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TOP UNIVERSITIES, TOP LIBRARIES: DO RESEARCH SERVICES IN ACADEMIC LIBRARIES CONTRIBUTE TO UNIVERSITY OUTPUT?

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Abstract

University context is nowadays mostly characterized by the implementation of competitiveness and cost-effectiveness criteria. There are two main characteristics of the new management model: a new relevancy to the university funding and the predominance of the research criteria as excellence indicator. Evidence of the growing role of research in universities are the parameters to rank the excellence of higher education institutions, such as ARWU (Academic Ranking of World Universities) of the University of Shanghai, SIR (SCImago Institutions Rankings) or the THE (Times Higher Education World University Rankings).

The research orientation also imposes to the academic library, with the growing implementation of services to support research. Evidences are at last reports about trends in academic libraries by ACRL (Association of College & Research Libraries), especially at the latest edition: The 2015 Environmental Scan of Academic Libraries. The international survey Bridging the Librarian-Faculty Gap in the Academic Library (2015) also emphasizes the greater impact and relevance of the academic library to research, stressing the perception of the library as essential in this process.

This paper tries to establish a connection between excellent universities and the research oriented services by their libraries. Our research hypothesis is: the universities at the top of the rankings have libraries that provide excellent services to support research processes. Ten of the top universities at the ARWU and Times rankings are used as sample and their libraries services analyzed. As research method we used the observation of the selected libraries webpages, with a checklist where the most relevant services to support research processes are identified.

Keywords: Academic Libraries, Research Support Services, Strategic Alignment

1. Introduction

Universities always accomplished a double social function: learning and research. Today research has converted to a strategic goal, as a mean to improve competitiveness to attract better and bigger financing and larger numbers of students. The growing interest in research can be verified at universities strategic plans, international academics rankings and higher-education accreditation agencies.

This interest in research has been a catalyst for academic libraries that have adapted to these changes by creating support services. Research support is understood as a group of services that contribute to the scientific communication process of the community. There is no doubt that academic library has always supported the research, but now faces a new paradigm. In past years academic libraries have contributed to documents access, but now mediation profile is more active and involving all areas of scientific communication (discovery, analysis, writing, publication, outreach, and assessment).

The aim of this paper is to analyze the services offer to support research in a selection of libraries from the most important international universities. The selection of the institutions is based in the academic rankings position. The final objective is to demonstrate the relevance of the library role in the research process of its community, trying to establish a bidirectional relation between

universities and their libraries. The premise is that excellent universities have excellent library services and excellent libraries contribute effectively to excellent research universities.

It is superficial to assert this idea with only website analysis, as it requires a more comprehensive study. This paper is a first approach to be deepened in future.

2. Methods and Sample

Since the appearance of the first academic ranking, the ARWU in 2003, the rankings have been accepted as a tool to measure the excellence and competitiveness of universities. But rankings have been target of important critics, questioning the robustness of the used criteria. Each ranking has limitations and focus on specific components. Nello Angerilli, Associate Vice President International for the University of Waterloo in Canada indicates:

(...) ARWU uses very few measures but those that they use, reflect elements of academic quality, including how many of an institution's alumni have won a Nobel prize and how many faculty have won Nobel prizes as a result of the work done while at the university (in order to prevent rich universities from "buying" Nobel prize winners). They also measure the importance of research outputs by examining where and how often faculty publish in certain key indicator journals. This highly quantitative methodology produces a ranked list that represents some very impressive educational and research outcomes, but from a narrow perspective. The QS and THE rankings are more broadly based and include measurements of student numbers, diversity of faculty and students, etc., but are significantly influenced by an opinion poll of faculty and other researchers around the world that focuses on what they know about research strengths of other institutions. The Leiden focuses on science and the impact of scientific publications from 500 universities around the world. Webometrics infers a global rank based on the number of links that a university homepage has from other institutions and organizations, in addition to how information is managed on the institution's website (Cairns, 2013).

This disparity of approaches makes not appropriate the choice of a single ranking. So we decided to combine results from different academic rankings. [Hazelkorn et al. \(2014\)](#) conducted a study in European universities and identified the three more relevant rankings: QS, THE and ARWU. We decided to select top ten institutions in these three rankings, but was only possible to access THE and ARWU results. Sample was selected with this method: a table was created with the top one hundred institutions from each ranking, the position of each matching institution has been summed, ordered ascending and the first ten occurrences selected (with a maximum of four institutions by country, to introduce some variety in the sample). The selection resulted in:

- Stanford University – Stanford University Libraries
- Harvard University – Harvard Library
- Massachusetts Institute of Technology – MIT Libraries
- California Institute of Technology – Caltech Library
- University of Cambridge – Cambridge University Library
- University of Oxford – Bodleian Libraries
- ETH Zurich – ETH Bibliothek
- Imperial College London – ICL Library Services
- University College London – UCL Library Services
- University of Toronto – University of Toronto Libraries.

To guide the analysis, we elaborated a checklist with 18 items. All representative of the services supporting research nowadays. To define services supporting research in academic libraries we analyzed literature and libraries websites.

Cox & Pinfield (2014, p. 300) advocate that the academic library must be present in multiple fronts as: identifying financial support, helping in literature reviews or news about projects or research groups, bibliometrics and research impact assessment, support to quality evaluation systems of the universities, training in reference management software, promotion of open access and

repository, support in data analysis, advice in copyright, support in deposit and dissemination of research archives. For Keller (2015, p. 75) library contributes with institutional repositories, open access, bibliometrics and improved impact of research, student support research and data management research. Fernández-Marcial & González-Solar (2015) emphasize the role of the academic library in the management of the digital identity.

We assumed that these services are dynamic, being necessary to complement the literature with information from the universities websites. And checked some libraries websites. We picked two universities from the sample, the first (Stanford University) and the last (Toronto University) ones. And completed the list with institutions from other geographical areas, choosing the first ten universities from non Anglo-American countries: University of Copenhagen – Denmark, Pierre and Marie Curie University – France, University of Oslo – Norway, The Hebrew University of Jerusalem – Israel, University of Helsinki – Finland, National University of Singapore – Singapore, Seoul National University – South Korea, King Abdulaziz University – Saudi Arabia, Charles University in Prague – Czech Republic, University of Chile – Chile.

3. Results and Analysis

Results were analyzed in two levels: first presence of the different items was identified (Table 1), and second a more comprehensive analysis was developed.

	Stanford University Libraries	Harvard Library	MIT Libraries	Caltech Library	Cambridge University Library	Bodleian Libraries	ETH Bibliothek	ICL Library Services	UCL Library Services	University of Toronto Libraries
1. Research Support Link	X	X	X	X	X	-	-	X	X	X
2. SDI	X	-	X	X	-	-	-	-	-	-
3. Advanced Reference Services	X	X	X	X	X	X	-	X	-	X
4. Research Support Training	X	-	X	X	-	X	X	X	X	X
5. Self-Training Guides	X	X	X	X	X	X	-	X	X	X
6. Scientific Writing Support	-	-	X	X	X	-	-	-	-	-
7. Repository Management	X	X	X	X	X	X	X	X	X	X
8. Open Access Support	X	X	X	X	X	X	X	X	X	X
9. Information Evaluation	-	-	-	-	X	-	-	-	-	-
10. Intellectual Property Support	X	X	X	X	X	X	X	X	X	X
11. Special Documents Support	X	-	-	-	X	-	-	-	X	-
12. Research Data Support	X	X	X	-	X	X	X	X	X	X
13. Embedded Librarian	-	-	-	-	-	-	-	-	-	-
14. Bibliographic/Content Management	X	X	X	X	X	X	X	X	X	X
15. Research Metrics	X	X	X	X	X	X	-	X	X	X
16. Social Networks Profiles	-	X	-	-	X	X	-	X	-	-
17. Researcher Identification	X	X	X	X	X	X	X	X	X	X
18. Institutional Cooperation	-	-	-	-	X	X	-	X	X	-

Table 1: Research Support Services by Library

1. Is there any link “research support” or “research services” clearly identified in library website? Almost all libraries (exceptions of Bodleian Libraries and ETH Bibliothek) have a link in the website grouping the totality (or most) of the research support services. This area is designated as research support or research services. More than half of them have it as a top link, facilitating the access. Some libraries have the research support services as second or third level menu items, inside a faculty or staff area (University of Toronto Libraries, Caltech Library, UCL Library Services).

2. Is there any alert service, RSS or selective dissemination of information? The selective dissemination of information, historically very present at research libraries, almost disappears. Only MIT Libraries present a service of email alerts and RSS, under the topic help for being more efficient. Also Stanford University Libraries and Caltech Library present an alert service.

3. Is there advanced reference services (including subject librarians or liaison librarian)? The research support is mostly provided by subject librarians and more advanced requests are recommended to be personally provided with individual appointments. All libraries publish lists of specialists for the multiple subjects, frequently using the training sessions or workshops as means to present them to researchers.

At University of Toronto Libraries there are subject reference and liaison librarians. These professionals have a wide range of tasks, including research consultations for faculty, or curriculum related instruction. Similar lists are presented at Caltech Library. The MIT Libraries use the expert librarian role, emphasizing the support not only to different subjects but also to different types of documents as thesis and maps, publication areas as copyright or even emergent research areas as digital humanities, history of MIT or MIT at popular culture. At Bodleian Libraries also exist the services, not presented as general but as a punctual service. There is a large list of subject librarians, but with a more traditional approach of experts on specific subjects. But the dimension of the list and specialization level deserve a special reference. Meet you librarian is the formula used at ICL Library Services and the specialization is by departments. It’s possible to conclude that the profile of specialized or expert librarian as the availability of advanced reference services are significant tendencies directly connected to the excellence of research.

The screenshot shows the MIT Libraries website navigation bar with links for Search, Hours & locations, Borrow & request, Research support, and About us. Below the navigation bar is the breadcrumb "Home » Research guides & expert librarians". The main heading is "Research guides & expert librarians". The content includes a brief introduction, a "See also" link for "Class & program guides", and a two-column list of topic guides and expert librarians. A sidebar on the right offers options to "Ask us" via chat, email, or phone, and a "Research consultation" option to meet with an expert. A "See also" section with a "Contact us" link is also present.

Topic guide	Expert librarian
Aeronautics & astronautics	Barbara Williams
Anthropology & archaeology	Georgiana McReynolds
APIs for scholarly resources	Mark Clemente
Apps for academics: mobile web sites & apps	Ask Us
Architectural design	Lareese Hall
Architecture & art	Lareese Hall
Architecture & planning in Islamic cultures	Aga Khan Documentation Center: akdc@mit.edu
ASME papers & publications	Angie Locknar
Astronomy & astrophysics	Michael Noga

Figure 1: Expert Librarians List – MIT Libraries
[\(http://libraries.mit.edu/experts/\)](http://libraries.mit.edu/experts/)

4. Library organizes some training orientated to research support? 5. Library offers some resources to self-training?

Most libraries provide support to the community using: FAQs for quick reference, usually developed starting at the questions from library users; training sessions, usually introductory to research and centered on demonstrations of tools; guides for self-orientation, mostly introductory to research, as citation and plagiarism, bibliographic management tools, copyright and open access, ORCID and author identification; and subject librarians.

Some libraries (Bodleian Library, MIT Libraries, Stanford University Libraries, ETH Bibliothek, University of Toronto Libraries) promote workshops or seminars, usually inviting people from outside the library (from publishers or researchers), around topics relevant to research: data management, open access or methods and tools for scientific writing and even ethics on research or personal data in research. At the Bodleian Library is also possible to find training sessions around complementary needs usually not related to libraries, as manipulating images with GIMP. Topics as research data management, open access and bibliometrics frequently have specific areas in the library website (UCL Library Services) or point the researchers to other services in the university (ICL Library Services). These areas or services congregate the information about these specific topics.

Some libraries have developed training plans oriented to junior researchers: UCL Library Services have developed WISE (online training in information skills, supported by Moodle); ICL Library Services with the Graduate School have sessions on academic writing, literature review and note taking; and Caltech Library presents the Author Carpentry Initiative.

6. Library offers help to prepare scientific publications?

Most of libraries do not provide support and training related to preparation of scientific publication more than on standards of citations and references. The MIT Libraries developed the Getting Published: Tools and Help guide, with a very extensive set of services and resources to support the different aspects of scientific publication, including information on financing the publication, auto-publishing and copyright. Caltech Library also presents a comprehensive list of linguistic resources and word usage in scientific writing. At Cambridge University Library is especially significant the importance given to the preparation of scientific publication, with The Office of Scholarship Communication by the Library and the Research Office, that developed an Author Tool to support all process.

7. Is the institutional repository managed in/by library?

The open access movement is deeply rooted at universities, with clear definitions of open access policies in all institutions analyzed. The institutional repository is available at all institutions, managed by the library itself (Stanford University Libraries, Caltech Library, Bodleian Libraries, ETH Bibliothek, and University of Toronto Libraries) or in collaboration with other university services (Harvard Library, MIT Libraries, Cambridge University Library, ICL Library Services).

8. Library offers information or advice about open access publication?

All libraries provide more information, advice and support on open access than only the management of the institutional repository. The UCL Library Services deserve a special reference for the comprehensiveness of the information available and the connection to UCL Press, recommending the publication of open access books. The Office for Scholarly Communication at Harvard Library have a deep involvement in the definition of the institutional open access policies, managing not only the institutional repository but also a fund to reimburse processing fees for articles published and the Copyright Advisory Program. The Oxford Open Access project is a collaborative project involving Research Services, the Bodleian Libraries, IT Services, the Planning and Resource Allocation Section, OUP and the Academic Divisions, coordinated by the Research Committee.

9. Is there any support about information evaluation?

Support on the evaluation of information is not a general service for all libraries, being the area included in sessions and guides complementary to other topics. Only the Cambridge University Library developed a checklist for the evaluation of the credibility of scientific journals. Some libraries, as the case of MIT Libraries, point to the individual support of subject librarians to advice in journal evaluation.

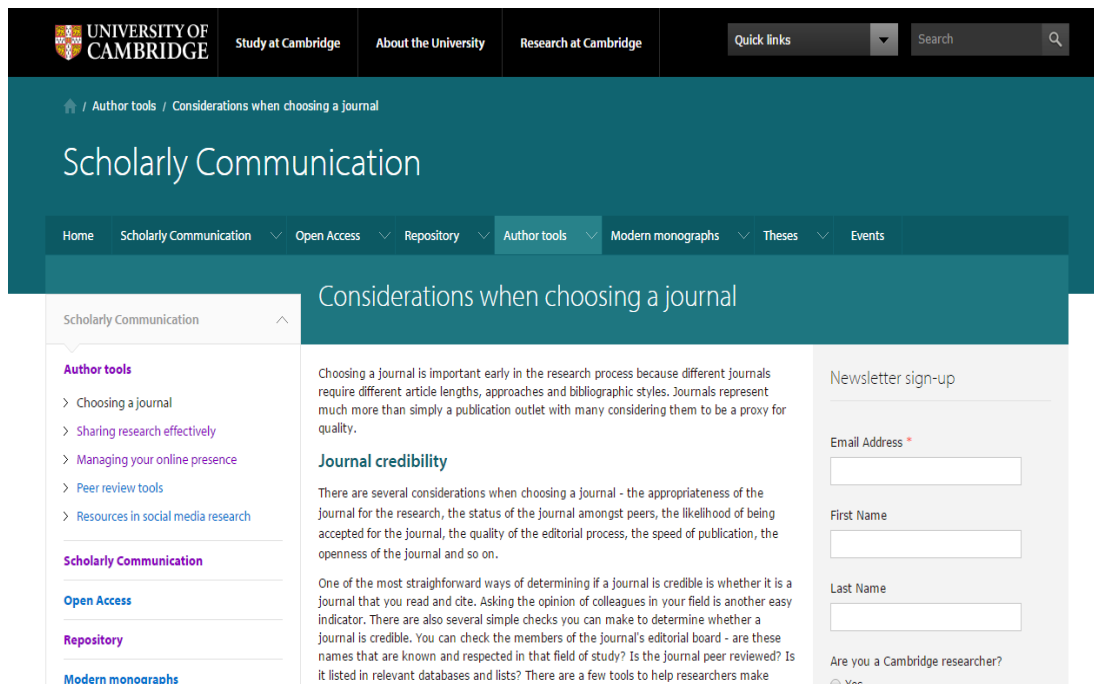


Figure 2: Office of Scholarly Communication – Cambridge University Library
[\(http://osc.cam.ac.uk/\)](http://osc.cam.ac.uk/)

10. Is there any information and advice about copyright, intellectual and industrial rights, creative commons?

Almost all libraries provide information on copyright and intellectual property. Not so present is the information on industrial rights. The most common support consists on FAQs or general information not oriented to researchers (Bodleian Libraries and Stanford University Libraries are examples). The MIT Libraries adopt an integrated view to the issues of publication joining Open Access y Copyright & Publishing under the same umbrella of Scholarly Publishing. The Harvard Library goes further more with the creation of the Office for Scholarly Communication and the Harvard Library Copyright Advisor program, with specific functions trying to develop a culture of shared understanding of copyright in the community by providing information and educational resources about fair use, publishing and licensing, and copyright laws.

11. Library offers information about specific kind of documents (patents, maps and geographical resources, rare books)?

Some libraries websites in the research section present links to different information sources. A special mention to the Cambridge University Library's Special Collections that include the oldest and most valuable materials in the Library, in manuscript, printed and artefact form, as well as modern maps, music and material in the Asian & Near and Middle Eastern collections, providing reproduction and exhibition services for these collections. And to UCL Library Special Collections, one of the foremost university collections of manuscripts, archives and rare books in the UK. The Special & Archival Collections complemented by the Stanford Geospatial Center support any and all GIS use across the entire Stanford community.



Figure 3: Special & archival collections reference – Stanford University Libraries (<http://library.stanford.edu/research/special-archival-collections-reference>)

12. Is there any research data management support?

The concern with research data management is one of the most constants in the analyzed libraries websites. The large majority provide information on the use of specific software, advocate on the importance of open data sharing and provide support on the creation of DMPs (data management plans). Examples are the Harvard Library, the MIT Libraries and the Stanford University Libraries. The Cambridge University Library has a link under the Research Support section, but the research data management is organically independent of the library. The Bodleian Libraries provide training in research data management and participate in the Research Data Oxford team, with e-Research Centre, IT Services, and Research Services. At ICL Library Services the research data management is a global service included in the research services and the ETH Bibliothek provide a Digital Curation service.

13. Is the figure of the embedded librarian present?

Despite the emerging status of the embedded librarian within the support services to research in literature, none of the analyzed libraries presents it. Even general searches at all institution level, considering that the embedded librarian figure could appear incorporated in specific projects, got no results. All libraries present the subject librarian as the appropriate support figure for researchers. It's probable that in the reality the subject librarian is assuming the role of the embedded figure and the difference in roles have no clear delimitation, at least in the web description of services.

14. Is there any section on reference management tools? Library offers advice and tools for personal content management?

All analyzed libraries provide support to reference management tools, being EndNote, Mendeley and Zotero the most used. Support to RefWorks is also available in most of these libraries. Some libraries (ICL Library Services, ETH Bibliothek) also provide support on using the BibTex format. Other tools like WizFolio (University of Toronto Libraries) and Citavi (ETH Bibliothek) are also referenced.

Some libraries emphasize the functionalities of the reference management tools as personal content management and collaboration tools. None training session on personal content management has been identified, but some guides with lists of tools (Harvard Library), on auto-organization, note taking, storage and sharing of files (MIT Libraries) and on structuring of personal information (Stanford University Libraries) complement the simple reference management functions. The ETH Bibliothek refers the Mendeley institutional subscription allowing

the use of more resources for storage and collaboration and Stanford University Libraries refer Box and Google Drive as institutional tools for collaboration.

15. Is there any information or advice about research metrics (impact factor, h-index, etc. and altmetrics tools)?

All institutions provide support on research metrics, both traditional and new, with guides, training sessions and workshops. More advanced use of these metrics is provided individually by subject librarians, but introductory support is available at analyzed institutions. UCL Libraries Services have a special area in the website for bibliometrics with very comprehensive information and library is participating (probably leading) the process of defining an institutional policy for research assessment and benchmarking.

16. Library offers help to create user profiles in academic social networks, distribution lists, promotion of researchers?

The management of the online presence of researchers and the Web 2.0 tools for individual promotion is not often supported by libraries. Some libraries have training on using the Web for keeping updated (UCL Libraries Service). Google Scholar and ResearchGate are the most common tools referred for sharing publications online. The comprehensiveness of the information on online tools presented by Cambridge University Libraries (as a component for Author Tools from the Office of Scientific Communication) deserves a special reference, including a list of tools for online presence and tools to capture social media data. As part of the Graduate School, the ICL Library Services has a program for researchers on building the online presence.

17. Library offers advice to name normalization/identity/persistent identifier?

ORCID has become the standard for author identification. All libraries refer it, provide guides on ORCID registration and training sessions on tracking own publications using ORCID. Some libraries also developed guides on other author identification tools (Harvard Library, MIT Libraries), being ResearcherID (ISI/Thomson) the most commonly referred. Only at University of Toronto Libraries has been identified a reference to ISNI (International Standard Name Identification - ISO).

The screenshot shows the University of Toronto Libraries website. The header includes the university logo and navigation icons for Research, Services, Visit, About, Ask, U of T, My account, and Search. The breadcrumb trail reads: U of T Libraries / Research guides / Research Impact / Managing Researcher Identity. The main heading is 'Research Impact' with a search bar. A left sidebar lists: Home, Citation Analysis, Altmetrics, Managing Researcher Identity (highlighted), Name Ambiguity, ORCID, Other resources, and Resources. The 'Name Ambiguity' section contains text about global research growth and a list of tools. The 'ORCID' section contains text about stakeholder collaboration and the ORCID logo.

Figure 4: Research Impact – University of Toronto Libraries
(<http://guides.library.utoronto.ca/researchimpact/>)

18. Is there evidences about relationship among library research services and other services supporting research in the university?

Relationships among libraries and other research support services in the institution are common, being the links to the institutional repository always present (when it's not managed by library). The most frequent relation is with research offices (Cambridge University Library, ICL Library Services), platforms that congregate support from different services in the university to present a complete offer to the researcher. The Bodleian Libraries with other services from the Oxford University have developed the Open Access and the Research Data Management offices to support the complete set of researchers needs in those areas. The UCL Library Services strongly

cooperate with the UCL Press combining support, as is the case of open access advocacy, presenting links between both websites. In some cases the relation is so close that the presentation format of the content suggests it might be a library service, as is the case of the Writing and Communication Center at MIT.

4. Conclusion

It's possible to verify a concern in grouping the research support services under a specific area in the library website homepage. Sometimes these services are presented in a faculty profile, which is a limitation, as restricts research to this user category.

The delimitation of research support services is not clear, as libraries have to support competences that are not exclusive to research in different contexts. That results in dispersion and inconsistency in the organization of the services under the research support umbrella (which could be improved in almost all institutions).

At the analyzed institutions the research support include a wide range of diverse services, covering the different phases of scientific communication. It's possible to identify a great interaction with the researcher and a tendency to the personalization of the services. The general services (training, workshops) reveal a more introductory approach and more advanced needs are supported individually by specialist/subject librarians.

The most developed areas are Open Access and Research Data, frequently with special websites components dedicated to these subjects.

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