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Åström, Fredrik; Hansson, Joacim

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How implementation of bibliometric practice affects the role of academic libraries

Fredrik Åström

Lund University Libraries, Head Office, P.O. Box 134, SE-221 00 Lund, Sweden

Email: fredrik.astrom@lub.lu.se

Joacim Hansson

Linnaeus University, School of Cultural Studies, Dept. of Library and Information Science, SE-351 95 Växjö, Sweden

Email: joacim.hansson@lnu.se

Abstract

This article discusses the potential consequences of implementing bibliometrics as an institutionalized practice in academic libraries. Results are reported from a survey distributed among academic libraries in Sweden with organized bibliometric activities. Incorporating bibliometric activities is seen as a way of redefining and widening of the role of the library. Implementation of bibliometric practice is motivated by ambitions to provide more complete services in the scholarly communication process, as well as to increase the visibility and status of libraries, not the least in relation to central university management. Underlying reasons are professional competencies such as metadata and bibliographic database management; and bibliometrics being strong within library and information science. Incorporating bibliometrics in academic libraries is also seen as a way of widening of the professional profile of librarianship. The new role should, however, also be considered from the viewpoint of potential changes in how academic libraries are perceived when incorporating a monitoring

function through bibliometric analyses of research performance in addition to traditional service oriented functions.

Keywords: Profession; Role of libraries/librarianship; Academic libraries; Scientometrics; Research evaluation

Introduction

Over the last few decades, there have been significant changes in systems of research management and policy, where evaluation of research outcomes are increasingly linked to the allocation of research funds on various levels - from individual scholars, to institutions and national systems for academic research, such as the national level distribution of government funds between publically funded universities. One important part of this change is how bibliometric methods to an increasing extent have become utilized to identify quantitative indicators for academic productivity and quality (Whitley and Gläser 2007). Also over the last few decades, the role and nature of librarianship and information management has been discussed, both as a field of professional practice and as a field of scientific inquiry (e.g. Nolin and Åström 2010; Schreiber and Elbeshausen 2006). One recent example of this is how, since the expansion of the Internet over the last two decades, searching for information has increasingly become something done by the individuals needing information themselves, rather than by information professionals. Simultaneously, development and evaluation of tools for searching has become an activity of, for example, computer scientists rather than information retrieval scholars in the field of library and information science (LIS). This has lead to a perceived need for the LIS professionals to redefine their professional roles.

In LIS, bibliometrics has been an important field of research for decades (e.g. White and Griffith 1981; White and McCain 1998) and its presence in the wider contemporary LIS field seems to be expanding at an increasing rate (Åström 2007). During the 2000s, bibliometrics and scientometrics also has become of increasing interest not only in the LIS field of research but also to the professional practitioners in libraries, primarily in the field of research and higher education (Ball and Tunger 2006; Brennan 2008). This is perhaps a response to the

perceived need for librarianship to redefine its role and expand its competencies. Over the last few years, university libraries in Sweden, as well as in a number of other European countries, have started offering bibliometric analyses to provide background material for the evaluation of research performance, and the distribution of funds, either at the university as a whole or within individual faculties and departments (Carlsson and Hällgren 2008; Gerritsma et al. 2010).

The aim of this paper is to discuss how taking up bibliometric analyses as an institutional practice may have a potential effect on the role of the library and its relation to the wider organizational context of the university. More specifically, these issues will be discussed from the viewpoint of the following questions:

- What is the background of libraries and librarians deciding to develop competencies in bibliometrics and scientometrics and to take on responsibilities for performing such analyses?
- What are the potential effects of these changes on the professional role and identity of academic librarianship, and how does this new role relate to other functions of the librarians and the libraries?
- What are the potential effects of these tendencies on the relation between the library and the wider university organization and in relation to the scholars as well as to university administrators and policy makers?

The basis for the discussion of these questions will partly be the literature on the subject. To get further indications on how this development is looked upon by the professionals, a small scale survey has been conducted, distributed to the *Metrics* list, an email listserv administered by the Bibliometrics group (a forum for librarians working with or being interested in

informetrics at Swedish university libraries within the Forum for Head/University Librarians in the Association of Swedish Higher Education.

Background

Since the second half of the 2000s, Swedish university libraries have to an increasing extent started building institutional competencies in bibliometrics (Carlsson and Hällgren 2008). Within the Forum for Head/University Librarians in the Association of Swedish Higher Education there is a working group for informetric and scientometric issues, established in the spring of 2007. Courses on bibliometric methods and applications are offered for librarians, organized both locally and on a national level, e.g. by the aforementioned bibliometrics group, lead by experts from the Swedish Research Council, the LIS research community and library faculty with long experience of informetric analyses. Perhaps the most manifest expression of the scientometric activity trend is that many university and university college libraries have created positions explicitly titled 'bibliometrician'. This development has not been limited to Sweden; similar trends can be found internationally, for example in Germany and the Netherlands (Gerritsma et al. 2010). This development has been discussed by e.g. Rafael Ball and Dirk Tunger (2006) as well as Patricia Brennan (2008). Resulting from this, university libraries have started offering bibliometric analyses to provide background material for the evaluation of research and the distribution of funds at the local universities as a whole, as well as faculties and departments within the university. An important question relating to this is what inspired this development?

The Changing Role of Librarianship

One factor behind the development of bibliometric activities at libraries is the felt need for a redefinition and widening of the professional roles of academic librarians within the wider

university organization. Traditionally, librarianship has to a large extent been focused on issues concerning the acquisition and organization of its collections, as well as searching and retrieving information for the users of the library. However, with online access to both search tools as well as the information *per se* it is easier for users to do many of the search and retrieval related tasks themselves. At least to some extent, it could seem as some of the services related to one of the core competencies of librarianship are no longer in high demand by users of the library. Combined with new practices of publications of research results, user behavior and competencies has created a need for redefinition of librarianship towards an increasing emphasis in the professional role on issues such as information literacy and other pedagogical aspects related to searching information. A stronger integration of the librarian in the academic process has been called for (Hansson 2010). This development is parallel with the development in LIS research, in which systems oriented information retrieval research has decreased, whereas behavioral and social aspects of information seeking and usage has increased (Åström 2007).

University libraries, at least in Europe, have also to an increasingly focused on development of knowledge and services related to scholarly communication other than simply searching and retrieving scholarly information. One important part of this is an increased activity in dissemination of research. University libraries in Europe have become strong proponents of Open Access (OA) publishing and work actively to support OA initiatives such as hosting OA publishing tools and developing directories of OA journals. Related to this is how university libraries increasingly have become responsible for the development and maintenance of local repositories and publication databases. These local repositories can be seen from two different perspectives. On one hand, they can be seen as being related to OA issues, in which a system like SBCAT – an underlying software for institutional repositories – is being developed at

Lund University Libraries in Sweden, together with University of Bielefeld in Germany and Ghent University in Belgium. This system is designed to work not only as a publication database but also as a tool for parallel publication of research. On the other hand, the repositories can be and are being used as data-sources for quantitative analyses of research output in the form of publications.

Growing interest in bibliometrics and scientometrics

Bibliometrics is a well established part of library and information science research (e.g. Narin and Moll 1977; White and McCain 1989; Wilson 1999), and the use of it in libraries for e.g. collection development and management is also a well-known practice, not the least in relation to digital library development (Dikeman 1975; Jimenez-Contreras et al. 2006; Kishida 1995; Nicholson 2003). Academic libraries applying bibliometric and scientometric methods and techniques for research evaluation purposes, however, is a more recent phenomenon (Ball and Tunger 2006; Brennan 2008; Carlsson and Hällgren 2008; Gerritsma 2010).

One important aspect of the increasing interest in bibliometrics and scientometrics, at the libraries as well as in academia in general, is the growth in use of bibliometrics to evaluate research performance, "especially in university and government labs, and also by policymakers, research directors and administrators, information specialists and librarians and researchers themselves" (Pendlebury 2009). Conferences, workshops and courses in bibliometrics, scientometrics and science and technology indicators are increasing both in number and in size. The allocation of research funds in the academic community and research policy in general is increasingly guided by such analyses. This is a development occurring on

both local and national levels in many countries such as Sweden, Norway and Australia, only to name a few (e.g. Vanclay 2011).

This, in turn, has a background in a shift in how publically funded academic research is perceived and managed by national governments, a shift including more focus on e.g. strategically oriented research policies and accountability. One aspect of this is the increasing importance of possibilities of systematic evaluation of research, both for strategic decisions on the future and accounting for past spending. This has, in many countries, lead to the development of national large scale systems for research evaluation (Whitley and Gläser 2007).

The use of biliometric indicators for the evaluation of local faculties and departments is becoming a common practice. It is here university libraries come into play. As mentioned earlier, there are a number of reasons for having university libraries being the organizational locale for bibliometric and scientometric activities. One is that bibliometrics is an important part of LIS research, which makes it quite natural to apply it in the professional practice. Another important reason is that professional competencies of librarians include having long term experience in developing and handling bibliographic data, and systematically dealing with large document sets. A third reason mentioned is how, in many cases, libraries have been in charge of developing and hosting institutional repositories, thus having immediate access to an important data source for measuring productivity through analyses of publication frequencies.

Bibliometric practice in academic research libraries in Sweden

In Sweden, there are today 48 institutions for higher education and research. Out of these, 18 institutions have some form of organized bibliometric/scientometric activity, mostly in the local university library (Carlsson and Hällgren 2008). To get a sense of the state of informetric activities at university libraries, a survey was posted to the *Metrics*[1] mailing list. *Metrics* is an online listserv serving as a discussion forum for Swedish university libraries staff members, as well as other people in Swedish academia, with an interest in bibliometrics and scientometrics. The list is managed by the Bibliometrics group within the Forum for Head/University Librarians in the Association of Swedish Higher Education and in September 2009, the number of members of the mailing list was 71. The purpose of the survey was to:

- investigate the nature and width of bibliometric/scientometric activities at Swedish university libraries
- collect information on on whose initiative and/or mandate bibliometric analyses are performed at university libraries
- gain insight about the positive and negative consequences for the libraries, getting involved in bibliometric activities.

Replies from nine out of the 48 institutions for higher education in Sweden were an acceptable rate, considering that there are 18 universities with organized bibliometric activities, of which 14 are located at the local university library. Several libraries did not submit answers due to poorly or recently institutionalized bibliometric practice. Still, the limited number of replies, which is much due to the limited academic library environment in Sweden, means that the findings can be used primarily as indications rather than as proper statistical results which can be generalized. These indicative results may, however be useful in

[1] http://listservice.lub.lu.se/mailman/listinfo/metrics

continuing analyses and discussions within the research community as well in practical librarianship.

The organization of bibliometric activities

The first set of questions dealt with how informetric activities at university libraries are organized in terms of the scale of the activities and under whose initiative and mandate they are carried out. The answers, in terms of scale, ranged, from dealing with informetric issue either on a 'when there is time to spare' or 'as needed' basis, to full time positions. Where full time positions are installed it is either one or two people mostly attributed this work or it is divided amongst a larger group of positions that also, to some extent, include time for basic research. This range of scale impacts the importance of activities as well. In some instances it means having someone simply monitor the development of bibliometrics and its relationship to research policy. In others large scale analyses of the university as a whole, including undertaking basic informetric research, methodological development and teaching. At five out of the nine universities there is at least one full time staff member working with bibliometrics and scientometrics; the ones with less time allocated are primarily smaller institutions.

As with the size and range of the bibliometric activities, there are also substantial differences in terms of the background of the staff responsible. On one end of the scale, we find librarians with a Masters Degree in LIS, with little or no formal training in bibliometric or scientometric methods, on the other people with PhD degrees in statistics or other research fields with a strong focus on quantitative methods.

Asking about initiating bibliometric activities in the library, variations are not as large as in terms of bibliometric activities. In most cases, activities are originally initiated by the libraries

themselves, but to an increasing extent, and especially at larger libraries, there is also an official mandate from university management to perform bibliometric analyses to evaluate research in different faculties and departments. The variations increase, depending on who the libraries see as 'customers' for their informetric/ scientometric activities. At the larger universities, with an official mandate for the libraries to do bibliometrics, university and faculty management are to a large extent the commissioning authorities. Smaller institutions tend instead to emphasize disseminating information on bibliometric indicators to individual scholars research groups and faculty administration, as well as to e.g. other librarians.

The character of performed bibliometric activities

All but two of the participating libraries offer some form of bibliometric analyses as a service to other units within the local university, such as management, departments or branches of the university library. Although there are differences, all performed analyses is for the purpose of research evaluation and/or providing background information for the distribution of funds on a local level, i.e. between faculties and departments at the universities. When asked who the libraries perceive as target 'audience' for the analyses, to whom they actually performs analyses, it is interesting to note a much larger presence of university and faculty management among actual 'customers' than groups of scholars or individuals. Also notable is that one library that actually did not perform bibliometric analyses raised the question whether the library should be participating in evaluating the scholars at the local university.

Although bibliometric analyses for research evaluation is by far the most frequent, examples were given of other types of use. Three libraries report doing analyses for the purpose of mapping research fields, research collaboration by investigating co-authorships, and performing analyses a service to individual scholars or research groups. Three libraries

reported the use of informetrics for collection management purposes, where the analyses are primarily for in-house use.

An important part of bibliometric activity – aside from doing the analyses – is providing information on scientometrics to individuals and groups within the university through e.g. seminars and lectures. The purpose of this is to raise awareness of different methods for research evaluation and how they are linked to systems for resource allocation; and through that, for scholars to be able to develop strategies to deal with these systems and methods.

Bibliometric activities – motivations and consequences

The third set of questions in the survey addresses two different aspects of bibliometric activities at the libraries. One is the motivations for libraries specifically being responsible for performing bibliometric analyses; and the second, what potential consequences the libraries see in them being the organization within the university performing them.

Answers on the more general issue of why the library should be responsible for organizing bibliometric activities reveals two main lines of reasoning. One relates to the competencies of librarianship and LIS concerned with publication databases, documents and metadata and experience with bibliographic tools in general. The other concerns the position of the library within the wider university organization. It is considered a stable entity within the university that itself is not affected by the outcome of the bibliometric analyses. For this reason it can take a neutral or objective position relative to the faculties or departments being evaluated. A third line of reasoning that can be seen both as a general motivation for libraries doing bibliometricsometrics, and for individual libraries implementing such practices as part of their agenda, is that bibliometric is central to the role of the library in cotemporary processes of

scholarly communication. This includes development and management of institutional repositories as well as having an active role in Open Access publishing issues. New patterns of publications, with the library as an active part, seem to open up for a new and even stronger position in the university's organizational structure. Less frequently stated, but mentioned, by respondents is that bibliometric analyses brings libraries not only a new role in the academic context, but also more attention. As one respondent said "library management [is] considering these activities prestigious."

Opportunities, Benefits and Risks.

Those surveyed were asked what opportunities and benefits implementation of bibliometrics bring to the library. Three kinds of answers can be distinguished. The first relates to how bibliometrics become an addition to responsibilities and widens the competencies of libraries and librarians. This is important at a time when tasks and competencies traditionally associated with librarianship increasingly moves into the realm of e.g. the users of the libraries. The second kind of responses are about how this expanded role has increased visibility of university libraries in the wider academic context. This is said mainly to come from the development of an increased cooperation with scholars at the university, leading to libraries taking a more active role in different aspects of research processes and scholarly communication. Thirdly, increased cooperation with university management leads to libraries becoming more involved in central university management processes, which is clearly felt to increase the influence and prestige of libraries within their parent institutions.

Might there be any risks in the increase of biblometric activities in university libraries? Well, only one library representative saw no risks what so ever in implementing bibliometrics. Most replies points out a number of risks:

- One is related to the competencies in the field of librarianship. While a competency concerning bibliographic data, as well as the management of large document collections, is mentioned as reason for libraries to implement bibliometric analyses, some respondents raised concerns about lack of competency in advanced statistical methods in general and bibliometric indicators in particular.
- Other concerns mention relations between libraries and scholars if libraries do bibliometric analyses for research evaluation. Do the competencies of the librarians make them legitimate as evaluators of scholars in different fields at the university?
- A third risk mentioned is the danger of the library being associated with 'bad' results of departments not performing well according to the bibliometric indicators.

These concerns all come down to a sense of danger that libraries, being seen as a more active participant in research policy, now turn from being a service or support function at the university to becoming one with an auditing or monitoring function, passing judgment on scholars. Some respondents lift the issue that use of bibliometric indicators for research evaluation is quite controversial in the research community – not least in a country like Sweden, where these kinds of assessments are relatively new.

Conclusions

Over the last few decades, both librarianship and LIS as a field of research, has gone through a redefinition of its role and tasks. Some have perceived this as a crisis in librarianship and LIS research, as many activities that traditionally have been part of the core of the field and the profession to an increasing extent have come into the background or performed by others. This has lead to the question on how to maintain professional and organizational legitimacy. Maintaining this legitimacy includes finding alternative ways of using existing competencies,

and at the same time developing new ones. As the academic community today sees an increase in systematic evaluations of research systems and institutions, not the least in relation to allocation of research funds, new possibilities has been attributed to academic libraries. To meet these, the profession develops different strategies. One is to take on a more active role in a range of different aspects of scholarly communication. Another, to some extent as a consequence of this, is to start implementing bibliometric analyses as institutional practice.

The aim of this paper has been to analyze and discuss this latter development, by investigating why libraries choose this particular path, and to explore its potential effects. It also examines the effects of libraries doing bibliometrics can have on their role in relation to the wider university organization. The analysis draws from examples of Swedish university libraries, of which an increasing number over the last decade have institutionalized some form of bibliometric or scientometric practice. Although Sweden is not the only country in which this occurred, it is one of the countries where the concrete impact of this development is evident in terms of positions as librarians explicitly oriented towards bibliometrics and scientometrics. A brief survey of academic libraries with institutionalised bibliometric activities has provided the analysis with exclusive examples of benefits and concerns about undertaking systematic bibliometric analyses.

The expansion of the role of the university libraries and the professional competencies of librarians can be seen as concurrent with the general development in higher education:

- bibliometrics as a field of enquiry has to a large extent been developed by scholars in library and information science;
- evaluations of universities are to an increasing extent based on institutional repositories largely developed at, and maintained by, university libraries;

- the implementation of bibliometrics adds to professional competencies such as bibliographic control, knowledge about metadata and the experience of dealing with large document collections; and
- it fits well with libraries taking on more active roles in scholarly communication processes.

The benefits of this widening scope of activities for libraries have been widely discussed in LIS research. Seldom, however, have the practitioners themselves been asked about it. The role of LIS professionals and the role of libraries become stronger by developing new sets of competencies, both in themselves and in relation to the wider university context. It increases the visibility of the library and the competencies of the librarians in relation to the wider university organization. One aspect of this is visibility, in terms of servicing the user by informing about bibliometric indicators and their use for research evaluation and the allocation of funds, thus helping scholars in developing strategies for dealing with a new situation. Another aspect of the visibility is in relation to university management, as the link becomes stronger by executing bibliometric analyses to provide background material for evaluations - thus becoming part of the funding policy process.

From the professional perspective, the widened competencies may carry a potential to increase the status of librarianship, since quantitative evaluation indicators traditionally have been held in high esteem in academia. This is of course something that can be ‘put to use’ when assisting scholars in developing strategies for dealing with new criteria for the evaluation of their research. From an organizational perspective, the status issue can also be seen in an increased influence on policy processes – here, the influence is more in relation to university management rather than the scholars. This can be seen from the perspective of a

shift in the role of the library itself and its relation to the wider university organization on several different levels. An important aspect of this is how libraries are developing from a service function of supplying the scholars with the information to one monitoring them through the production of statistics on their productivity and impact. This introduces a controlling function in relation to the university researchers that librarians have not had before. This brings on a shift of "consumers" from scholars to university management and administration, something which raises questions about the legitimacy of the libraries within the universities.

The results of this limited, but distinctive, study indicate an increased complexity for academic libraries and librarianship. If handled right, this may strengthen the positions of libraries within the context of the university organization, as well as in relation to their traditional users, the scholars and the students. If being able to formulate the benefits of bibliometrics to both university administration and to the research community, academic libraries might eventually take on a position more central in the development of the very universities within which they function, and thus put themselves in the very centre of higher learning – on the strong foundation of a confident profession.

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Appendix 1. Questionnaire for Swedish librarians working with bibliometrics

A. General information: bibliometric activities at the libraries

1. What kind of bibliometric activities do you have at your library? (Is it e.g. a matter of monitoring the development of bibliometric research/practice; of informing librarians, scholars and administrators in your local academic community; do you perform bibliometric analyses?)

2. What is the scale of your bibliometric activities?

3. On whose mandate are the activities performed? (Is it on your own initiative, or is commissioned by e.g. the university management?)

4. What is the target group for the activities? (Is it e.g. other librarians, scholars, university management?)

B. Bibliometric services at the libraries

1. Does your library offer services in the form of performing bibliometric analyses?

2. If so, what kind of bibliometric analyses do you perform, and for what purposes? (Is it e.g. for collection management purposes; for mapping research and publication structures; for research evaluation purposes?)

3. For whom do you perform these analyses? (Is it e.g. for in-house use; for the scholars; for university/faculty/department management?)

C. Background and consequences

1. What is your motive for developing bibliometric activities at your library?

2. What motives are there for developing bibliometric activities at academic libraries? (I.e. what is the reason for the libraries doing this, rather than other institutions/functions in the local academic context?)

3. What are the benefits/opportunities of libraries developing bibliometric activities?

4. What are the potential risks/detrimental effects of libraries developing bibliometric activities?