

## 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. Evaluating the effectiveness of electronic resource provision is still at the development stage. This paper considers some of the recent work in this field, and looks at one library's experiences in developing performance measures for its electronic services.

### Introduction

Electronic library services comprise more than electronic collections (digitised content) in the same way that physical library services comprise 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. Many remotely-located 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-paced training options (e.g. generic information skills programs), electronic user/subject guides, FAQs and other forms of online help. While the focus of this paper is on electronic *collections*, some of these other associated services will also be considered.

The rapid growth in electronic library collections, plus the nature and development of these resources, has meant that libraries have found it increasingly difficult to conduct their normal collection evaluation processes. Traditional evaluation processes may not be entirely suitable in the digital environment. However, these very processes are now more important than ever in the current evidence-based economic climate which influences libraries globally. Ceynowa and Coners describe the main task of library management in this reduced form: "To master an increasingly differentiated and widening spectrum of services with always less resources." They assert that the need to prove continued effectiveness is forcing libraries into a financial management

regime based on cost accounting, particularly cost analysis and cost control<sup>1</sup>. This regime, aimed primarily at the input side of the economic equation, requires evaluative methodologies which rely heavily on quantitative data, particularly usage data which is product-comparable, format-comparable, time-comparable, and preferably also library-comparable<sup>2</sup>.

Methodologies based on qualitative assessment are also increasingly being seen as important tools for measuring the effectiveness of library services, particularly on the output side of the economic equation. Proven survey instruments (e.g. LIBQUAL+<sup>TM</sup><sup>3</sup>), focus groups, feedback loops and other mechanisms have been found to complement, contextualise and balance the quantitative data. The use of qualitative data has been particularly valuable in the electronic library service environment where it is clear that examination of quantitative data alone does not give an accurate picture of usage, client behaviour and client preferences.

### **Performance Measurement for Electronic Collections**

In the print and electronic environment in which libraries now operate, collection evaluation has become a hybrid function, some processes working effectively for the print collections and other processes evolving or yet to be identified for the electronic collections. This all adds up to much more effort going into the evaluation of collections.

It has never been easy to evaluate traditional print collections, particularly print journal collections. For example, for obtaining usage data to evaluate print journals which are often not circulated, in-house usage methodologies have to be used. For larger libraries with substantial print journal collections, this has been a tedious and involved process which at best only gives snapshots of usage. Evaluating print monograph collections has been somewhat easier and more reliable because monograph collections are often circulating and therefore the library's integrated system can generally produce accurate usage data, and often has good analysis and reporting capabilities as well.

Achieving reliable usage measures for electronic resources has proved challenging indeed. Much of the literature details the problems which librarians face in obtaining this type of data. Luther<sup>4</sup>, Duy<sup>5</sup>, Shepherd<sup>6</sup>, and other authors have described these. Briefly the issues include:

- Lack of control over the data by the library

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<sup>1</sup> Ceynowa, Klaus & Coners, Andre. Cost Management for University Libraries. Munchen, Saur, 2003, p.9.

<sup>2</sup> Product-comparable, i.e. comparing usage data from one product with another. Format-comparable, e.g. comparing usage between print and electronic formats. Time comparable, i.e. comparing usage over two or more time periods. Library-comparable, i.e. comparing usage of product(s) among different libraries; library-to-library or cross-library comparisons for benchmarking purposes.

<sup>3</sup> LIBQUAL+<sup>TM</sup> (Library Service Quality Survey), a research and development project sponsored by the Association of Research Libraries (ARL) in collaboration with the Texas A&M University Libraries.

<sup>4</sup> Luther, Judy. White Paper on Electronic Journal Usage Statistics. Washington, DC, Council on Library and Information Resources, 2000.

<sup>5</sup> 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.

<sup>6</sup> Shepherd, Peter. Keeping Count. Library Journal, February 1, 2003, pp.46-48.

- Multiple access points and sources of usage data resulting in 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**

In the hybrid print and electronic environment, what factors are compelling libraries to persevere with evaluating their collections and obtaining usage data? 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, i.e. their clients and their funding bodies. The pressure of decreasing resources means that libraries must maximise the returns on their investment, and the resources they purchase must be those which are of value to their clients.

Like companies that are subject to shareholder perception and influence, the greater value which libraries must demonstrate is increasingly judged in terms of outcomes. Bertot and McClure stressed the importance of outcomes assessment by libraries, and identified the need for research in this area<sup>7</sup>. Blixrud referred to institutional, learning and research outcomes, and the related outcome and impact measures as “measures that matter”<sup>8</sup>.

In terms of 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 capabilities in this area are key components of these programs.

Assessing libraries in terms of research outcomes is an emerging field. Some performance indicators have been identified<sup>9</sup>, e.g. grant income, research and doctoral awards, research appointments, institutional quality audit rankings (e.g. AUQA audits<sup>10</sup>). Thebridge and Dalton reviewed the past 30 years of literature dealing with academic library performance measurement and evaluation, noting the current emphasis on outcomes assessment particularly in the electronic library service environment. They concluded that the situation remained unclear, and that no

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<sup>7</sup> 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.

<sup>8</sup> Blixrud, Julia C. Assessing Library Performance: New Measures, Methods, and Models. 24<sup>th</sup> IATUL Conference, 2-5 June 2003, Ankara, Turkey.

[http://www.libqual.org/documents/admin/blixrud\\_turkey.ppt](http://www.libqual.org/documents/admin/blixrud_turkey.ppt)

<sup>9</sup> Ibid.

<sup>10</sup> Australian Universities Quality Agency.

standardised and practical set of performance measures with which to evaluate electronic library services yet existed.<sup>11</sup>

### **Evaluation Decisions**

For evaluation purposes, the type of decisions which librarians must make about their collections has become increasingly complex with the trend towards more electronic resources, and access rather than ownership. These decisions can be summarised by the following questions: what resources are being used, how are they being used, and should they be renewed<sup>12</sup>? However, this oversimplification conceals the sometimes agonising and more detailed decisions which librarians face, and which King et al have identified as “whether or not:

- to rely exclusively on electronic journals or purchase both electronic and print subscriptions and, if so, at what price;
- to subscribe to or rely on single article demand for certain journals;
- to discard print issues or rely on them as a backup for archival purposes;
- to negotiate site licenses;
- to deal directly with publishers or rely on intermediary services such as consortia, aggregators, gateways, etc., and if so, at what price;
- to depend, in some cases, on information freely accessible on the Web as a substitute for costly electronic resources.<sup>13</sup>,

I would add to this list some more difficult decisions which librarians face, i.e. whether or not:

- to support or continue to support high levels of duplicate titles (sometimes perceived as an embarrassment of riches) arising from unavoidable overlap between aggregations;
- to revive the ‘unbundling’ argument with aggregators, the aim being to reintroduce the concept of title selection by libraries rather than the current ‘one size fits all, take it or leave it’ approach;
- to enter into collaborative regional or national arrangements (e.g. resource sharing initiative, shared storage/warehousing facility) which may offer some scope for rationalisation of collections.

Although these issues are not new, it may be timely to consider them in light of fund squeezes and other pressures.

### **Initiatives in the Development of Performance Indicators for Electronic Resources**

How can librarians make such decisions when in many cases they cannot even obtain the most basic usage data about their collections? Some libraries have attempted in-house solutions to overcome the obstacles in obtaining reliable and consistent data about their electronic resources<sup>14</sup>. Others have thrown their support behind initiatives

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<sup>11</sup> Thebridge, Stella & Dalton, Pete. Working Towards Outcomes Assessment in UK Academic Libraries. *Journal of Librarianship and Information Science*, v.35(2) June 2003, pp.93-104.

<sup>12</sup> The question of whether to renew or not is equally applicable to electronic books as it is to electronic journals as purchase of e-book sets is generally by subscription.

<sup>13</sup> 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.

<sup>14</sup> 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.

such as ARL's E-Metrics Project<sup>15</sup> and the COUNTER Project<sup>16</sup>, both of which have arisen as a result of the problems associated with metrics in the networked environment. These two projects have achieved some degree of success in a relatively short timeframe. The organizations supporting the COUNTER initiative (libraries, library consortia, vendors, industry organizations), and the ARL E-Metrics participating libraries, have recognised the urgent need to produce a sound and accepted basis for statistics collecting and reporting.

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."<sup>17</sup> Over 20 North American academic and research libraries were participating in the test implementation in early 2004. The intention of this pilot was to agree on a set of measures for incorporation into ARL's regular statistics collection cycle. COUNTER-compliant data were incorporated into the counts collected in the pilot phase of the project.



Fig.1 ARL E-Metrics Project

The COUNTER Project (Fig.2) promises the prospect of usage data 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."<sup>18</sup> COUNTER was launched in March 2002 and a first version of the Code was released by December that year<sup>19</sup>. Release 2 of the Code was due in April 2004. These two releases covered electronic journals and databases. Future releases will cover e-books and other e-content categories. By the end of March 2004, 25 vendors were already accredited as COUNTER-compliant, i.e. capable of issuing statistical reports according to COUNTER's agreed definitions and usage data elements. It was

<sup>15</sup> Association of Research Libraries' New Measures Initiative, E-Metrics project  
<http://www.arl.org/stats/newmeas/emetrics/>

<sup>16</sup> COUNTER (Counting Online Usage of NeTworked Electronic Resources  
<http://www.projectCounter.org>

<sup>17</sup> [http://www.arl.org/stats/newmeas/emetrics/Data\\_Collect.htm](http://www.arl.org/stats/newmeas/emetrics/Data_Collect.htm)

<sup>18</sup> Shepherd, Peter T. COUNTER: From Conception to Compliance. *Learned Publishing*, v.16(3), July 2003, pp.201-205.

<sup>19</sup> *Ibid.*, p.202.

estimated that these COUNTER-compliant vendors accounted for nearly half the annual published output of journal articles indexed in Science Citation Index<sup>20</sup>. Clearly, COUNTER is an initiative well on the road to success and one which is already benefiting the library community. Australian academic libraries began to receive COUNTER-compliant data and reports in early 2004.



Fig.2 COUNTER Project

## Case Study: UTS Library



Fig. 3 University of Technology, Sydney. City Campus Library.

### Background

The University of Technology, Sydney Library (fig.3) supports over 31,000 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

<sup>20</sup> COUNTER Member Bulletin, April 2004.

access to its electronic resources, including around 240 databases, over 34,000 electronic serials and more than 18,600 electronic books<sup>21</sup>.

Lawton & Scholfield<sup>22</sup> 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.

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.

### **E-Library Service Initiatives**

In 2001, the Library purchased and implemented the MetaLib and SFX systems<sup>23</sup> to better organise its electronic information resources, to simplify searching and navigation paths for clients, and to maximise use of the electronic collections, particularly costly electronic journals. In 2002, the Library launched an online reference service (ALIVE<sup>24</sup>) which provides remote clients and library staff with an interactive web-based digital reference experience in real-time – a close approximation to the face-to-face reference sessions which onsite users can have. Online self-paced training facilities designed for enabling lifelong learning, e.g. generic information skills programs such as BELL<sup>25</sup> and Catalyst<sup>26</sup>, were developed during this period. Other online tutorials, e.g. the SuperSearch tutorial<sup>27</sup>, have also been produced. An online reference collection is available on a 24x7 basis, providing a ready source of familiar dictionaries, encyclopaedias, and other useful databases. 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

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<sup>21</sup> Data at April 2004.

<sup>22</sup> 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.

<sup>23</sup> These are combined and badged as UTS' SuperSearch system,

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

<sup>24</sup> <http://www.lib.uts.edu.au/askus/alive>

<sup>25</sup> <http://www.bell.uts.edu.au>

<sup>26</sup> <http://www.lib.uts.edu.au/catalyst/>

<sup>27</sup> [http://www.lib.uts.edu.au/information/online\\_tutorials/supersearch](http://www.lib.uts.edu.au/information/online_tutorials/supersearch)

is a contributor to the Australian Digital Theses Program (ADT)<sup>28</sup>, and in 2004 launched UTSePress<sup>29</sup>, an e-publishing service and institutional repository for the university. Samples of some of UTS' e-library service initiatives are shown below (fig.4).

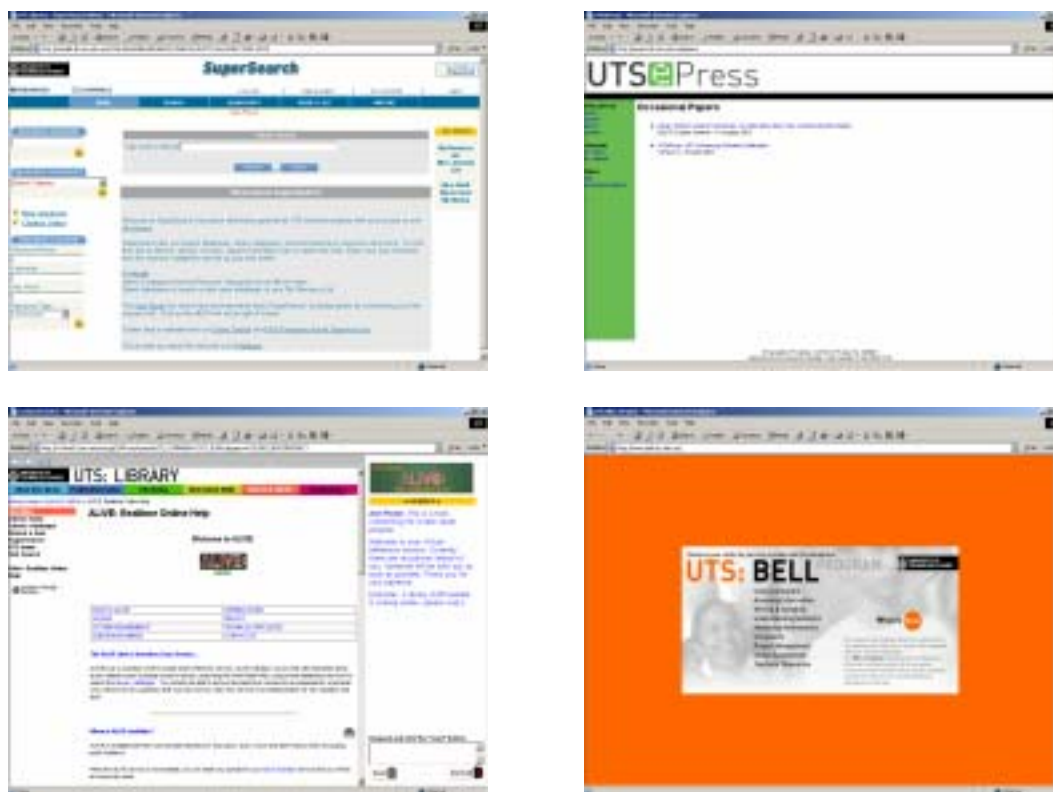


Fig.4. Webpages of some of UTS' e-library services

### Effectiveness of E-Library Services

How do we know these strategies are working for our clients? 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, does it benefit them? Before UTS' e-library performance could be measured, certain basic data had to be available.

In the case of UTS Library's electronic collections, a fundamental question which challenged staff for some years was: Does UTS know what, and how many, electronic resources it provides for its users? Fortunately the answer to this question is 'yes', although it was not always possible to obtain this information accurately and definitively for a particular point in time.

During the rapid growth phase when the Library's electronic collections were expanding substantially, the numbers changed quickly and sometimes dramatically, particularly for electronic journals. Although the Serials & Interlending staff who worked most closely with these resources had the best awareness of the volatility of

<sup>28</sup> 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](http://www.lib.uts.edu.au/finding/collections/digital_theses)

<sup>29</sup> <http://epress.lib.uts.edu.au/>



the online resource data, it was difficult for them to explain for example how some counts could vary by 10,000 or more simply as a result of the Library cancelling one subscription for an online journal aggregation.

This basic count problem was experienced by many Australian academic libraries which were undergoing similar growth in their electronic collections. The difficulties in providing reliable and comparable data were becoming increasingly apparent each year as libraries submitted their official annual statistical returns to CAUL<sup>30</sup>. A CAUL subcommittee responded by revising and redefining data elements for serials in the CAUL Statistics return process. To overcome anomalies which occurred in the data among libraries, the subcommittee also developed the 'Deemed List', designed to assist CAUL libraries in their annual statistical collections by providing a single agreed source of counts for journals in various full text packages. These measures have gone some way towards resolving the problems involved in obtaining reliable and benchmarkable data for the basic counts of electronic resources.

### **Multi-channel Access vs Single Gateway Access**

Beyond the basic counts required for the CAUL Statistics returns, UTS Library also needs to obtain usage data about its electronic resources for the reasons given earlier in this paper. In some ways, this should be simpler for UTS than for other libraries because the MetaLib and SFX systems both provide some usage data. However, UTS Library's practice of multi-channel access to its electronic resources (via MetaLib/SFX, the catalogue, an A-Z journal database website page, various other pages on the Library website), has meant that a single source of usage data has not been available, and that it is a complex process to obtain an overall picture of usage.

In addition, even if UTS was to channel all its e-resource users through one central gateway – SuperSearch - it was not clear at the time of writing that the usage data derived from SuperSearch's two component systems (MetaLib and SFX) was as consistent as the emerging vendor-generated COUNTER-compliant usage data in 2004. Usage data from MetaLib and SFX were not COUNTER-compliant by early 2004, but analyses into COUNTER-compatibility of those systems were being undertaken.

Leaving aside the benefits to users which multiple access offers, and considering the situation purely from a management information position, the single gateway option could provide UTS with a potential solution for the problems associated with evaluating its networked resources. For instance, it may give UTS control over usage data. It may give a complete picture of usage, including analyses of user information-seeking behaviour (e.g. search terms and search paths). It may give consistent and comparable data. The usage data may be comparable on a product-to-product and title-to-title basis, retrospectively and over different periods of time. It may even be possible to benchmark UTS's performance against other organisations which use the same gateway software (e.g. AARLIN<sup>31</sup> libraries). The single gateway option may give reliable data, and in a format that is compatible with UTS' other management information statistics and reports formats. It must produce data which meets the requirements of Australian privacy legislation. It was not clear at the time of writing

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<sup>30</sup> Council of Australian University Librarians

<sup>31</sup> Australian Academic Research Library Information Network

that the SuperSearch gateway option would do all these things, and more importantly whether UTS would be willing to channel its e-resource users through a single gateway in the interests of achieving comprehensive management information about its e-collections.

Since 2001, UTS Library has regularly reviewed SuperSearch's management information capabilities and has contributed enhancement suggestions for new categories of statistics and reports. Even though the system's usage data has not yet been proven to be fully standardized and COUNTER-compliant, Library management is in no doubt about the effectiveness of SuperSearch in maximising usage of the Library's electronic resources. Vendor-generated data supplied for electronic resources accessible via SuperSearch since 2002 have repeatedly demonstrated this, and recent COUNTER-compliant data supplied to UTS has confirmed it.

### **Data Mining**

In addition to investigating and monitoring SuperSearch's capacity and potential for providing usage data for evaluation purposes, UTS Library began to plan an in-house data mining project in 2004. With a brief to assess usage patterns of clients, the Library's IT Team examined the status of a number of the Library's systems and assessed the current and potential situation of each for extraction and analysis of data. The data sources included the Library website logs, access registration system, Innovative Millennium web opac and circulation modules, SuperSearch, front door turnstile system, PC workstations in public areas, proxy servers (for location-based analyses), e-reference system (ALIVE), and the Digital Rights Register (DRR) system.

Key aims of this project were comprehensiveness of data and granularity of data structure to enable deep and flexible analyses for current and future needs, for purposes of obtaining a total picture of the Library's networked resource usage. Although no data was available from the data mining project at the time of writing, an expected outcome was guidance for the ongoing development of the Library's training, support and collection management activities within its electronic library service.

### **COUNTER**

During 2004, UTS Library continued to rely on suppliers for usage data and was affected by the problems of non-standardization referred to earlier. However, as a member of CAUL, UTS was in a good position to benefit from the outcomes of the COUNTER Project because CAUL was a consortial member of COUNTER. This gave CAUL and its member libraries direct input to the development of the COUNTER Code of Practice. By April 2004, UTS had started to receive COUNTER-compliant reports from several suppliers including Ingenta, Elsevier, and Kluwer. These data were being examined for possible inclusion in UTS Library's data mining project<sup>32</sup>.

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<sup>32</sup> If SuperSearch data is later deemed to be sufficiently standardized and accurate, it may eventually replace supplier-generated COUNTER-compliant data for data mining purposes.

## Qualitative Data

In assessing the effectiveness of its networked resources and services, UTS Library has tried 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. Online and offline survey instruments such as Rodski<sup>33</sup> and LIBQUAL+™<sup>34</sup> have been used recently. Both of these surveys contained questions about electronic collections and electronic services. A sample from the 2004 LIBQUAL+™ survey used by UTS is shown below (fig.5).

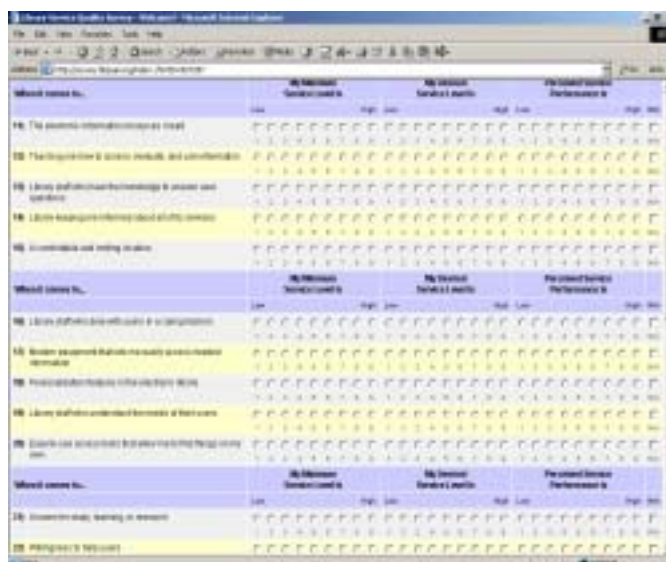


Fig. 5. Sample of questions used in UTS Library's 2004 LIBQUAL+™ survey

Online exit surveys<sup>35</sup> are often used, especially for newly launched e-services. These are effective tools for obtaining immediate impressions from clients about a system they have just used. Online feedback facilities are offered 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 give evidence that its strategies are working effectively. The abundance of literature on evaluating electronic library

<sup>33</sup> Rodski Research. Library Client Survey.

<sup>34</sup> LIBQUAL+™ (Library Service Quality Survey) was used for the first time in 2004 and the findings were not available at the time of writing this paper.

<sup>35</sup> 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.

services supports the view that librarians are getting on with the job of proving the value of the services they offer, in spite of the difficulties of measurement. They are doing this through (among other things) successful promotion and publicity efforts which draw attention to the continuous service improvements they make.

The way forward is the development of standard performance indicators applicable to electronic library services. The evolving COUNTER Code of Practice offers libraries the best chance of progressing in this regard, and the COUNTER Project is worthy of our support. Individual librarians can assist the process by demanding COUNTER-compliant usage data and reports when they deal with e-resource vendors, especially when negotiating new licences or renewing existing licences. COUNTER is a solution which is available now, offering reliable performance indicators for evaluating the effectiveness of an important area of electronic library services.