Librarians' attitudes to resource usage measurement and decision making in UK academic libraries: a content analysis

Lizz Jennings
University of Bath

Research problem

> *"Making judgments is hard work. For many of us, it's a responsibility that accompanies our jobs. Scholars, administrators, and librarians need to accept that responsibility."* (Ewing, 2006)
>
> *"There is a tendency to assume that measurement is in a state of imperfection similar to that of the early physical sciences and that we have to use expert subjective judgements only until the experts have developed better technical methods of measurement."* (Allred, 1979)

There is a perception that there is an over-reliance on usage measures, to the point of substituting numbers for judgement, although others some such as Hamburg *et al.* (1972) suggest that intrinsic value is not as important as connecting users to content.

The aim of this research was to explore how and why librarians use usage measures in decision making in practice and whether this has changed over time. This was achieved by analysing the content of mailing list discussions to identify typical practice; exploring trends in the use of usage measures by librarians; seeking explanations for changes; and determining whether usage measures are substituted for expert judgement.

Background and literature review

Academic libraries are a vital support service for academic endeavour, providing resources which enable institutions to achieve their goals (Brophy, 2005). In small institutions, devolved selection is suitable for allocating funds, but most require a systematic approach, which considers both expert opinion and usage.

Ranganathan (1931) describes how library collections change in response to the interests of its user community. Academic librarians are fortunate in knowing this community precisely, even personally (Hardy and Corrall, 2007). Decisions about resources are linked to changes in academic interests, rather than the innate quality of specific titles (Hahn and Faulkner, 2002). Usage statistics can highlight areas for consultation (Enssle and Wilde, 2002; Albitz, 2003) and librarians have measured usage since the nineteenth century (Thompson, 1951).

Continuing resources require annual funding to be maintained. Librarians use evidence of low usage to negotiate cancellations with faculty (Enssle and Wilde, 2002; Derven and Kendlin, 2011; Bucknell *et al.*, 2011). Monographs do not require ongoing subscriptions, but funds to purchase them must be available each year for the collection to remain balanced. Packages increase the collection by offering discounted access to a range of titles, but these can be inflexible (Nabe and Fowler, 2012) and tie the library to irrelevant subscriptions (Bucknell, 2008). Librarians monitor package usage to ensure they are more cost-effective than single title selections (Taylor-Roe and Spencer, 2005; Ives and Fallon, 2009).

E-books function as monographs or continuing resources, depending on whether they are leased or purchased outright. Comparisons between providers are problematic (Cox, 2008), particularly if section measurement is used, as this may be anything from a dictionary definition to a chapter (Bucknell, 2010). However, usage enables patron-driven acquisition of e-books (Bucknell, 2012a) and collection performance can be evaluated to indicate which business model suits institutional usage patterns (Grigson, 2009).

Physical items are measured using circulation figures, which are used to identify usage patterns and determine obsolescence, as well as offering an indication of future interest (Broadus, 1985). Many solutions have been employed to identify use of reference materials (Lambert and Taylor, 1996; Palmer and Sill, 1988), usually based on a sample period. E-resources have made the continuous collection of usage statistics simple (Taylor-Roe and Spencer, 2005), but linking usage to users is challenging. The cost per use of a subscription is often compared to that of inter-library loans (Williams, 1975). The convenience of e-resources has changed the nature of usage (Medeiros, 2007). Platform design, diverse content types and subjects also affect figures and the conclusions that can reasonably be drawn from the data (Bucknell, 2012b).

Librarians need simplicity and consistency for effective decision making (Hill *et al.*, 1979). Analysing usage statistics is time-consuming (Grogg and Fleming-May, 2010), and must be weighed against the ability to make well-informed decisions (Conyers, 2006). Runyon (1982) describes library decision making as a social process, especially where the decision maker is not the end user. The combination of use and expert advice is a cost-effective approach (De Gennaro, 1977).

COUNTER standardised usage reports, which are automated using SUSHI. UK librarians benefit from the Journal Usage Statistics Portal (JUSP) (Cradock *et al.*, 2011), which provides basic analysis and automates several common processing tasks (Conyers and Lambert, 2011).

Librarians rely on providers to supply usage statistics (Cole, 2000), and costs incurred in generating COUNTER reports (King *et al.*, 2009) can cause publishers to choose between providing usage statistics or enhancements for users (Powell, 2010). However, the data on how publications are used is positive for the whole system (Pearson and Box, 2011). Vendor-supplied statistics are rarely able to gather demographic data (Stewart, 2011); data from local systems offer an alternative (Chrzastowski *et al.*, 2009; Duy and Vaughan, 2003).

Librarians employ usage measures to defend the library against budget cuts (Conyers, 2006), to justify bids for increased funding (Taylor-Roe and Spencer, 2005) or show the impact of cuts on both the institution and senior decision makers (Bucknell, 2008). Benchmarking usage and expenditure is common among senior librarians, often using SCONUL figures (Jilovsky, 2010). Recent studies have shown the impact of libraries, including a study by Tenopir (2012) which linked investment in library materials to research income and University of Huddersfield's work on the relationship between library usage and academic outcomes (Stone *et al.*, 2011).

Methodology

Literature on usage measurement consists largely of case studies, which are usually examples of best practice; and surveys, which can evoke a "social desirability effect" (Sapsford, 2007). In both these cases, the research process has an impact on the outcomes reported and an unobtrusive approach is needed to gain a new perspective. The analysis of existing documents is an unobtrusive method, which avoids influencing responses (Berger, 1998).

Librarians working with usage statistics are often specialists, and rely on networking electronically with colleagues in similar roles at other libraries. As a result, there are several mailing lists devoted to this and related topics. Collection management is a broader skill and usage measurement is also discussed by non-specialists on general lists. Mailing list messages are useful because they offer an insight into the concerns and opinions of librarians based on real areas of interest.

There several approaches to analysing the content of documents to gain an insight into the practice and attitudes of the creators. These include hermeneutical phenomenology, discourse analysis, and content analysis. Because of its suitability for analysing large numbers of documents, content analysis was selected for this study, as themes could be tracked over a period of years.

LIB-STATS, LIS-E-RESOURCES, LIS-SERIALS, LIS-E-BOOKS and LIS-LINK were used in this study, as all had publicly accessible archives and it was reasonable to treat the messages as documents rather than personal communications. While there are some ethical concerns surrounding the perceived privacy of online communications, JISCMAIL's stated terms and conditions clarify the expectations for content posted on lists, and contributions were anonymised after data collection.

These lists were searched using the word 'usage', which produced a sufficient balance between recall and relevance. Each message was coded against a scheme derived from the literature review, and although message interpretation will "reflect a perspective, orientation and approach" (Altheide, 1996), so cannot be entirely neutral, the interpretative bias was countered by the process influence and self-reporting bias inherent in survey and case study methods (Neuendorf, 2005). The analysis was exploratory and qualitative, rather than quantitative and reductionist.

Results: Key themes

Figure 1

355 messages were analysed, the majority of which were more recent than 2006 when the LIB-STATS archive began. Contributors were globally distributed, and represented most sectors, but there was a focus on academic libraries in the UK. Over the period covered (1998-2011), the issues discussed on the mailing lists developed, although some topics, such as usage patterns, cost-per-use calculations and cancellations were of importance throughout.

Early discussions focused on physical resources, as e-resources were generally supplied on disk at that point. As online information became more common, discussions turned to measuring e-resource usage. The COUNTER code of practice led to discussion around standards from 2003 and set expectations for vendor-supplied statistics. As more providers became compliant, librarians discussed the management and interpretation of numbers. Discussion of best practice and critical engagement with what was being measured led to new ways to analyse usage measures. Most discussions concerned continuing resources, but around 5% of the messages referred to e-books.

A range of attitudes were expressed in the messages, with some believing statistics offered objective evidence of the utility of purchased resources, while others felt they were more pliable. The distance between analyst and decision maker could be problematic, with senior university management often seeing just a single number. A good working relationship between statistical experts and collection managers was considered important to ensure decisions recognised the nuances of the library's resources.

1998-2000: Physical resources dominate

Figure 2

Although most discussions concerned e-journal measurement, 38% of messages in this period referred to physical resources, reflecting the dominance of physical acquisitions in the library collection at this time. The challenge of reference-only materials was discussed in detail, with recommendations for monitoring usage being made for journals collections and current issue displays. Consultation with academics was mentioned, but it was suggested that collection users may bias survey results by claiming to use resources more than they actually do, confirming the need for usage evidence to justify decisions.

The challenges associated with usage statistics for e-resources were largely technical, with no established methods of counting, and limited cooperation from suppliers. Measuring usage through library systems was common. However, multiple access routes rendered these methods inaccurate, and the IT resources involved could make them impractical.

Figures which were acquired were used to evaluate different kinds of purchase models, and monitor the shift in usage from print to electronic, with cancellation decisions being focused on format changes rather than reducing provision. Many of the ideas discussed became standard in future years, such as the potential benefits of patron-driven acquisition:

> *"One or two colleagues, however, have suggested that there is value in getting access to a wide range of material, making it available and letting the user decide – usage statistics then become a key tool in assessing the value of any material."* (LIS-E-RESOURCES – October 2000)

2001-2003: Electronic challenges

Figure 3

As the inclusion of e-resources in library collections became widespread, there was a focus on usage patterns to understand the impact of these changes. Discussion around usage of physical resources tended to be oriented towards service provision, for example pricing external membership based on book issues, or monitoring highly used journals to ensure provision during a refurbishment.

Package evaluation saw librarians comparing usage of previously subscribed titles with additional titles. Some reported that core titles were well-used despite demands for cancellation, although where lower usage of subscribed titles was reported, it was felt that this might be due to the continued use of print resources.

There were concerns over the quality of usage measures, with local systems capturing usage, regardless of publisher policies on supplying statistics, while publisher figures were able to capture activity coming from all channels. One contributor suggested cross-referencing local and vendor-supplied statistics to verify results. The COUNTER code of practice introduced in 2003, was not yet having an impact.

Discussions took place around the role of librarians, and the value of spending time analysing usage statistics. Although some were sceptical, others had positive outcomes from this work:

> *"provide analysis of usage stats (and I have used this to bid succesfully for additional recurrent funding from the university for us to take up more NESLI deals, and to be able to renew the print subscriptions tied to these)."* (LIS-E-RESOURCES – May 2002)

2004-2006: Emerging standards

Figure 4

Since the introduction of e-measures questions in SCONUL statistics, interest in gathering statistics increased. The COUNTER code of practice also increased the number of librarians gathering usage statistics for their e-resources, although non-compliant providers still caused additional work. Concerns emerged around the quality of publisher data particularly in relation to double counting.

Discussions around open access resources were common. In a discussion on the impact of repository articles, the importance of combining usage figures with faculty consultation was emphasized, as it was acknowledged that the statistics did not give the full picture:

> *"Librarians don't cancel on the basis of COUNTER statistics, though they take them into account; they cancel on the basis of relative suggestions from their faculty, budget-multiple-constraint satisfaction. Researchers are not recommending the canceliation of good journals … regardless of where they access their working copies."*
>
> (LIS-E-RESOURCES – September 2005)

There was more evidence of the inclusion of usage measures in the decision-making process. As well as using low-usage as an indicator of a possible cancellation, the idea that usage measures could be used as a predictor of suitable new purchases was also gaining ground. The measurement of e-book usage was also explored, particularly the issue of varying granularity.

Time spent producing useful data was considered positive, but there was considerable frustration at time wasted on inefficient provider systems. Identifying necessary data before gathering figures was considered a sensible approach, which could be used to improve the information available to decision makers.

2007-2008: Rising expectations

Figure 5

With e-journal usage measurement being well-established, librarians began to expect more from the figures, particularly for package analysis, where cost per use and usage patterns dominated the conversation. E-books were discussed, as the COUNTER code of practice made reliable statistics available. However, understanding of e-book usage patterns was still developing, as it remained unclear what constituted typical use. Backfiles were problematic despite the existence of dedicated COUNTER reports due to variation in publisher pricing policies. Librarians wished to assess the performance of each purchase, so the difficulty in identifying usage of content purchased separately proved frustrating.

The preparation of systematic reports, such as key performance indicators became possible. Decision makers became used to receiving regular figures on resource usage, which raised expectations. Many contributors expressed frustration with delays in providing usage statistics, but greater still was the problem of resources not providing statistics at all:

> *"These could be low-use titles, which we could consider for cancellation, or high-use titles, which we could promote as flagship e-journals: it is impossible to tell."* (LIB-STATS – February 2008)

While low use may reflect institutional interests, knowing a resource was completely unused was considered a vital piece of information. Problems identifying zero-use titles were described, either through the presence of non-subscribed titles or the absence of subscribed titles from reports.

Contributors explored the value of cost-per-use calculations and the importance of reliable statistics was emphasised, particularly where pricing was usage-based. Concerns were raised over accuracy, and whether spikes should be corrected.

2009-2010: Best practice

Figure 6

During this period, there were several discussions related to value-for-money calculations. The global financial crisis was beginning to be felt, with librarians using the mailing lists to compare ideas for managing anticipated funding reductions.

Typical analysis involved comparisons between cost per download and the cost of inter-library loans. Others questioned whether value for money was absolute, or whether other aspects needed to be considered:

> *"Interpretation needs approached with a great deal of sensitivity to the vagaries not only of the information sources properties, characteristics, but also the local institution's goals and peculiarities."* (LIS-E-RESOURCES – June 2009)

The underlying reasons for atypical usage patterns were discussed by several contributors. In one instance, a publisher reported a problem that might have reduced usage, which was confirmed by list members, providing an opportunity to better understand user behaviour.

There were discussions on the value of usage analysis software for gathering and analysing statistics. There were varying levels of dependence on automated solutions and while there was work involved in processing data into useful reports, the ability to combine data was praised. Authentication systems were being used to identify usage by department.

Following the mention of the lack of provision of statistics by one publisher, based on the views of Ewing (2006), contributors reflected on whether too much reliance was indeed placed on usage statistics. There was divided opinion on whether this justified not providing statistics at all.

2011: New innovations

Figure 7

The conversation diversified and several new topics arose as librarians increased the sophistication of their analyses. Usage patterns were frequently discussed, as was demonstrating impact rather than value for money, although cost per use was still significant. Financial concerns were discussed, with pressure on library budgets taking precedence over usage in cancellation decisions.

The introduction of services such as resource discovery demonstrated that librarians were unable to wait for theoretical papers to be written in order to provide information require by decision makers. Extracting usage measures from authentication systems was discussed, with librarians showing interest in learning more about those using the resources, especially at a departmental level. Questions were asked about the approach needed to demonstrate value for money for specialist resources.

Data quality issues were considered, particularly around platform functionality and usage spikes, noting the difference between incorrect data and atypical usage. Discussion around the meaning of the statistics also took place, with ambiguous definitions causing particular problems. In terms of decision making, there was agreement that, except for the extreme ends of the usage scale, professional judgement was still required:

> *"IMHO usage stats can identify the very well used from the very poorly used, but there is a whole swathe of stuff in between where usage cannot be relied on to make fine judgment calls."* (LIB-STATS – June 2011)

E-books

Figure 8

E-books were a frequent topic of conversation from 2006 onwards. As they often function differently to e-journals as well as to print books, librarians had to learn more about how they were used before judging whether they were getting value for money from their purchases:

> *"I have to throw out my old notion of thinking performance is not simply how many times a person requests a page, but maybe how long they spend browsing the book's content before they have gained the information they need. Clearly mapping users' behaviour is a key part of e-book analysis"* (LIB-STATS – September 2007)

Units of measurement for journals are well-established and counting usage at the article level is accepted as a fair measure, despite differences in the nature of articles. E-books posed a problem as providers offered full-text content at different levels of granularity.

A COUNTER standard was introduced for e-books that enabled publishers to report on usage of whole books, or "sections", although the granularity was interpreted differently by each provider. While relative usage was comparable for a particular provider, inter-publisher comparisons were impossible, and reporting of statistics was particularly affected by these variations.

E-books were acquired using several models including access-only subscription, outright purchase or patron-driven acquisition, the latter being described positively by list participants, although with an understanding that getting the best value from this model would involve careful evaluation of the data.

Conclusions

The research confirmed that the topics discussed closely matched the literature, with a focus on practical, rather than theoretical methods. Several authors included in the literature review were regular contributors to the lists, which suggests that the literature is grounded in a working understanding of usage measures in libraries.

Librarians use usage measures to manage large collections, but also employ other measures to ensure their assessments balance value with cost-effectiveness. Usage statistics are particularly valuable for the assessment of packages, although librarians expressed concerns over their quality and reliability. The COUNTER code of practice had the most significant impact on usage measurement, although the granularity of e-book reports is still a challenge. Technological developments offer librarians sophisticated analyses, but also affect the meaning of figures. The value of librarians who understand both the limitations of statistics and the nuances of their collections cannot be underestimated.

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