BIBLIOMETRIC ANALYSIS AS A NEW BUSINESS AREA IN LIBRARIES:
THEORY AND PRACTICE

RAFAEL BALL
Central Library, Research Centre Jülich GmbH
52425 Jülich, Germany
E-mail: r.ball@fz-juelich.de

Abstract. Supplying users with literature by a seamless linking of media is the goal of (scientific) libraries. By the digitization of primary and secondary data and the convergence of products and providers, libraries have already come very close to achieving this ideal. A digital library is the realization of this goal. However, many librarians are in danger of running out of imagination. What will come after the digital library? Do we still need information professionals today? And, above all, what services are required? This paper identifies new fields of business for libraries with the example of bibliometric analysis. The discussion concerns the shape this service could take in practice, who needs it and what target groups exist in the scientific environment. Concrete examples of bibliometric analysis from the Central Library of Research Centre Jülich, the largest interdisciplinary research institution in Europe, round off the overview.

Introduction
The boundary conditions for library work have changed radically in the past few decades. All types of libraries are experiencing a re-evaluation, in the course of which their traditional fields of activities are being increasingly called into question. The situation is characterized by dramatic technological developments in the information sector, automation of operations, by an acquisitions budget that is being reduced in real terms together with continually rising book and journal prices, as well as by change in and diversification of the media in the holdings. The completely new information supply concepts that have become necessary (for example the discussion on "access vs holdings"), a corresponding change in user behaviour, new concepts of scientific communication (Berlin Declaration, 2003) and last but not least by drastic staff cuts in the largely publicly funded university libraries and other scientific institutions, mean that a completely new and increasingly more important role is being assigned to "information" in industry, science and society. At the same time, the concept is being understood in a more extensive and comprehensive sense and does not only involve knowledge already explicitly available on paper or in databases but also, and increasingly, the processing and provision of information for customers.

The Library as a Business Unit
Libraries have existed for thousands of years as collections of literature and knowledge, as places of reading and of scholarly study, and occasionally as a type of museum with collections of books of the most varied nature. The traditional tasks of a library can be described as the creation, preparation, processing and maintenance of holdings for authorized users. In order to fulfil this central core function, the classical tripartite structure distinguishes the fields of acquisition, cataloguing and user services.

The definition of a library as a business enterprise (and thus the necessity of appropriate control and corresponding management) is relatively new. Libraries should no longer resemble museums but should be business enterprises operating with the greatest possible efficiency. They should make an important contribution to research and teaching and the general promotion of education.

Against the background of this concept, whether a library can provide the right books and information is no longer the sole criterion today, but the decisive issue is increasingly the contribution that the library can make to its host institution. Whereas the performance and significance of a library used to be measured by its holdings of books and journals, in the seventies progressive libraries began to demonstrate their efficiency by fulfilling certain performance figures.

Today it is known from management theory that purely operational data cannot provide valid information on the significance of an institution (library). Operational data are no longer an appropriate controlling instrument for public and research libraries. On the one hand, "soft factors" have long proved to be much more influential in ensuring survival (lobbying, stakeholder approach), and,
moreover, the significance of the library is now assessed according to its contribution to the enterprise as a whole. It is therefore more important than ever to scrutinize a library's products and to examine them in a portfolio analysis with respect to their significance (Ball, 2000). It soon becomes apparent that traditional library services are no longer a guarantee for survival and are not sufficient to justify the existence of a library.

Many examples from the literature show that the traditional picture of libraries and librarians is changing (Lim, & Klobas 2000, Wätjen, 1999). In developing a comprehensive model of a "library", Brophy considers that the library has always been a growing organism, and, together with Licklider, postulates that it is the tasks of analysing, processing and reorganizing primary information for the user that characterize a library rather than the classical tasks of storing, indexing, searching for and delivering documents (Brophy, 2000).


Beyond Digitalisation

Ten years ago, the central issue for libraries large and small was the digitalisation of contents, the structuring of the electronic information environment (Bjørnshauge, 1999; Buckley et al., 1999; Griffin, 1998; Ke & Hwang, 2000; Schatz, 1997). The future suddenly looked rosy for libraries again: and it was digital. The fact that the digital revolution not only ate its own children, but was also realised much faster than anybody had hoped or dreamed makes the librarian’s job extremely complicated today. The digital and seamless provision of information has become a reality for library users almost everywhere. But where should all the staff be sent when everything is digital and electronic? What should we do with all the buildings and offices? Why bother with acquisitions of our own when licences for digital content can be easily acquired centrally by the Purchasing Department?

What is left is a certain emptiness, because most librarians have yet not established alternatives in their product portfolios.

New Fields of Business Opportunities for Libraries: A Few Successful Examples

There are a whole slew of excellent opportunities for extending the range of services at libraries without having to worship the "golden calf" of content digitization. In the tradition of their university publishing houses, British and American universities have set up prestigious institutions – some of them with a well-established tradition – that do not only publish high-quality content and thus raise the profile of the whole institution, but also earn economically relevant income such as Stanford University Press (http://www.sup.org/info/aboutus.cgi), Oxford University Press (http://www.oup.co.uk/), Johns Hopkins University Press (http://www.press.jhu.edu/about/index.html). Increasingly, such publishing houses are also being successfully set up at less well-known and high-profile provincial universities and frequently provide innovative options in combination with digital services. Two examples are Kassel University Press (http://www.upress.uni-kassel.de/) and Oldenburg University Press (http://www.bis.uni-oldenburg.de/bisverlag/verlinfo.html#). These university publishing houses have been successfully established in libraries which, as central facilities of the respective university, are free from any special interest of their own, and are, moreover, independent, interdisciplinary and are at the centre of publishing activities.

Content management systems help in structuring and archiving all sorts of data and information. Whether primary or secondary literature, experimental instructions, descriptions of apparatus, workflows, pictures, letters or directions – in scientific departments there is a wide range of information that is easy to organize and archive in a content management system. The Central Library of Research Centre Jülich is successfully providing such a service for the institutes on campus. The Central Library operates a well thought-out division of labour. The data processing technology is provided by the Computer Centre while the Central Library provides advice on data structuring and processing and also retrieval (http://www.fz-juelich.de/zb/dms_en).

There are professional press clipping services in most companies providing a fast and focused overview of daily reports in the regional, national and international press. Scientific establishments such as universities and research centres often do not make use of these type of information systems at all or content themselves with rudimentary press reviews that are usually compiled in a rather unprofessional manner.
For thirty years, the Central Library of Research Centre Jülich has been compiling a professional press review by evaluating more than 30 national and international daily papers and weekly magazines. Two products are the result—an express information service in the form of a daily press review and a fortnightly press clipping service comprising more than 200 pages. These press reviews are produced by an evaluation team who look through the selected papers every day for relevant articles and then compile the products in a discussion process with the leader of the editorial team.

The Juelich Experience: “Bibliometric Analysis” as a New Library Service

Bibliometric analysis as a business area in libraries

A interest in bibliometric data and the emergence of analytical methods first became apparent to any appreciable extent in the eighties of the 20th century. Initially, mathematicians, information scientists and sociologists concerned themselves with mathematical models in bibliometrics. After that, interest in bibliometrics faded somewhat until in the late nineties information and library scientists took up bibliometrics once more against the background of a new science scene. Large volumes of digital bibliometric data, now easily processible, as well as the necessity of providing reliable, quantifiable information on scientific output and the frequent introduction of performance-oriented allocation of funds in science and research made the question of the possible application of bibliometrics a hot topic again (Noyons et al, 2003).

Bibliometrics is thus experiencing a revival, not primarily with respect to mathematical modelling and theoretical principles, but as an instrument of science management (Wagner-Döbler, 2003).

Bibliometrics is gradually escaping from the "back room" of science evaluation and its reputation as a "conspiratorial element" and is beginning to establish itself as an accepted instrument in the orchestra of the overall evaluation of persons and institutions.

Expert opinions from the German Science Council, for example, draw specific attention to bibliometric analysis, an in France an institute was set up especially for this purpose in 1990 (Observatoire des Sciences et des Techniques, OST). In the USA, for instance, bibliometric data have already been used since the mid-seventies as a basis for funding decisions, and the use of quantitative indicators is just as widespread in the Scandinavian countries as in Switzerland where "research maps" have been drawn for certain disciplines.

Bibliometric analysis at the Central Library of Research Centre Jülich

As described above, there is great uncertainty with respect to responsibility for this controlling tool at scientific institutions. Without having been commissioned with this task by the Research Centre's management, the Central Library at Research Centre Jülich has concerned itself with bibliometrics for two years after acquiring the necessary know-how by appointing qualified personnel, by staff training and attendance at congresses.

The Central Library offers the most varied types of bibliometric analysis for science evaluations (http://www.fz-juelich.de/zb/Bibliometrics). This involves institute-related analyses and trend analyses. The starting point is two standard products known as the "bibliometric report" and "bibliometric message". The products originated within the framework of the conference on "Bibliometric Analysis in Science and Research" held at Research Centre Jülich (Research Centre Juelich - Central Library, 2003). All the products in the bibliometric product line have the same logo for easier brand recognition.

"Bibliometric message" is a short version providing a brief and concise answer to a concrete query, for example the number of citations of an article or their distribution. "Bibliometric report" is the long version consisting of a summary and data section. This product is used for the analysis of complex issues that cannot be conveniently delimited. The inclusion of these products in the Central Library's portfolio has proved its worth and is attracting increasing interest.

The Central Library provides support for these tasks in the form of well-designed output analysis, response analysis and comparative analysis (national and international comparison)

Achieving Added Value by the Library

The description of this perception analysis shows that a library can position itself at the top of the innovation scale with the aid of bibliometric products.

The use of existing information to create added-value products means that the classical image of the object-oriented library is finally transformed into that of a service provider. Its function as a provider of raw data or data carriers is complemented by highly qualified information processing.
Offering an added-value service such as bibliometrics leads to the creation of a real information provision service of benefit to users.

**What Staff Qualifications are Required?**

The question of who has the competence to implement bibliometric analysis is still completely unclear. There are only a few experts specializing in bibliometrics who have the necessary knowledge of the scientific community and who at the same time can meaningfully handle the amount of data at their disposal. A few sociological and political science institutes have attempted to make use of bibliometrics, but frequently only on a metalevel as a science OF bibliometrics. Information scientists themselves have not been active in this field either and have at most supplied a scientific commentary. It is therefore not unusual for assistants and secretaries of science managers to be entrusted with such tasks. A scientist who wishes or has to make a bibliometric analysis rarely has the necessary know-how or the proper instruments available for such an enterprise.

Information specialists are today at the focus of enormous volumes of data made available worldwide from science and its output. As information professionals they are basically in a position to handle these volumes of data and to distil reliable information from them. Who else in the scientific environment is able and willing to provide bibliometric data as a service for science managers – in an interdisciplinary manner and independent of their own scientific interests? Only libraries and information facilities are independent, interdisciplinary institutions capable of providing these central services.

Our bibliometric research group consists of two senior scientists, a PhD student of information science and two information specialists, but we are able to make use of additional personnel resources from the library staff.

**Valid Databases for Bibliometric Analyses and the ISI Competitors**

It is not easy to answer the question of relevant data sources for bibliometric analyses. The market continues to be dominated by Thompson Scientific's citation databases (formerly ISI, http://www.isinet.com/). For 12 months now we have also been using the "Scopus" database provided by Elsevier Science (http://www.scopus.com/scopus/home.url). However, this database does not (yet) satisfy the demands we have to make for valid bibliometric information. The lack of retrospective coverage in Scopus is not adequately compensated by the additional content. The frequently criticized strict selection of journal titles in the ISI databases soon proves to be an advantage in comparison to the arbitrary nature of title selection in Scopus.

**Conclusions**

An extension of the portfolio of library products by including bibliometric analysis represents a valuable addition reflected in the lively interest on the part of library users. Moreover, bibliometrics in particular represents a win-to-win situation for customers and libraries. The customer is offered an added-value service going far beyond traditional library services, while the library can employ the know-how of its information professionals in a strategic and creative manner.

**References**


