

Session 6

Performance Indicators for Electronic Library Services

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Abstract

As the percentage of acquisition dollars devoted to electronic resources continues to rise so does the need to measure the effectiveness of electronic library services. Libraries are under pressure to leverage the investment in their electronic collections and make informed decisions about the management of those collections. With the availability of new and expanded means of accessing electronic information, measures of usage and client expectations are essential for gauging the library's performance and guiding its strategies. Frameworks, standards and methodologies for evaluating the effectiveness of electronic resource provision continue to develop. This paper updates a previous review¹ of the recent work in this field, and critically re-examines one library's experiences in devising and using performance measures for its electronic services.

Introduction

Electronic library services are more than electronic collections (digital content) in the same way that physical library services are more than collections of books, journals and other physical items. Just as traditional reference, support and training services are integral components of the physical library, so too are the various forms of online support and training offered by the electronic library service. Remote library users now have a range of online support services available on a 24x7 basis, including live reference, online tutorials and other forms of electronic self-training options, electronic user/subject guides, FAQs and other forms of online self-help. While the focus of this paper is on electronic *collections*, some of these other associated services will also be considered.

Libraries are required to justify the increasing investment in their collections, especially their electronic resources, and leverage that investment through delivery of greater value to their stakeholders. The return on investment must be maximised and resources purchased must be those which are of real and ascertainable value to clients.

¹ Flynn, A. Performance Indicators for Electronic Library Services. In: Performance Measurement for Libraries and Information Services Conference, Sydney, May 18-19, 2004, pp.55-67.

The rapid growth in and significance of electronic library collections, plus the pressure on declining financial resources remain the top factors contributing to the push for identification and development of performance indicators for networked resources. In order to achieve workable performance indicators, old evaluation processes must be transformed for the digital environment. The development of convincing quantitative and qualitative assessment criteria and methods are vital in the evidence-based economic climate under which libraries operate today.

Performance Measurement for Electronic Collections

The mixed print and electronic environment has led to collection evaluation becoming a hybrid function, some processes working effectively for the print collections and new processes emerging for the electronic collections. One effect of this hybridisation is that collection evaluation now requires considerably more effort and resourcing.

Achieving reliable input (e.g. count) and output (e.g. usage) measures for electronic resources continues to challenge the library profession. A survey of the literature (e.g. Luther², Duy³, Shepherd⁴, Shim & McLure⁵, McDowell & Gorman⁶) reveals the problems which include:

- Lack of control over the data by the library
- Multiple access points (multi-channel access) and multiple sources of usage data resulting in an inability to obtain a complete picture of usage
- Lack of standard measures (e.g. agreed definitions) leading to lack of comparable data
- Fear of misuse or misinterpretation of data
- No data available, or irregular release of data
- Data format problems
- Privacy concerns

Evaluation and Outcomes Assessment

The shift of emphasis to outcomes (or impacts) assessment within the education sector has implications for libraries and their parent organisations. Libraries need suitable assessment criteria and techniques which will determine the true impact and benefits of their services on their customers. Gratch-Lindauer produced a seminal report about this in 2002, and her work spawned some important research projects in the US with significant findings for libraries generally, particularly academic and research libraries⁷. Shim & McClure surveyed 24 US academic and research libraries on the

² Luther, Judy. White Paper on Electronic Journal Usage Statistics. Washington, DC, Council on Library and Information Resources, 2000.

³ Duy, Joanna. Usage Data: Issues and Challenges for Electronic Resource Collection Management. In *E-Serials Collection Management: Transitions, Trends, and Technicalities*. David C.Fowler, editor. Binghamton, Haworth Press, 2004, pp.111-138.

⁴ Shepherd, Peter. Keeping Count. *Library Journal*, February 1, 2003, pp.46-48.

⁵ Shim, Wonsik & McClure, Charles R. Data Needs and Use of Electronic Resources and Services at Academic Research Libraries. *Portal: Libraries and the Academy*, 2.2, 2002, pp.217-236.

⁶ McDowell, Nicola & Gorman, G.E. The Relevance of Vendors' Usage Statistics in Academic Library e-Resource Management: a New Zealand Study. *Australian Academic & Research Libraries*, v.35(4), Dec 2004, p.322.

⁷ Gratch-Lindauer, Bonnie. Comparing the Regional Accreditation Standards: Outcomes Assessment and Other Trends. *Journal of Academic Librarianship*, v.28(1), pp.14-25.

subject of data collection activities⁸. Among other findings, they noted there was some “inability to link data to...educational outcome.” Bertot and McClure stressed the importance of outcomes assessment by libraries, and identified the need for further research in this area⁹. Blixrud referred to institutional, learning and research outcomes, and the related outcome and impact measures as “measures that matter”¹⁰.

Regarding learning outcomes for academic and research libraries, Blixrud commented on the shift that is occurring from a “content” to a “competency” approach. This trend is observable in the development of information literacy programs aimed at enabling independent information retrieval and management skills for research and lifelong learning purposes. Application of these skills to electronic resources and assessment by librarians of student competencies in this area are key components of these programs.

To date, Blixrud¹¹ and ARL have produced some of the most promising work in identifying and articulating the type of indicators which libraries can use to make links to student learning and research outcomes as well as impacts on technical infrastructure. They recommended the following statistics and measures be used to show what difference the library makes:

- Patron accessible electronic resources
- Use of networked resources and services
- Expenditures for networked resources & related infrastructure
- Library digitisation activities
- Performance measures

For the library’s parent organisation, these measures may be reflected in improvements in areas such as grant income, research and doctoral awards, research appointments, institutional quality audit rankings (e.g. AUQA audits¹²).

Between 1998 and 2003, Franklin and Plum conducted web-based surveys of over 15,000 users of networked electronic services offered by four US libraries (health sciences and academic)¹³. This significant research study showed a clear trend in remote users outnumbering in-house users of electronic information, and proved that the library is meeting client needs by delivering resources *electronically*. The Franklin and Plum findings turn upside down the notion of physical attendance at the library as an indicator of library success. The type of usage data collected and the resulting protocol which these researchers developed are the sort of tools which libraries need to demonstrate beyond doubt their importance to clients and their effectiveness within the organisation.

⁸ Shim & McClure, op. cit., p.231.

⁹ Bertot, John Carol & McClure, Charles R. Outcomes Assessment in the Networked Environment: Research Questions, Issues, Considerations, and Moving Forward. *Library Trends*, v.51(4), Spring 2003, pp.590-613.

¹⁰ Blixrud, Julia C. Assessing Library Performance: New Measures, Methods, and Models. 24th IATUL Conference, 2-5 June 2003, Ankara, Turkey.
http://www.libqual.org/documents/admin/blixrud_turkey.ppt

¹¹ Ibid.

¹² Australian Universities Quality Agency.

¹³ Franklin, Brinley and Plum, Terry. Library Usage Patterns in the Electronic Information Environment. *Information Research*, v.9(4), July 2004, paper 187 [Available at <http://informationr.net/ir/9-4/paper187.html>]

Performance Indicators for Informed Decision Making

The type of decisions which librarians must make about their collections has become increasingly complex with the trend towards more electronic information resources. King et al identified some of the tough decisions faced by librarians regarding the management and development of electronic collections¹⁴. The basic questions which need to be asked before making such decisions are still valid, i.e. what resources are being used, how are they being used, and should they be renewed or cancelled? However, situations arise now where much more is at stake and more users would be affected if a decision is made too lightly or if the wrong decision is taken.

Consider for instance a library's dilemma about which of two fairly similar large aggregations of online serials should be retained after both have been trialled by users for several months. At the very least, content and usage of the products would need to be examined. Usage data for the trial period may need to be analysed. A study of title overlap (i.e. duplication of content) may be necessary, and this could take considerable time and effort. User experience and expectations may need to be surveyed and analysed – another possibly lengthy process. Libraries operating in highly consultative organisations often have to refer such decisions to several committees (e.g. faculty/library committees, the library's electronic resources committee).

Even if good information is available on which to base decisions of this nature, it is not surprising that many librarians find collection management and development processes difficult in the electronic and print+electronic environment.

Initiatives in the Development of Performance Indicators for Electronic Resources

What is being done to assist librarians facing the difficult collection decisions? Sometimes, they cannot even obtain the most basic usage data about their resources. Research studies like the one by McDowell & Gorman¹⁵ exposed the shortcomings and irrelevance of vendors' usage data for e-resource management purposes. Some libraries have attempted in-house solutions to overcome the obstacles in obtaining reliable and consistent data¹⁶. Others have supported initiatives such as ARL's E-Metrics Project¹⁷, the COUNTER Project¹⁸, and more recently the MINES Project¹⁹, all of which have arisen as a result of the problems associated with metrics in the networked environment. The E-Metrics and COUNTER Projects have achieved considerable success in a relatively short period. The MINES Project is underway in Canada and is also expected to deliver benefits to libraries. Underlying these three projects is the recognition of the urgent need to produce a sound and accepted basis

¹⁴ King, Donald W. et al. Library Economic Metrics: Examples of the Comparison of Electronic and Print Journal Collections and Collection Services. *Library Trends*, v.51(3), Winter 2003, pp.376-400.

¹⁵ McDowell & Gorman, op.cit., p.323.

¹⁶ Duy, Joanna & Liwen, Vaughan. Usage Data for Electronic Resources: a Comparison between Locally Collected and Vendor-Provided Statistics. *Journal of Academic Librarianship*, v.29(1), January 2003, pp.16-22.

¹⁷ Association of Research Libraries' New Measures Initiative, E-Metrics project
<http://www.arl.org/stats/newmeas/emetrics/>

¹⁸ COUNTER (Counting Online Usage of NeTworked Electronic Resources)
<http://www.projectCounter.org>

¹⁹ MINES (Measuring the Impact of Networked Electronic Services)
<http://www.arl.org/stats/newmeas/mines.html>

for statistics collecting and reporting with the aim of helping libraries prove their value and effectiveness.

In 2003-04, the ARL E-Metrics Project (Fig.1) coordinated a test implementation with the goal of preparing “libraries to collect data that identify and describe electronic resources as proposed through the E-Metrics project.”²⁰ At the time of writing, there were 49 North American academic and research libraries participating in the project and actively contributing data. A goal of the project was to agree on a set of measures for incorporation into ARL’s regular statistics collection cycle. COUNTER-compliant data have been incorporated into the data contributed for the E-Metrics project.

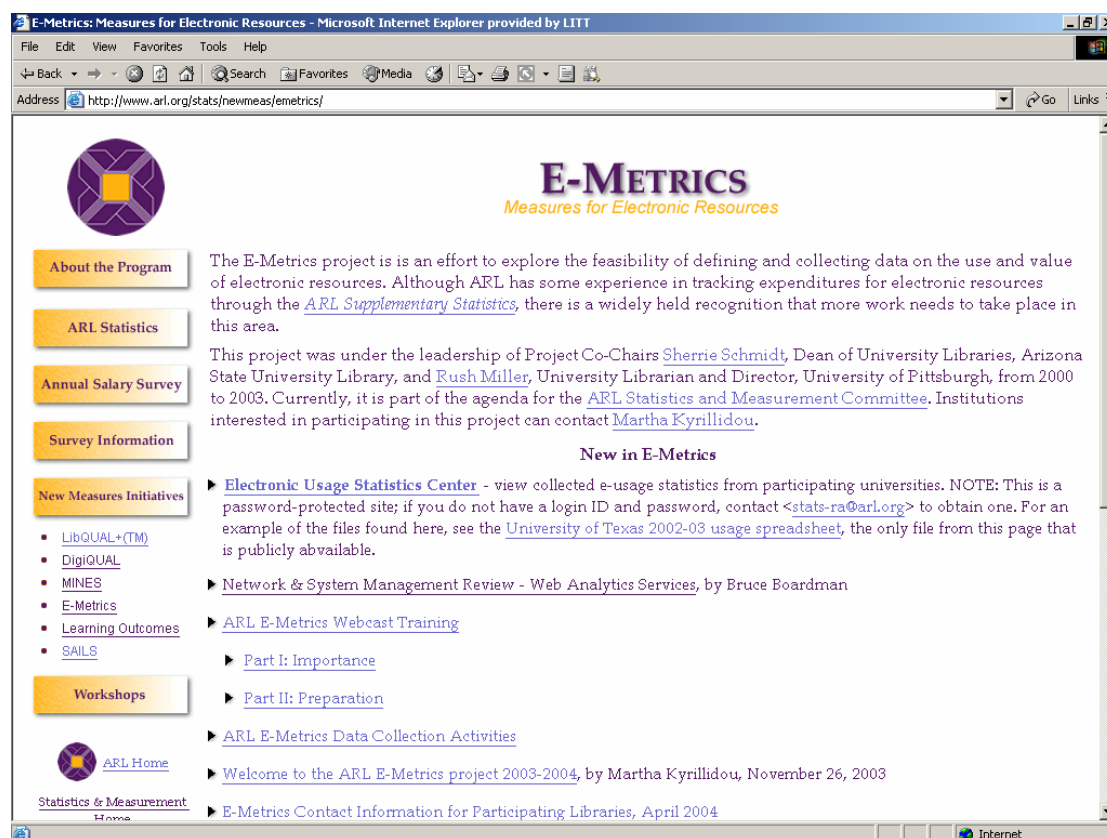


Fig.1 ARL E-Metrics Project

The COUNTER Project (Fig.2), launched in March 2002, now delivers usage data in a form that is not only reliable and consistent, but is also comparable and aims at comprehensiveness. The stated objective of the project “is to develop and maintain a single, international, extendible Code of Practice that allows the usage of online information to be measured in a credible, compatible and consistent way using vendor-generated data.”²¹ Several releases of the Code have been made, and these cover electronic journals, databases, online books and reference works. Further releases of the Code are expected. By February 2005, 41 vendors were registered as

²⁰ http://www.arl.org/stats/newmeas/emetrics/Data_Collect.htm

²¹ Shepherd, Peter T. COUNTER: From Conception to Compliance. Learned Publishing, v.16(3), July 2003, pp.201-205.

providing COUNTER-compliant usage reports, i.e. conforming to COUNTER's agreed definitions and usage data elements.

The COUNTER initiative is already delivering benefits to the library community. Australian libraries began to receive COUNTER-compliant data and reports in 2004.

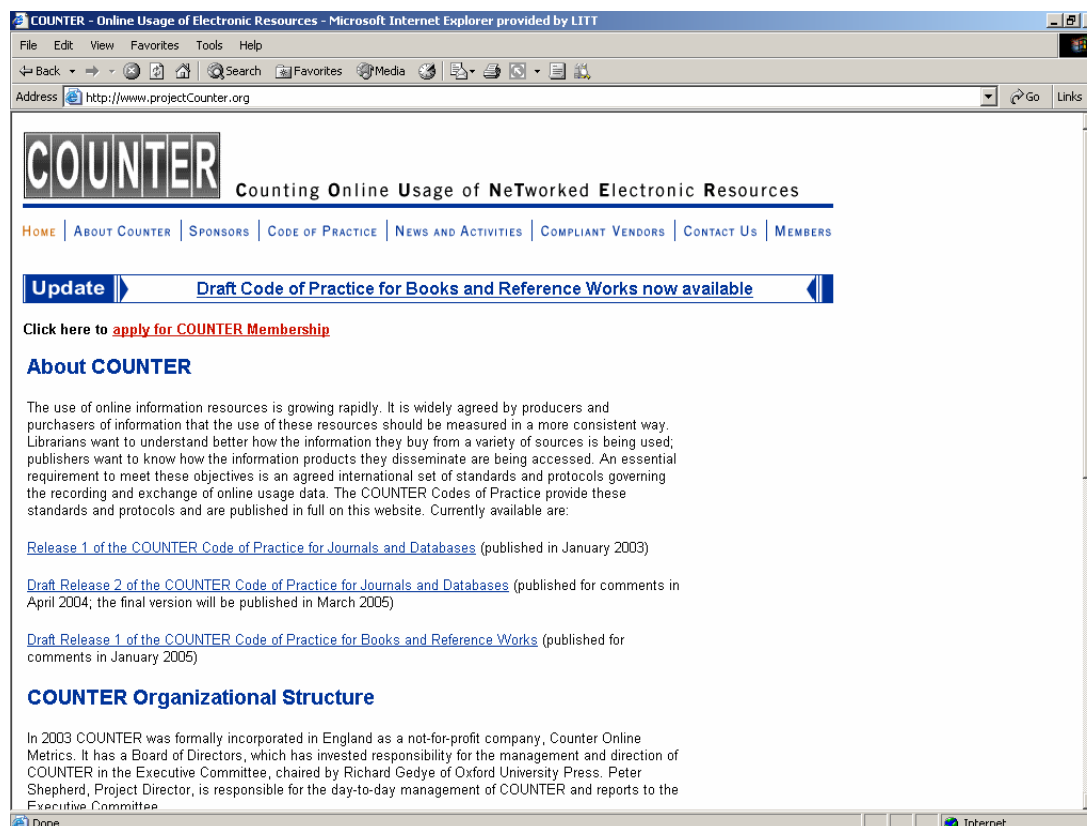


Fig.2 COUNTER Project

The MINES Project is another initiative of the ARL (Fig.3). MINES is a web-based protocol and survey instrument designed to collect data on the impact of networked services. It targets remote users of electronic resources and services and delivers reliable and credible data to support the type of cases which libraries need to make in order to survive and prosper in the networked environment. Based on 5 years of research, plus convenient, accessible and well-understood techniques, the MINES-type survey instrument is destined to become widely accepted, particularly within academic and academic research libraries. In January 2005, 16 Canadian libraries were participating in the MINES Project, and ARL had plans to host a workshop about MINES and other outcome assessment tools in April 2005.

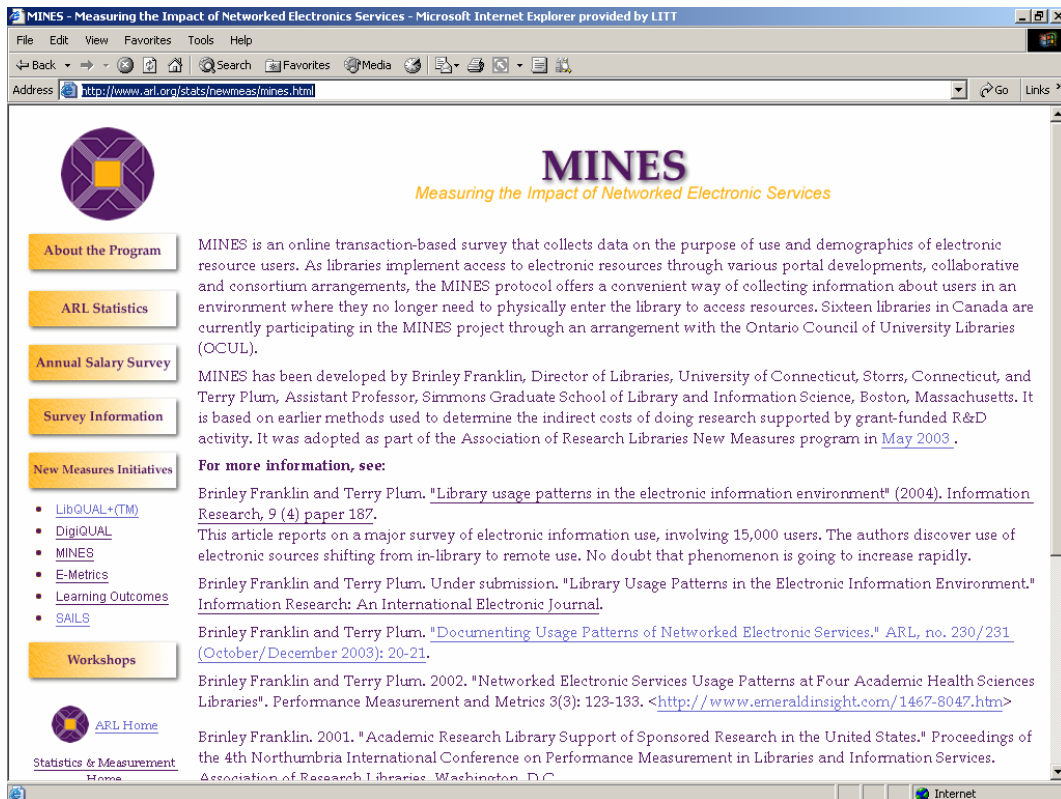


Fig.3 The MINES Project

Case Study: UTS Library



Fig. 4 University of Technology, Sydney. City Campus Library.

Background

The University of Technology, Sydney Library (Fig.4) supports around 30,000 students and staff accessing its services onsite through 3 campus libraries and several information commons throughout the university, as well as remotely from offices and homes (including offshore locations). The Library provides 24x7 authenticated access to its electronic resources, including around 240 databases, over 40,000 electronic serials and more than 109,000 electronic books²².

Lawton & Scholfield²³ identified the following drivers which have shaped the library's recent strategies:

- Clients' expressed needs, from client feedback and surveys
- The desire to deliver services at point and time of need
- The need to address equity issues and provide the same level of service to remote students as to onsite users
- Support for self-service
- Complexity and diversity of information systems
- Pressure to extend value from limited funds and maximise value from innovative technologies
- Pressure on the university to stay ahead in a highly competitive industry.

²² Data at March 2005.

²³ Lawton, Fides Datu & Scholfield, Sally. Innovations in Reference Service Delivery: eReference. International Conference on Spanning the Digital Divide: the Development of Digital Libraries, Manila, November 6-7, 2003.

In 1999-2000, UTS Library concentrated on collection building activities with a view to improving the standard and content of the collection for clients. A rapid increase in electronic resource collections ensued, along with the development of online infrastructure and skill base necessary to organise, deliver and support use of these collections. More recently, the library's strategic focus has been on improvement of access to electronic information resources, including the development of online support and training. In 2005, the Library's planning process is focussing (among other things) on staffing, recruitment and succession strategies as a means of future-proofing the organisation.

E-Library Service Initiatives

In early 2001, the Library provided clients with catalogue access to thousands of fulltext serials through the automation of e-journal cataloguing into batch processes. At the same time, the MetaLib and SFX systems²⁴ were implemented to better organise the Library's electronic information resources, to simplify searching and navigation paths for clients, and to maximise use of the electronic collections, particularly costly e-journals. The Library also developed an in-house electronic reserve system in 2001 to deliver course readings and other materials to students in accordance with the new digital copyright requirements.

In 2002, the Library launched an online reference service (ALIVE²⁵) which provides remote clients and library staff with an interactive web-based digital reference experience in real-time. In 2004, the Library implemented the RefTracker system to monitor and manage its reference services, to better integrate them with other library services (e.g. interlibrary loans), and to provide an improved reference knowledge base system for speedier responses to clients. Also in 2004, the Library redeveloped its A-Z list of databases into an in-house database access system providing another subject portal to its electronic information resources²⁶.

Online self-paced training facilities designed for enabling lifelong learning, e.g. generic information skills programs such as BELL²⁷ and Catalyst²⁸, as well as online tutorials were developed. The Library's virtual reference collection is available on a 24x7 basis, and its role and value was recognised in 2004 when the physical reference collection was almost completely eliminated to free up more space for computers. User guides for databases, subject guides, FAQs, and other handy tools are also produced in-house and are always accessible via the Library's website. UTS Library is a contributor to the Australian Digital Theses Program (ADT)²⁹, and in 2004 launched UTSePress³⁰, an e-publishing service and institutional repository for the university.

²⁴ These are integrated and badged as UTS' SuperSearch system,

<http://www.lib.uts.edu.au/finding/supersearch>

²⁵ <http://www.lib.uts.edu.au/askus/alive>

²⁶ <http://apps.lib.uts.edu.au/eresource/search.py>

²⁷ <http://www.bell.uts.edu.au>

²⁸ <http://www.lib.uts.edu.au/catalyst/>

²⁹ A national collaborative program which aims to establish a distributed database of digital versions of theses produced by postgraduate research students at Australian universities.

http://www.lib.uts.edu.au/finding/collections/digital_theses

³⁰ <http://epress.lib.uts.edu.au/>

Effectiveness of E-Library Services

With so many e-library initiatives implemented over a relatively short timeframe, how do we know these strategies are working for our clients? Since my last review of UTS' e-library services one year ago³¹, are we any closer to knowing what our clients really want? What performance indicators and assessment mechanisms is UTS deploying to gauge whether or not its clients are using the electronic library service it provides, and if so, how does it benefit them? What are its impacts, and are they measurable?

In terms of collecting *input* data, our tools and processes for data extraction are improving, enabling quicker counts of electronic resources to satisfy various external and internal requirements, e.g. CAUL statistical returns, financial and other audits, course accreditations, annual reports, in addition to library decision making.

Regarding obtaining *output* data, our in-house systems (e.g. the e-reserve system) are designed to easily collect usage statistics which are produced in Excel format for flexible analysis. Several of the systems we have purchased provide usage data to some extent, e.g. Metalib and SFX, ALIVE. Such data is used when reviewing system uptake and for tracking usage levels over time. It is also used to guide collection management decisions. Vendor-generated data for our electronic information resources is collected and made available to Library staff via our Intranet.

When it comes to measuring *outcomes or impacts*, we select and track appropriate input and output data which enable us to make the necessary linkages to institutional goals and outcomes to support a particular proposal, e.g. extra funding for more electronic resources.

Multi-channel Access vs Single Gateway Access

The question of whether to provide multi-channel access (several access points) or move to single gateway access for delivery of electronic resources is something we at UTS continue to ask. UTS is no closer to resolving the dilemma. Like other academic libraries, we do not yet have a good enough understanding of what our clients would really prefer. While we collect a great deal of statistics and feedback, we do not have data of sufficient scope and granularity to support an informed decision on this matter. Consequently UTS has opted to keep many access points to its e-collections open: the catalogue, SuperSearch (the MetaLib/SFX system), in-house e-reserve and database access systems, and various links and pages throughout the Library website. In this way, UTS' approach is one of hedging – maintaining plenty of access options for clients – and this appears to suit the UTS community.

In this multi-access environment, the difficulties associated with collecting usage data which were noted in my previous review³² remain. Usage data at UTS is not yet in an integrated format, and beyond what is collected and analysed now for specific needs, it is still a complex process to achieve an overall picture of client behaviour and preferences.

Data Mining

³¹ Flynn, op.cit.

³² Flynn, op. cit., p.58.

The Library's in-house data mining project to assess usage patterns of clients progressed during 2004. Like UTS' other IT infrastructural strategies, data mining is considered a long-term enabling strategy designed to support the Library's current and future directions.

In 2004-5, the University moved to same signon access to the major systems it provides for its students and staff (e.g. UTSONline, the Blackboard learning management system, and NeoHR, the University's HR self-service system). The Library's IT Team achieved single signon access to several e-library services and collections in early 2005 and expects to implement single signon for all networked resources during 2005. This potentially enables the gathering of uniform usage data which is both comprehensive and sufficiently granular to facilitate deep and flexible analyses of client behaviour and preferences. This work is eventually expected to deliver a fuller and better integrated picture of the Library's networked usage leading to more informed decisions and making outcomes assessment more achievable.

COUNTER

Since my previous review, UTS Library has received COUNTER-compliant reports from vendors including Elsevier, Ingenta, Springer-Kluwer, Nature Publishing Group. These are being monitored but no formal in-depth analysis of them has yet been undertaken. A development of interest to UTS is the beta testing of a COUNTER report consolidation service announced by Macmillan in early 2005. This could have benefits because it would potentially remove the labour-intensive tasks associated with merging data from several vendors and facilitate easier monitoring, comparability studies and other analyses. Another recently announced development of interest was the release of the draft COUNTER Code of Practice for online books and reference works³³.

While we are cautious in our interpretation and use of the COUNTER data we have received at UTS, these data are being monitored and considered when reviewing our dataset subscriptions.

Qualitative Data

In assessing the effectiveness of its networked resources and services, UTS Library continues to try to balance quantitative data with qualitative data. The user community has been surveyed and resurveyed to obtain details and trends about information-seeking behaviour patterns and preferences which are not apparent in the available statistics. UTS Library began using the LIBQUAL+™ survey instrument for this purpose in 2004. Details of the Library's use of this survey and its outcomes and implications for our services are discussed in another paper given at this conference³⁴.

Online exit (i.e. web based) surveys³⁵ are often used for UTS Library's e-services. As the researchers whose work lead to the MINES initiative (Franklin & Plum³⁶) found,

³³ http://www.projectcounter.org/cop_books_ref.html

³⁴ Marnane, B. Performance Measures for 21st Century Libraries. Performance Measurement for Libraries and Information Services, 2nd Annual Conference, Sydney, March 21-22, 2005.

³⁵ For example, in-house online exit surveys were developed for SuperSearch and ALIVE systems.

They appeared as optional 'pop-ups' when users logged out of the system.

³⁶ Franklin & Plum, op. cit.

these instruments are effective tools for obtaining immediate impressions from clients about a resource or system they have just used. At UTS, our exit surveys generally provide a facility for some free unstructured comments from users. Online feedback facilities are offered extensively throughout the Library's website and systems via numerous feedback links. These provide clients with more opportunities to give direct feedback to Library staff about services and facilities for ongoing assessment and development purposes.

Conclusion

The various mechanisms which UTS uses to assess the performance of its electronic library services are representative of the tools which are available to libraries generally. UTS Library's culture of assessment encourages and facilitates the proactive seeking of client feedback on an ongoing basis for the purpose of informing and guiding the Library's strategies. Despite the lack of well-developed performance indicators for evaluating e-library services, UTS like many academic libraries, is managing to obtain some useful quantitative and qualitative data, particularly in the area of electronic resource provision, which provide evidence that its strategies are working effectively.

There are continuing challenges for UTS and other academic libraries delivering electronic library services. Perhaps the greatest challenge is to realise that we do not fully understand our clients' needs. There can seemingly never be enough study of client behaviour. When a librarian asserts that a certain resource or service is liked or disliked by clients, we are quick to ask: How do you *know* that? Where is the evidence? We rely to a great extent on feedback or survey responses from relatively few clients, but are these the 'squeaky wheels'? What do the majority of our clients want from the library? We also heavily rely on how we librarians would like our services and collections to be. We use the extensive experience of our staff, along with the quantitative and qualitative data available to us, as indicators on which to base our considered judgements about the services and resources we provide.

The literature on evaluating electronic library services confirms that librarians everywhere are getting on with the job of proving the value of the services they offer, creatively and convincingly using whatever performance indicators are available to them. Initiatives such as COUNTER and MINES which aim at achieving data uniformity and reliable performance indicators for impact assessment should receive ongoing support from the library community. As the effects of these initiatives start to pervade the debate about pricing of electronic resources, some issues for consideration by librarians may be raised: Could reliable and standardised data (e.g. usage statistics) influence future pricing models in such a way as to disadvantage libraries and their communities? Or will this data lead to reasonable pricing models which recognise the role of libraries in expanding market penetration of electronic products, and in promotional, training and support efforts, all of which benefit library users and vendors?