Chapter 4

Bibliometric Service Models in Academia and Considerations Impacting Resourcing

All the information in this technical report is geared toward aiding bibliometric practitioners and their institutions to understand and select the right tools and technologies for their practice. In addition to understanding the technical aspects, choosing the right bibliometric tools for your institution will be heavily influenced by two important *strategic decisions*:

1. the type of services that are intended to be offered and
2. the expertise available.

Having a clear idea about the type of services, short-term and long-term, will influence the expertise that is required to provide these services, and this in turn will inform tool selection. This may seem like an obvious and simple idea; however, the challenge lies in choosing from the vast variety of services that fall under the bibliometric umbrella, some of which will be discussed further in this chapter. It is essential to recognize that nascent bibliometric services will rarely be able to offer a complete suite of services. Even when focusing on a smaller subset of services, a large array of expertise may be needed. Many experienced bibliometric practitioners will strongly advise that it is unrealistic to expect a broad range of services from a single individual or from a small team whose members are only partially dedicated to the service. Therefore, many successful bibliometric services often begin with small, focused objectives using existing expertise, with an eye for growth. For example, many libraries begin by using their existing liaison librarian model to support researchers in creating research impact profiles for individual researchers to support their grant applications or promotion and tenure packages, while other institutions may simply have an analyst, likely outside the library, providing some limited bibliometric analysis as part of a larger project monitoring research and other activities at the institutional level. In any case, it is essential to identify the intended service models and understand the expertise required to implement these services. Planning bibliometric service requires that careful, deliberate choices be made about the service capacity, as bibliometrics can take many forms, from focused, in-depth consultation-style analytical services to broadly scoped far-reaching services.

This chapter explores bibliometric services and how they may fit under the following service models:

- collaborative bibliometric services
- centralized bibliometric services in the library
- centralized bibliometric services outside of the library

We must also keep in mind that there are no professional standards set for bibliometric services, offering institutions ample flexibility for working outside these models and tailoring their services to local resources, expertise, institutional needs, and priorities. Some sage advice from a recent OCLC report on cross-campus partnerships within the research enterprise recommends approaching all research support services from a "social interoperability" perspective (Bryant, Dortmund, and Lavoie 2020). The report advises examining campus culture and stakeholder interests and employing intentional tactics to build relationships. Regardless of the service model employed, skilled relationship building is as important as the strategic decisions an institution makes around technical tools and personnel.

What Expertise Is Needed for Bibliometric Services?

It is probably impossible for a single individual to possess all of the expertise and offer the full spectrum of bibliometric services. Most likely, the institution has a limited service offering or has a team of individuals who provide their specialized skills to the bibliometric services. This may seem an obvious dichotomy of choice. However, when planning bibliometric services, careful, deliberate choices must be made about the service capacity given the spectrum of possible bibliometric services, from high-level strategically focused services to more in-depth concentrated analytical services.

Although there are no professional standards through certification or degree attainment, the "2021 Competencies Model for Bibliometric Work" (Lancho Barrantes, Vanhaverbeke, and Dobre 2021) underscores (1) the required knowledge in the field, (2) responsibilities and tasks, and (3) technical skills. Each area is subdivided into three levels: entry, advanced, and expert. The intention of these competencies, as stated in the documentation, is to identify skill gaps, to support progression through career stages, and to prepare job descriptions. Table 4.1 provides a summary of the skills covered in these competencies, and although we cannot cover all of these competencies here, they provide a very useful guide to planning and strategic decision-making around bibliometric services. Reviewing these competencies during planning and implementation stages of service building is highly recommended.

Table 4.1: Technical skills required for bibliometric work summarized from the "2021 Competencies Model for Bibliometric Work" (Lancho Barrantes, Vanhaverbeke, and Dobre 2021).

Skills	Details
Data use	download, clean, store, analyze, perform network analysis, visualize, interpret, compute bibliometric indicators
Tool use	data visualization software, statistical software, statistical programming packages, API use, AI packages
Scholarly communication	interactions of institutional repositories, research databases, preprint servers, persistent identifiers, bibliographic control

Bibliometric Service Models

The following models are being presented as representations and not as steadfast rules or an exhaustive review of the bibliometric services governance within academia. They are meant to be a guidepost for strategic decision-making, highlighting considerations for technical tools, expertise, and service levels. You may find your institution at an intersection between these models or providing services that do not quite fit under any of these models. However, the message here is that it is important to consider the impact of the model, whatever form it may take, that influences how decisions are made at your institution. You may find that some of the challenges you face are in fact entrenched in the structures at your institution, and overcoming them may mean considering alternative governance structures. These models are meant to help illustrate these possibilities.

Collaborative Bibliometric Services

In a collaborative bibliometric services model, institutions are likely to have the bibliometric work distributed across several service or administrative units. This model is characterized by (1) shared governance across these units or at least a strong interconnectedness through consultation and decision-making and (2) typically a focus on institutional level bibliometric analysis services motivated by strategic decision-making needs rather than supporting individual researchers for profile analysis. The engagement in collaborative bibliometric services across units is likely to grow out of a shared understanding of the value and impact that bibliometric services have within and outside of the individual units. This creates an environment where there is not only a shared understanding but also a shared commitment to and responsibility for the success of the services. Therefore, this creates more potential for shared resourcing through the use and selection of bibliometric tools and expertise. This model does not come without caveats. There is the risk of confusion around who actually provides the resources for tools and required expertise. There may also be the risk of territoriality, either by way of unclear delineations of responsibilities or by responsibility avoidance (Bryant 2022b). A collaborative bibliometric service model with its focus on institutional level analyses is likely to engage more strongly with units such as the university planning office or academic affairs and the research administration office.

EXEMPLAR: UNIVERSITY OF WATERLOO

The University of Waterloo is a PhD-granting, research-intensive Canadian university located in the city of Waterloo in the province of Ontario. It has developed collaborative bibliometric services through early engagement with several stakeholders across campus. As internal discussions at the university began to recognize a need for bibliometric services, a formal working group for bibliometrics was established by the vice-president academic and provost in 2013. Chaired by the associate vice-president research oversight and analysis, the working group currently

engages core stakeholder units on campus including the library, institutional analysis and planning (IAP), and the office of research (OR). Additionally, members represent the other campus stakeholders, including the information systems and technology unit, academic units, and research centers and institutes. The working group provides high-level direction, advocacy, and guidance on the bibliometrics in response to campus needs. However, it does not function as a service provider. Instead, institutional level services are provided collaboratively by the core partners: the library, IAP, and OR. These units work very closely together to provide institutional level bibliometric analysis that emerges from needs such as ranking validations, strategic plan implementation performance insights, and support for grant applications. Even with close collaboration among these units, the library is a central partner in developing instruction, coordinating outreach, and supporting the distribution of bibliometric expertise across campus through training, instruction, and the coordination of its local community of practice. A full description of the bibliometric services at Waterloo can be found in the 2020 publication by Shannon Gordon and Alison Hitchens, *Library Impact Practice Brief: Supporting Bibliometric Data Needs at Academic Institutions* (Gordon and Hitchens 2020).

Centralized Bibliometric Services in the Library

Bibliometric services that are centralized within the library still often involve significant collaboration with units outside of the library. However, these collaborations are often not formalized through a shared governance structure. In North America, governance that is centralized within the library tends to take advantage of existing liaison librarians or specialized team-based structures. These services often initially focus on individual or departmental level supports and analysis and often structure services from a teaching and learning approach. This model is advantageous as these individuals can engage their existing relationships within the university and use existing core library skills, such as knowledge of scholarly publishing, research databases, and search methodologies. Arguably, linking levels of bibliometric analysis (e.g., individual vs. institutional) based on the governance model is a difficult distinction to make, as bibliometric services tend to diffuse through an institution as they gain traction. Therefore, a library with mature bibliometric services may very well have its services distributed throughout the institution. Certainly, as the bibliometric analysis skills within the library become better known across the institution, there are opportunities to identify shared values and priorities with other units. However, the bibliometric services that are primarily governed by the library will likely continually face familiar challenges such as repeatedly proving the value of the services to the broader institution and clarifying ownership of resources, decision-making, and tasks.

EXEMPLAR: SYRACUSE UNIVERSITY

Syracuse University is an R1 research university located in the city of Syracuse in the state of New York, USA. It has developed a bibliometric service model that is centralized within the library with close connections to other service units such as the office of research. The library has developed a research impact team that focuses its services on engaging in discussions related to responsible use of metrics, supporting outreach and education on the use of core bibliometric resources such as Scopus, Web of Science, Dimensions, and Lens.org, and supporting campus partners through the creation of reports using bibliometric analyses. It also leans on its existing liaison librarians to aid with information dissemination and relationship building within the academic units. With this model, Syracuse is a strong example of how libraries facilitate the diffusion of bibliometrics across a campus. Its bibliometric services are still relatively new, being undertaken in 2020, and its service model will likely continue to evolve as it establishes stronger connections across campus and builds expertise within and outside of the library.

A fuller description of the Syracuse model can be found in the OCLC *Hanging Together* blog post by Rebecca Bryant, "Establishing a Bibliometrics and Research Impact Team at Syracuse" (Bryant 2022a).

EXEMPLAR: UNIVERSITY OF NEW SOUTH WALES

By 2009, at the research-focused University of New South Wales, Sydney, Australia, a seven-member service team was developed from existing library staff. These individuals had their portfolios adjusted to allow at least 50 percent of their role to be committed to their Research Impact Measurement Services (what they locally call their RIMS) (Drummond and Wartho, 2009). They provided services mainly to individual researchers, schools, and faculties. Their primary function was to respond to requests and develop reports that included research impact analytics. These reports included grant application statements, research impact statements, citation counts, h-index scores, research trend reports, journal impact reports, and publication activity reports (Drummond and Wartho 2009).

THE EUROPEAN CONTEXT

Bibliometric services in the European context are considerably more mature than in North America.

An exemplar from Europe is the University of Vienna Library, which has a well-established bibliometric service. Its services are supported through a dedicated department for bibliometrics and publication strategies that has seven dedicated staff who provide bibliometric analysis from the researcher level through the institutional level. The department is also the administrative arm of the prominent European Scientometric Summer School (ESSS; https://esss.info/about/), which is a multi-institutional collaboration that provides training in bibliometric analysis to students, researchers, and practitioners.

In Europe, there are also more established academic research units that are dedicated to scientometrics. Among them are some internationally recognized units with which many bibliometric practitioners will be familiar, such as the Centre for Science and Technology Studies (CWTS) at Leiden University, the Netherlands; the EC3 Research Group at the University of Granada, Spain; and the German Centre for Higher Education Research and Science Studies (DZHW). The combination of these service- and research-oriented units has made Europe a noteworthy leader in the bibliometric community from which we in North America can learn and grow.

Centre for Science and Technology Studies
https://www.cwts.nl/about-cwts

EC3 Research Group
https://ec3-research.com/

German Centre for Higher Education Research and Science Studies
https://www.dzhw.eu/en/gmbh/index_html

Centralized Bibliometric Services outside the Library

Bibliometric services that are centralized outside the library are considerably more difficult to characterize as they are not as well known among the library community and are often part of internally reporting units without publicly available profiles detailing their services. Regardless, some basic characteristics have been summarized through reviewing roles across several institutions such as the Ohio State University (Strategic and Competitive Intelligence Office 2022), the University of Michigan Medical School (Office of Research 2022), Western University (Western Research 2022), and the University of Toronto (2022). Many of these universities have individuals outside of the library who are skilled in bibliometric analysis or who have access to and administer bibliometric tools. Their roles tend to be within units that are highly interested in tracking the outputs and impacts of research, such as the research administration office, president's office, or planning office. Additionally, stand-alone advisory units such as research intelligence offices appear to be becoming more engaged in providing highly tailored bibliometrics to the university administration. These units will likely experience similar service silos as those bibliometric services that are centralized within the library. However, they tend to be more reactive to specific operational goals, such as increasing funding in a specific research area, increasing the university's performance in international rankings, or taking part in a larger industry integration or business intelligence service.

Another interesting structure is the CWTS B.V., which is a company owned by Leiden University that offers research analytic services as a business. With its close affiliation with the Leiden Ranking and CWTS, this is an exceptionally interesting setup as it bridges both academia and commercial services. Although this is not a particularly plausible model for many institutions, it illustrates that bibliometric services can also be structured as a contractual service or consultancy. This type of service is also offered as a sort of boutique, for hire consultancy service from many of the companies that provide bibliometric data and tools.

This chapter does not supply an exemplar here as there is only limited information on this model and the services and structures vary so greatly among institutions that selecting a single exemplar would likely be misleading. Readers should explore the institutions cited in this section to find out more about their individual services and governance structures.

Conclusion

This chapter covers three main service models for bibliometrics at academic institutions: collaborative bibliometric services, centralized bibliometric services within the library, and centralized bibliometric services outside the library. It makes clear that any of these models and the mix of services that are possible will see success at your institution, emphasizing the value that bibliometric services have at the academy. There appears to be a progression in the user focus of the bibliometric services that is connected to the type of service models. With much more focus on individual-level services, such as supporting faculty in promotion and tenure applications or creating asynchronous learning objects, libraries first take the lead on bibliometric services. As the services begin to mature, connections are formed within other units and the services tend to broaden. Of course, this is a general observation and may not be the experience at every institution. However, there is a clear need

to prioritize creating collaborative partnerships across an institution in any bibliometric work, regardless of the governance structure. Whether these connections are created through formal governance models or evolve through other channels, these partnerships will need to establish sustainable relationships that are not dependent on any single individual but are baked into the way the collaborating units interact around their bibliometric services.

The progression of bibliometric services will also impact the bibliometric tools that are used at the institution. Therefore, it is hoped that this chapter aids readers to reflect on the bibliometric tools presented in previous chapters and to begin to connect how their service models may impact the tools that will be most beneficial to their services now and how this may evolve in the future.

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