, however, be validated by other methods.

## 5.2 Qualitative measures for assessing the impact of a new service

Many projects on impact of library services have used “soft” measures in order to assess a change in users’ skills, attitudes, and behaviour. The users themselves, but also library staff and academic teachers were asked for their opinion of library services and the possible effects of using a library service. Such more qualitative than quantitative methods are:

- Print or online questionnaires
- Surveys (before and/or after using a service)
- Interviews
- Focus groups, discussion groups
- Users’ self-assessment of skills
- Behavioural observation

Exit surveys (survey when leaving a service) can be especially useful as they can immediately catch users’ impressions about the service used. A web-based survey that is compulsory for users before accessing an electronic resource is used by MILES, an assessment tool developed in the frame of the ARL “New Measures” initiative.<sup>12</sup> This survey asks for the location of use, the user group, and the purpose. As users are interrogated before use, it cannot be assessed whether they benefited. But if this survey is used regularly over years, data could show whether there is a change in purpose, location, and user group.

Library staff, academic teachers, and users are asked for different aspects of outcome in questionnaires, surveys, interviews, etc.

Staff surveys ask for instance:

- What kind of help do users need and for what kind of service?
- What kind of questions do they have, especially as to a new service?
- What change of skills/competences can be perceived after the introduction of a new service?

Academic teachers can answer questions like these:

- How do new services support teaching and research?
- Do they encourage students to use electronic library services?
- For what purpose do they themselves use electronic services?
- What do they think is the impact of new library services on students’ skills or students’ ways of learning?

Users could be asked the following questions:

- What library resources/services do they know?
- What resources/services do they use?
- What resources/services have they found useful?
- How have the services (especially the new service) helped them in their studies?
- What problems did occur when using a certain service?
- Did they receive formal or informal training for a new service, and did they find it useful?
- Do they think they have improved their skills by using library services/a certain service?

The results of such methods have of course a subjective bias, they show the “perceived outcome”. Therefore, the results should be compared with developments in use statistics or other data relevant for impact.

Especially interviews and focus or discussion groups often yield no measurable results, but a rich fund of “anecdotal evidence” that helps to corroborate statistical data

## 5.3 Other methods for assessing impact

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<sup>12</sup> <http://www.arl.org/stats/newmeas/index.html>

Besides the “soft” measures, that have a subjective bias, several more “objective” measures have been tested to assess impact. For evaluating the effects of a new or transformed service, the following methods can prove efficient:

- Tests that assess user skills before and after acquaintance with the new service (primarily to assess the impact of user training)
- Performance monitoring/data mining that documents user behaviour, especially searching ways, when using a service or resource
- “Mystery shoppers” that are given certain tasks and report about problems or success when using the new service and about improvements they perceived in their library use
- Analysis of documents and bibliographies drawn up by users as to changes in the range of resources used, the accuracy of citations, the number of electronic resources cited, etc.

Again the question remains: If there are changes in skills or behaviour, is that indeed due to the use of library services or a certain service?

## **6. Practical examples**

### **6.1 Implementing a regional portal for academic libraries**

The portal is implemented by the joint regional computer centre of the libraries and combines library catalogues worldwide, electronic reference material, and other regional electronic resources with ordering and delivering functions. It allows a quick integrated search with a choice between resources to be consulted.

Methods to assess impact:

- Use statistics
- Surveys of academics

Statistical results:

- Higher percentage of external users (not belonging to the libraries’ primary clientele)
- Higher use of most electronic resources

Survey results: Academics answered that they

- Saved time by the integrated search
- Had changed their ways of information seeking
- Found the access much easier than before
- Experienced a broader covering of relevant information
- Became acquainted with reference works or other information resources that they did not know before
- Used a more interdisciplinary search
- Had already integrated the use of the portal into their teaching

Impact: Change of competences, attitudes, and behaviour

### **6.2 Opening a group learning area**

A university library has arranged a group working area with adequate facilities, including W-LAN, and comfortable seating.

Methods to assess impact:

- Use statistics
- Survey

Statistical results:

- Physical visits to the library have increased



Survey results: Students report that they

- Work more frequently in the library
- Work more frequently in groups
- Learn from group members who attended library training for electronic services
- Find working in the library more attractive than before

Impact: Change of attitude and behaviour

### **6.3 Changing the journal collection to electronic form**

The medical library of a university cancels all print subscriptions for which the vendors do not insist on print + electronic form. Use data for the print journals had been collected since 1997. The transformation process started 1996 and took about five years.<sup>13</sup>

Methods to assess impact:

- Use statistics
- Surveys (faculty)

Statistical results:

- Users accessed the online versions ten times as often as the print version.
- On average, the usage of an online article was 5.4 times cheaper.
- Print titles not available online had a high decline in usage.
- Remote use from the working-place increased.
- From 2001, physical library visits decreased.

Survey results:

- While in 1998 a number of academics were still sceptical, already in 2002 it was exceptional for faculty staff not to request electronic journals.

Impact: Change of attitudes and behaviour

### **6.4 Implementation of an inquiry-based library instruction program**

The university library organized a formal instruction program for the English department around the questions students bring from their classrooms.<sup>14</sup>

Method used to assess impact.

- Analysis of bibliographies in students' research papers before and after the implementation of the program

Results:

- An increase in citations to scholarly journals
- No significant difference in other topics like accuracy of citations. Publication year of resources used, or competence of judging on resources

Impact: Higher awareness of scholarly journals

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<sup>13</sup> Obst, Oliver: Patterns and Costs of Printed and Online Journal Usage. *Health Information and Libraries Journal* 20 (2003), pp.22-32

<sup>14</sup> Emmons, Mark, and Wanda Martin: Engaging Conversation: Evaluating the Contribution of Library Instruction to the Quality of Student Research. *College & Research Libraries* Nov. 2002, pp.545-560

## 7. Impact of new services on the library

Introducing new services, enlarging or transforming traditional services will have consequences on the structure and organization of the library as well as on its traditional services.

The library must invest resources – funds, room, and staff time – into the new service and must therefore reconsider its resource allocation. Additional staff time will probably in the beginning be necessary for user training and reference service, but also for staff training. There will often be shifts in resource allocation to electronic media or IT equipment. As new processes and activities will probably be needed for a new service, workflows will change. In the long run, with the new tasks for staff new departments will evolve and the organizational structure will change.

Hopefully, the quality of the library's performance will improve. A traditional service replaced by an electronic one might gain in:

- quickness of delivery (e.g. direct access to electronic journals)
- accuracy (better ways of keeping track, e.g. of an online order)
- higher market penetration by attracting more users and new user groups
- ease of access to the service
- relevance for users (e.g. relevance of research results)

Though new services probably cannot be offered with less costs than the traditional ones – only with other cost factors -, higher use data can reduce cost-per-use and thus improve the efficiency of the services.

New services may involve changes in traditional services like lending, in-house use, or users' copying in the library. Libraries have experienced a decrease in circulation, copying, and physical visits to the library when offering a large electronic collection, remote access to catalogues and databases, web-based ordering and ILL.<sup>15</sup> On the other side, experience has also shown that in spite of a substantial electronic collection and a broad range of electronic services physical visits can remain stable or even increase, if libraries offer comfortable surroundings for in-house work and adequate IT equipment and if they consider the need for group learning by special group working areas.

## 7. Outcome projects

Several projects worldwide are trying to find methods, measures, and tools for assessing impact/outcome of libraries and information services.

The **eVALUED Project**, based within the **evidence base** at the University of Central England, was set up to develop a transferable model for e-library evaluation in higher education. The project produced a toolkit for evaluating electronic information services. (<http://www.evalued.uce.ac.uk/index.htm>)

**IMLS (Institute of Museum and Library Services)** fosters outcome-based evaluation of projects. (<http://www.imls.gov/index.htm>)

The **ARL New Measures Initiative** includes several outcome-related programs:

- [Learning Outcomes](#)
- [Higher Education Outcomes Research Review](#)
- [MINES \(Measuring the Impact of Networked Electronic Services\)](#)

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<sup>15</sup> Bravy, Gary J. and K. Celeste Feather: The Impact of Electronic Access on Basic Library Services: One Academic Law Library's Experience. *Law Library Journal* 93,2 (2001), pp.261-268

**IBEC**, a joint research initiative of the Information School of the University of Washington and the University of Michigan School of Information has developed a toolkit for assessing the impact of information in communities.

*(<http://ibec.ischool.washington.edu/default1024.aspx?cat=Home&b=y>)*

**SCONUL** and **LIRG** (Library and Information research group) have started an impact initiative and an electronic mailing list to impact (<http://www.jiscmail.ac.uk/archives/lis-impact.html>)

Within **IFLA**, the Section for Statistics and Evaluation has established a working group for collecting the work done on outcome and impact and to establish first guidelines for assessing impact. The first result is an overview of projects and literature.

*(<http://www.ulb.uni-muenster.de/outcome.html>)*

The project coincides with IFLA's "Three Pillars" model, where the "Society Pillar" focuses on the role and impact of libraries and information services in society.