Library Metrics in a Changing Environment

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ARL serves a leadership role in the development, testing, and application of academic library performance measures, statistics, and management tools. Grounded in the tradition of the North American research library environment, the ARL Statistics and Measurement Program collects and reports quantitative and qualitative indicators of library collections, personnel and services by using a variety of evidence, gathering mechanisms, and tools.

The ARL Statistics is a series of annual publications that describe the collections, expenditures, staffing, and service activities for the member libraries of the Association of Research Libraries. Statistics have been collected and published annually for the members of the Association since 1961-62. Important implications regarding the costs of serials and monographs as well as funding for research libraries are being monitored through a variety of well-known graphs tracking the costs of scholarly communication and used to increase awareness of the unsustainability of the current dissemination models.

The traditional input- and ouput-oriented data collection efforts are being challenged by powerful forces in the external environment with the introduction of technology and a rapid rate of change. Forces and challenges that are facing libraries include (a) increasing demand for libraries to demonstrate outcomes/impacts in areas of importance to the parent institution, and (b) increasing pressure to maximize use of resources through benchmarking, resulting in cost savings and reallocation. There is increased pressure for accountability as has been repeatedly documented in the annual introductions of the ARL Statistics: "In an age of accountability, there is a pressing need for an effective and practical process to evaluate and compare research libraries. In the aggregate, among the 124 Association of Research Libraries (ARL) alone, over $3.2 billion dollars were expended in 2000/2001 to satisfy the library and information needs of the research constituencies in North America."[1] Traditional service measures regarding libraries' physical collections and in-person transactions like total circulation and reference transactions are declining as users are increasingly relying on an unmediated information environment.

ARL embarked on a New Measures Initiative effort[2] culminating much of the thinking that took place over the last decade regarding the limitations of the traditional input and output measures. New Measures projects were characterized by intensive collaboration among member leaders with strong interests, specific projects supporting different models for exploration, self-funded projects from interested members, and an intent to make resulting tools and methodologies available to the full membership and wider community.

New Measures projects include the following efforts:

- A project to define usage measures for electronic information resources (E-metrics/COUNTER Online Metrics)
- NSF NSDL grant to identify the dimensions of digital library service quality (e-QUAL or "digiqual")
- A survey on User Demographics and Purpose of Use for Electronic Resources (Project MINES)
- Measuring Library Service Quality (LibQUAL+™)
- Identification of measures that demonstrate a library's contribution to student learning outcomes
- Investigation of role libraries play in support of the research process
- Development of tools to address cost effectiveness of library operations (staff allocation, ILL/DD study)

One of the major priorities for 2004 is the successful incorporation of metrics that describe the character and nature of electronic resources that the library is making available (E-metrics). In addition to the descriptive data elements that ARL is institutionalizing into an annual data collection, questions about the perceived value of electronic resources (e-QUAL or 'digiqual'), the demographics of the people who use the library's virtual resources, and their purposes of use (MINES) are important areas of investigation that supplement the descriptive data elements.

One of the major objectives in 2004 is the incorporation of a set of data elements into the annual supplementary statistics survey. Cost information collected currently through the ARL Supplementary Statistics shows that: expenditures for electronic resources account for 25% on average of the ARL institutions' library materials budgets; ARL libraries reported spending more than $228 million on electronic resources; ARL libraries reported a total of $21,470,716 in additional funds spent on their behalf through a centrally funded consortium for purchasing electronic products and services; expenditures for electronic serials have increased by 171% since the 1999-2000 survey, and by more than 1800% since they were first reported, in 1994-95.[3]

There are a number of reasons that intensify the need for collecting networked data and statistics including funding, infrastructure, benchmarking, and vendor negotiation activities. Among them, the need to justify funding to make a case for continued current support for digital collections as well as additional support for technology and infrastructure are among the most important. The need to continuously improve the infrastructure by measuring internal processes is another force – it enables better

decision-making in allocating and prioritizing resources and needs, and helps establish assessment of service quality in a networked environment. Collecting data for comparison and benchmarking purposes has always been a key driver for institutions of higher education and libraries in general. The various library environments are so diverse that a common set of benchmarking indicators for comparison purposes will allow best practices to surface in the area of digital services and enable a more informed competition with other departments both internally and externally. Last, networked data and statistics are critical in the vendor negotiation processes. As libraries are spending larger amounts of money on electronic resources we need accurate reporting of network use, good estimates on a per client use, ability to compare overlapping coverage, need to control the pricing mechanisms to be a reflection of real need and value.

As part of the ARL E-Metrics Project[4] activities a contract and a work plan was developed with the Information Use Management and Policy Institute of the School of Information Studies at Florida State University. There were three phases, beginning in May 2000 and concluding in December 2001. During the first phase the researchers identified current practices at ARL libraries in relation to networked resources and services. In the second phase, they identified and tested an initial set of statistics and measures. And in the last phase they attempted to build linkages to educational outcomes.

The number of libraries collecting these data elements has increased over the last three years[5] from 25 in 2000 to more than 50 in 2003. There is increasing pressure to describe these activities within the ARL context as they are driving the transformation of research libraries. These data elements will be part of the annual ARL Supplementary Survey in 2003-04. The proposed data elements are available on the website.[6] ARL has also developed a webcast training session on e-metrics data collection and best practices which is available for free over the web.[7]

ARL is continuing work with vendors by supporting the work of COUNTER Online Metrics.[8] It is also involved in shaping national and international standards activities and has applied to be the maintenance agency of the newly revised **NISO Z39.7-2002 Draft Standard for Trial Use.[9]**

ARL was a founding members of COUNTER. COUNTER goals include:

- Developing, reviewing, disseminating, and gaining support for an internationally agreed Code of Practice governing the recording and exchange of online usage data and other appropriate Codes of Practice relating to online publications;

- Developing an organizational framework for implementation of and compliance with such Codes of Practice;

- Contributing to the public, commercial and professional understanding of online information use.

New models for measurement and evaluation not only address issues of describing electronic resources, but also address issues of service quality. One of the major successes in the New Measures Iniative effort has been a project known as LibQUAL+™

that has quickly matured into an established service operation. It is a suite of services that libraries use to solicit, track, understand, and act upon users' opinions of service quality. LibQUAL+(TM) has been implemented in more than 500 libraries as of spring 2004. Results have been used to develop a better understanding of perceptions of library service quality, interpret user feedback systematically over time, and identify best practices across institutions. It has been documented in the literature extensively.[10]

The LibQUAL+(TM) protocol was developed as an *interdisciplinary* research and service project involving faculty from the Texas A&M University (TAMU) Libraries (Colleen Cook, Wright Professor of Library Science, and Fred Heath, formerly Evans Professor of Library Science, now at the University of Texas), the TAMU College of Education and Human Development (Yvonna Lincoln, Distinguished Professor and Harrington Professor of Educational Leadership, and Bruce Thompson, Professor), and the Association of Research Libraries.

Designed to measure user satisfaction with library service quality, the LibQUAL+(TM) program is now in its fifth year of operation. Over the past five years, LibQUAL+(TM) has been tested in every state but two. The protocol has been used as well as in Canada, Australia, Egypt, England, France, Ireland, Scotland, Sweden, the Netherlands, and the United Arab Emirates. There is also interest in South Africa.

Data have been collected from over three hundred thousand users. The current survey instrument is available in eight language variations.

LibQUAL+(TM) gives libraries the data to assess whether their services are meeting user expectations. The growing LibQUAL+(TM) community of participants and its robust dataset provide rich resources for analyzing and improving library services. The data have facilitated publications by team members in essentially every scholarly journal dealing with library science (e.g., College and Research Libraries, IFLA Journal, Journal of Library Administration, Library Administration & Management, Library Quarterly, Library Trends, Performance Measurement and Metrics, portal).

LibQUAL+(TM) has been supported in part by a three-year grant from the U.S. Department of Education's Fund for the Improvement of Post-Secondary Education (FIPSE). Related funding has also been provided by the National Science Foundation.

LibQUAL+(TM) was derived from the SERVQUAL instrument, which has been used to measure service quality in the business environment. A number of libraries, including Texas A&M, previously experimented with the implementation of SERVQUAL in the library setting and felt that it had the potential to be adapted to the library environment. At the American Library Association's midwinter meeting in January of 2000, a group of ARL libraries met to discuss the possibility of piloting a modified survey. That survey, now named LibQUAL+(TM), was launched in the spring of 2000 at 12 ARL libraries. In September of 2000, ARL and Texas A&M secured the FIPSE grant, which enabled the project to grow and develop over the next three years.

Since 2000, the project has seen tremendous growth. Forty-three libraries participated in the spring of 2001, with 20,000 responses collected from users. In 2002, 164 libraries participated. Last year, 2003, 308 libraries participated. This year, 208 libraries participated in the spring 2004 survey, and more than 110,000 responses have been collected from users. LibQUAL+(TM) has also been enriched by the participation of large consortial groups, including OhioLINK, the Association of Academic Health Sciences Libraries (AAHSL), the Oberlin Library Group, NY3Rs, and more.

The LibQUAL+(TM) survey has evolved over time, from a 41-item instrument in 2000 that measured five dimensions of library survey quality, to today's 22-item format measuring three dimensions: Service Affect, Library as Place, and Information Control. Service Affect is the human dimension of library service quality. Questions in this dimension relate to the extent to which library employees are courteous, knowledgeable, helpful, and reliable. The Library as Place dimension includes questions covering issues such as the usefulness of space, the symbolic value of the library, and the library as a refuge for work or study. The final dimension, Information Control, measures how users want to interact with the modern library, and whether the information that they need is delivered in the format, location, and time of their choosing.

The growing LibQUAL+(TM) community of participants and its extensive dataset are rich resources for improving library services, and have made important contributions to the study of library service quality. The survey's web-based instrument makes little demand of local resources, while compiling a robust dataset from all participants. In addition, the grounded questions yield data that is sufficiently granular to be of local use, while normative data enable the comparison of results across cohort groups. The survey has also helped to identify "best practices" that may benefit other libraries.

In their article on the implementation of LibQUAL+(TM) in French, Kyrillidou et al write, "Library values as reflected in the library's physical environment (Library as Place), the warmth, empathy, reliability and assurance of library staff (Affect of Service), and the ability to control the information universe in an efficient way (Information Control) may be among the most unifying and powerful forces for overcoming language and cultural barriers, for bridging the worlds of our users, for improving library services, and for the advancement and betterment of individuals and societies."[11] LibQUAL+(TM), as implemented at hundreds of libraries both within North America and around the globe, is one tool that can help libraries to evaluate the service that they provide and compare those results across institutions and across countries.

<http://www.arl.org/stats/>
<http://www.libqual.org/>

[1] Martha Kyrillidou and Mark Young, *ARL Statistics 2000-01*. (Association of Research Libraries: Washington, D.C., 2002): 5. <http://www.arl.org/stats/arlstat/01pub/intro.html>

[2] Julia Blixrud, "Mainstreaming New Measures" *ARL Bimonthly Report of Research Library Issues and Actions from ARL, CNI, and SPARC* (October/December 2003): 1-8. http://www.arl.org/newsltr/230/mainstreaming.html

[3] Mark Young and Martha Kyrillidou, ARL Supplementary Statistics 2002-03 (Washington DC: Association of Research Libraries, 2004) forthcoming.

[4] Rush Miller, Sherrie Schmidt, Charles R. McClure, Wonsik "Jeff" Shim, and John Carlo Berot, *Measures for Electronic Resources (E-Metrics) Measures for Electronic Resources (E-Metrics)* (Washington, DC: Association of Research Libraries, 2002.

[5] Julia Blixrud and Martha Kyrillidou, "E-Metrics: Next Steps for Measuring Electronic Resources" *ARL Bimonthly Report 230/231* (October/December 2003) <http://www.arl.org/newsltr/230/emetrics.html>

[6] Ibid.

[7] Webcast on Demand: ARL E-Metrics Data Collection, Part I: Importance, Part II: Preparation <http://www.arl.org/training/webcast/ondemand.html>

[8] Project COUNTER <http://www.projectcounter.org/>

[9] **NISO Z39.7-2002 Draft Standard for Trial Use** <http://www.niso.org/emetrics/>

[10] Colleen C. Cook, *A Mixed Methods Approach to the identification and Measurement of Academic Library Service Quality Constructs: LibQUAL+™.* Doctoral dissertation, Texas A&M University, 2001; Cook, Colleen and Heath, Fred "The Association of Research Libraries LibQUAL+™ Project: an Update." *ARL Newsletter: A Bimonthly Report on Research Library Issues and Actions from ARL, CNI and SPARC,* 211 (August 2000): 12-14; _____ "Users' Perceptions of Library Service Quality: A LibQUAL+™ Qualitative Interview Study." *Library Trends* 49, no. 4 (2001): 548-584; Colleen, Cook, Fred Heath, Martha Kyrillidou, and Duane Webster, "The Forging of Consensus: A Methodological Approach to Service Quality Assessment in Research Libraries--the LibQUAL+^{TM} Experience. In Joan Stein, Martha Kyrillidou and Denise Davis (Eds.), Proceedings of the 4th Northumbria International Conference on Performance Measurement in Libraries and Information Services (Washington, DC: Association of Research Libraries, 2002): 93-104; Colleen Cook, Fred Heath, and Bruce Thompson, "Users' Hierarchical Perspectives on Library Service Quality: A LibQUAL+™ Study." *College and Research Libraries* 62 (2001): 147-153; _____ "Score Norms for Improving Library Service Quality: A LibQUAL+™ Study." *Portal: Libraries and the Academy* 2, no. 1 (January 2002): 13-26; Colleen Cook and Bruce Thompson, "Scaling for the LibQUAL+™ Instrument:

A Comparison of Desired, Perceived and Minimum Expectation Responses Versus Perceived Only" In Joan Stein, Martha Kyrillidou and Denise Davis (Eds.), <u>Proceedings of the 4th Northumbria International Conference on Performance Measurement in Libraries and Information Services</u>: (Washington, DC: Association of Research Libraries, 2002): 211-214; Colleen Cook, Fred Heath, Bruce Thompson, and R.L. Thompson, "The Search for New Measures: The ARL LibQUAL+™ Study-A Preliminary Report." *Portal: Libraries and the Academy,* 1 (2001): 103-112; Colleen Cook, Fred Heath, R.L. Thompson, and Bruce Thompson, "Score Reliability in Web- or Internet-based Surveys: Unnumbered Graphic Rating Scales Versus Likert-type Scales." *Educational and Psychological Measurement* 61 (2001): 697-706; Colleen Cook and Bruce Thompson, "Higher-order Factor Analytic Perspectives on Users' Perceptions of Library Service Quality" *Library Information Science Research* 22 (2000): 393-404; _____. "Reliability and Validity of SERVQUAL Scores Used to Evaluate Perceptions of Library Service Quality" *Journal of Academic Librarianship* 26, 248-258; _____. "Psychometric Properties of Scores From the Web-based LibQUAL+™ Study of Perceptions of Library Service Quality." *Library Trends* 49, no. 4 (2001): 585-604; Fred Heath, Colleen Cook, Martha Kyrillidou, and Bruce Thompson, "ARL Index and Other Validity Correlates of LibQUAL+™ Scores" *Portal: Libraries and the Academy* 2, no. 1 (January 2002): 27-42; Bruce Thompson, "Representativeness Versus Response Rate: It Ain't the Response Rate!" Paper presented at the Association of Research Libraries (ARL) Measuring Service Quality Symposium on the New Culture of Assessment: Measuring Service Quality, Washington DC (October 2000); Bruce Thompson, Colleen Cook, and Fred Heath, "The LibQUAL+™ Gap Measurement Model: The Bad, the Ugly and the Good of Gap Measurement." *Performance Measurement and Metrics* 1 (2000): 165-178; _____. "How Many Dimensions Does it Take to Measure Users' Perceptions of Libraries?: A LibQUAL+™ Study" *Portal: Libraries and the Academy* 1 (2001): 129-138; Bruce Thompson, Colleen Cook, and R.L. Thompson, "Reliability and Structure of LibQUAL+™ Scores" Portal*: Libraries and the Academy* 2, no. 1: 3-12. An updated bibliography is also available at: <http://www.libqual.org/Publications/index.cfm>

[11] Martha Kyrillidou, Toni Olshen, Fred Heath, Claude Bonnelly, and Jean-Pierre Cote. "Cross-cultural implementation of LibQUAL+™: the French language experience." Paper presented at the 5th Northumbria International Conference, Durham, UK, July 29, 2003.