THE WORLD'S MOST INNOVATIVE UNIVERSITIES

BY EMMANUEL THIVEAUD

INSTITUTION & GOVERNMENT RESEARCH

Rank	Nation	Institutions
1	USA	50
2	Japan	9
3	France	8
4	South Korea	8
5	Germany	6
6	England	5
7	Switzerland	3
8	Belgium	2
9	Canada	2
10	Israel	2
11	Netherlands	2
12	China	1
13	Denmark	1
14	Singapore	1

TABLE 1: *Countries Comprising the Reuters Top 100 Most Innovative Universities*

Rank	University	Country
1	Stanford University	USA
2	Massachusetts Institute of Technology (MIT)	USA
3	Harvard University	USA
4	University of Washington	USA
5	University of Michigan System	USA
6	Northwestern University	USA
7	University of Texas System	USA
8	University of Wisconsin System	USA
9	University of Pennsylvania	USA
10	Korea Advanced Institute of Science & Technology (KAIST)	South Korea
11	Imperial College London	England
12	Pohang University of Science & Technology (POSTECH)	South Korea
13	University of California System	USA
14	University of Southern California	USA

15	University of North Carolina, Chapel Hill	USA
16	KU Leuven	Belgium
17	Duke University	USA
18	Osaka University	Japan
19	Johns Hopkins University	USA
20	California Institute of Technology	USA
21	University of Illinois System	USA
22	Kyoto University	Japan
23	Georgia Institute of Technology	USA
24	University of Tokyo	Japan
25	University of Cambridge	England

TABLE 2: *Reuters Top 25: The World's Most Innovative Universities*
(Source: Thomson Reuters InCites and Derwent World Patents Index)

Announcing the Reuters Top 100 powered by IP & Science data and analytics

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Innovation is the lifeblood of the global economy. It is what drives the advancement of better technologies, improved medicine, streamlined services and most new products and solutions.

Historically, innovation has been associated with the corporate realm: large organizations that invest millions or billions in R&D to keep pace with consumer demand for new widgets and shorter product or drug lifecycles.

However, with the increased acceptance of open innovation and realization you can innovate by collaborating with different stakeholders, university involvement in innovation has also increased. In fact, the academic and corporate worlds form two parts of a symbiotic whole, with the former exceling in the research and discovery phase and the latter in commercialization. Nuzzled neatly between these two is another critical stage of the lifecycle of innovation: protection, which is achieved equally by either party.

It is with this background that Reuters set out to launch its novel, first-annual Reuters Top 100 (http://www.reuters.com/article/2015/09/15/idUSL1N11K16Q20150915). This is an objective ranking of the world's most innovative universities based on a series of proprietary patent and scientific-literature-based metrics.

You might be surprised to learn that of the 100 most innovative universities around the world, half of them hail from the U.S. The remaining 50 are sprinkled around the globe, with the next largest group coming from Europe, then Asia and then a few other countries. Table 1 shows a breakout of the countries comprising the Reuters Top 100.

Measuring Academic Innovation

Reuters developed its one-of-a-kind methodology for measuring innovation by following the trail of data left by the universities. It tracked the papers published by university researchers and studied the documentation universities harness to protect research-based innovations via patent applications.

Analysis of scholarly literature and patent data resulted in the first-ever Reuters Top 100: The World's Most Innovative Universities (http://reuters.com/most-innovative-universities), a ranking based on a quantified assessment of university collaboration with industry and levels of activity, success and influence in patenting.

For a sense of the list, Table 2 showcases the top 25 most innovative universities. The full list and other valuable data can be accessed on Reuters.com (http://www.reuters.com/innovation).

The Reuters Top 100: Using Papers and Patents

This ranking reflects papers indexed in Thomson Reuters Web of Science between 2008 and 2013, with citations tallied as of July 2015. [A university is credited with a paper if at least one of its affiliated researchers is listed among the authors on the paper. And all the listed institutions in a given paper receive equal publication and citation credit.]

Thomson Reuters analysts utilized InCites™ (http://researchanalytics.thomsonreuters.com/incites/), a component of the Web of Science, to identify the institutions globally (excluding corporations and hospitals) whose researchers published the greatest numbers of papers. The next step was to ascertain the total number of patents associated with each institution, via the Derwent Innovations Index (http://thomsonreuters.com/en/products-services/scholarly-scientific-research/scholarly-search-and-discovery/derwent-innovations-index.html). In addition to general patent volume, other measures included "Patent Success," the ratio of patents granted by patent offices; and "Global Patents," the ratio of patents in which applications were filed with the U.S., European and Japanese patents offices (an expensive and laborious process, indicating substantial belief in the commercial potential of an idea).

Analysts also examined various indicators that enumerate how frequently and extensively an organization's patents have been cited by other patents, as well as cited by scientific papers—in other words, measurements of a patent's broader impact.

Scrutiny also fell on the organizations' published research papers. Specifically, papers that included coauthors from at least one industrial or commercial organization (as opposed to academia) were tallied, serving as indicators of close collaboration with industry. The citation records of the papers were also examined, to quantify how frequently they were cited by other papers whose authors listed industry affiliations. This, too, denotes commercial influence beyond the academic sphere.

Ultimately, these measures were combined into a series of scores based on the rank order by which the institutions performed to arrive at the top 100 most innovative universities in the world.

U.S. Leads in Academic Innovation

Of the worldwide institutions evaluated, none surpassed Stanford University in measurable innovation and technology transfer. Close behind are MIT and seven other U.S. universities, taking nine of the top 10 spots. U.S. institutions, in fact, account for 17 of the top 25.

U.S.-based universities account for 50% of the Top 100. Japan is next, with 9%, followed by France and South Korea with 8% each, and Germany with 6%.

South Korea makes a good showing, with two institutions in the top 15. One of these, Pohang University of Science & Technology, registers strongly despite one of the smaller paper totals among the Top 100, with roughly 8,300 Web of Science-indexed reports. The smallest paper output of all, as it happens, was from another South Korean university, Gwangju Institute of Science & Technology (ranked #86), with just under 4,000 papers. Both South-Korean institutions are making the most of their research efforts.

China Underrepresented – For Now

In all, the measurements tracked for the Reuters Top 100 Most Innovative Universities paint a picture of North American and Western European preeminence, with solid showings by a few Asia Pacific nations. Notably underrepresented at present is China, which contributes only one institution, Tsinghua University, at #72.

Despite China's recent surge in patenting activity, the nation is still lagging in international filings. Data collected for the Reuters Top 100 confirms that China is still sharpening its efforts in technology transfer on a global scale. The nation, however, is certain to progress rapidly on this front, and the next compilation of this Top 100 will likely tell a different story.

Rankings around the World

The Reuters inaugural ranking is in exceptional company. The IP & Science business also powers rankings for these other leading partners: Shanghai Jiao Tong University's (http://www.shanghairanking.com/) esteemed Academic Ranking of World Universities; *U.S. News & World Report's* (http://www.usnews.com/education/best-global-universities/rankings?int=9cf408) Best Global University Rankings; CWTS for its Leiden Ranking (http://www.leidenranking.com); U-Multirank (http://www.u-multirank.eu) for its European Commission Funded Consortia; Rankings I-UGR (http://dicits.ugr.es/rankinguniversidades) – Universidad de Granada, Spain; URAP for the Middle East Technical University in Turkey (http://www.metu.edu.tr); Russia's Round University Research Group's (http://roundranking.com) Round University Ranking (RUR); and, last but certainly not least, the National Taiwan University Rankings (http://nturanking.lis.ntu.edu.tw).

Similar data and analytics are used by many evaluation and policy groups around the world as well. Japan's National Institute of Science and Technology Policy (NISTEP) and the Institute of Scientific and Technical Information of China (ISTIC) are two such examples of governments using IP & Science data to determine the impact of the nation's scientific and technological efforts.

Dr. Ying Cheng, executive director for the Center for World-Class Universities at Shanghai Jiao Tong University, said: "It is an honor to work with Thomson Reuters and make use of its carefully processed list of the world's most highly cited researchers. We take great pride in our Academic Ranking of World Universities and the value it provides the market. Partnering with Thomson Reuters to ensure the highest quality data is a key feature of our ranking."

Thomson Reuters IP & Science is honored to work with such established news organizations and partners to power their rankings. From Reuters to *U.S. News* and the others, these rankings are evidence of the trusted, high-quality data and analytics the organization provides, and which are used by governments, administration, faculty, students and many others as they make education and funding decisions.

"An increasing number of students enroll in universities outside their own country," said Robert Morse, chief data strategist of *U.S. News*. "We wanted to use our 30 years of experience in academic rankings to develop a resource that helps these students easily research and compare schools across the world. By working with Thomson Reuters, we can evaluate schools worldwide."

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