Research Trends

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Using data to drive performance

Research Trends Editorial Board

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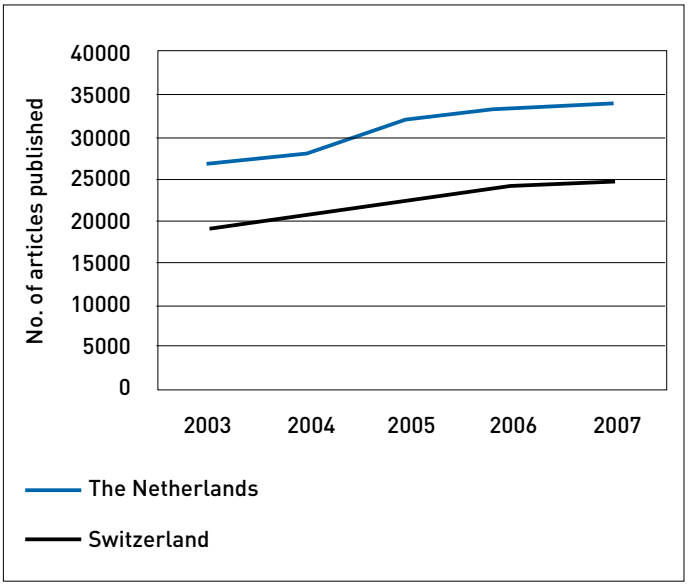
overall increase of the other countries listed demonstrates the strong performance of the research in their institutions.

Two Indian universities, the Indian Institute of Technology in Delhi and in Bombay, have experienced the greatest increase in ranking – an astonishing 248 places – which is testament to the continued development of research in India.

The two countries following India, the Netherlands and Switzerland have also shown impressive results in the 2008 rankings, with substantial increases in their institutions' positions. Analysis of these two countries in Scopus shows a very similar growth in published articles, as illustrated in Figure 1.



The impact of individual institutions

So what is behind these countries' increase in rankings? When we analyze the data on a national level, it appears that individual institutions can make a huge impact on the ranking of their home country.

In the Netherlands, the VU University Amsterdam attained a rise of 149 positions in rank – an impressive achievement that makes a positive impact on the overall ranking for the Netherlands. In Switzerland, the Ecole Polytechnique Fédérale de Lausanne and the University of Lausanne each rose by 67 and 56 net changes respectively. Together, these rankings make a strong contribution to Switzerland's overall change in rank.

This suggests that national improvements in ranking may be at least partially the result of individual universities taking a more strategic approach: targeting international publications, aided by bibliometric tools and building and promoting library collections.

This is not surprising – research institutes the world over are coming to realize that a dedicated effort towards improving strategy can bring significant improvements to the institution. In fact, using bibliometric and other input data to better understand strengths and weaknesses is helping universities compete more successfully against their peers, resulting in impressive improvements for those who are successful.

Figure 1 (left) - Publication output (articles and reviews) of the Netherlands and Switzerland, 2003-2007.

Expert opinion

Using data to drive performance

Daniel Calto

Grants are the lifeblood of all research universities in the United States. Grants support research and defray some of the many indirect research costs across the institute. Yet identifying, applying for and winning funding is becoming increasingly challenging. Research administrators are facing numerous obstacles, including competition for grants, growing compliance requirements – especially in biomedical research – and funding international collaborations.

Daniel Calto recently joined Elsevier and, prior to that, was Director of Research Strategy and Senior Director of Research Administration at Columbia University in New York, where he was using grants data to drive improvements in research revenue.

To help research administrators manage this increasing complexity while still being able to respond accurately and rapidly to funding opportunities, Calto worked on benchmarking,

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identifying historical trends and increasing institutional ranking among peers.

Gathering the data

"Benchmarking in the US has not relied heavily on bibliometrics, although we did start using bibliometric tools to help structure some of our decision-making data, and I expect this approach to continue," says Calto.

"Beyond simple benchmarking, we did deeper investigations, such as SWOT analyses. At Columbia, for example, we discovered that we were very strong in applying for training grants, but were lagging behind our peers when it came to funding for large program projects," he explains. SWOT information and similar analytical interpretations are key to what grant administrators and research institute senior management need in order to pursue better strategies.

As there is no central funding database in the United States, Calto had to gather data from the country's two biggest funding sources – the National Institute of Health (NIH) and the National Science Foundation (NSF) – as well as from the many smaller societies and foundations that make funding available.

Calto believes that while he had a lot of success and offered his institution's administrators some insight into performance, there is still much to do. "Comprehensive data is our greatest challenge. Fragmented, non-standard data is really the Achilles' heel for many research institutes. For instance, each funding body uses different cataloguing systems, some use annual data, others not.

"And with globalization, we are also dealing with radically different funding systems – the way research is funded in the US is not the same as in other parts of the world," he adds.

Making indicators work for you

According to Calto, to interpret any data correctly, it is essential to bring in the qualitative context. This involves conversations with scientists and funding agencies, and a good general knowledge of the research market.

"I like bibliometric and funding data because they are fair and objective ways to rank people, departments and institutes. However, databases are never complete and they must be interpreted carefully. Most department chairs also take into account the importance of originality and innovative research, even though they might not fit into standard metrics," he explains.

Calto recently joined Elsevier as Director of Product Management for Performance and Planning in the Academic and Government Products Group, where he is now working to develop the very tools that he would have appreciated when he was at Columbia.

> "Fragmented, non-standard data is really the Achilles' heel for many research institutes."

"It's possible to do some very good analyses using bibliometric databases, but for the really detailed information, research institutes now have to allocate resources, such as people and time. This is why dedicated tools that allow senior management to see research performance at a glance are so critical," he explains.

With access to good data and the tools necessary to carry out efficient analysis, research institutes can ensure that they are applying for the right funding at the right time, with as little internal stress possible. Eventually, this approach will optimize results and reduce missed opportunities.

Useful links

National Institutes of Health
National Science Foundation

Why did you cite...?

...a Nobel Laureate?

There are many reasons why authors cite other authors. Often, citations are motivated by the wish to acknowledge the influences of colleagues. Yet this is clearly not the full picture. An alternative view is that people tend to cite within their social network: authors will cite works by authors they have interpersonal connections with *(1)*.

We have previously discussed how winning a Nobel Prize can affect citations. In Did you know?, we note that 2008 Nobel Laureate in Chemistry, Roger Tsien, has received 38,989 citations*. But, is this because of his large interpersonal network or the influence that his work has had on other researchers?

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