Academia's Obsession with Universities Ranking - <u>Part 1:</u> Profile of CWTS Leiden Ranking & Ranking Result 2020

In contemporary academia, just a thin minority of people are unaware of university rankings. They still measure a university's ability, to attract talent and produce new knowledge, using the number of publications or citations to determine research quality.

Nevertheless, the university rankings trace back to 1983 when The *US News and World Report* (USNWR) began providing information about US universities. Since then, national rankings have been created in over 40 countries. The trend has been established with growing number of national and specialist versions of rankings coming up, ranging from those done by such publications as *US News and World Report* in the United States, *Macleans* in Canada, *Der Spiegel* in Germany, the *Asahi Shimbun* in Japan, to Global MBA Rankings from the *Financial Times, National Ranking Framework in India* and the GreenMetric World University Ranking from Indonesia. Saudi Arabia's national ranking is on the list.

Global rankings may be more recent but they have become more influential; the Shanghai Jiao Tong *Academic Ranking of World Universities* (ARWU) began in 2003, followed by *Webometrics* and Times Higher Education QS *World University Ranking* (THE–QS) in 2004, the Taiwan *Performance Ranking of Scientific Papers for Research Universities* in 2007, and *USNWR's World's Best Colleges and Universities* in 2008 (which uses Times-QS data). The U-Multirank, developed by the European Union, uses a broader set of indicators, but has struggled to gain wide acceptance, while others, such as the Leiden Ranking, are more narrowly focused on scope and coverage.

Today I would like to discuss about CWTS Leiden Ranking, which is publishing ranking results since 2007,it is an annual global university ranking based exclusively on bibliometric (that is the use of statistical methods to analyze books, articles and other publications) indicators. The rankings are compiled by the Centre for Science and Technology Studies (Dutch: *Centrum voor Wetenschap en Technologische Studies*, CWTS) at Leiden University in the Netherlands. The Clarivate Analytics bibliographic database and Web of Science is been used as the source of the publication and citation data.

The Web of Science database consists of a number of citation indices. The Leiden Ranking uses data from the Science Citation Index Expanded, the Social Sciences Citation Index, and the Arts &

Humanities Citation Index. The Leiden Ranking does not take into account conference proceedings publications and book publications.

Then, CWTS enriches Web of Science data in several ways. First, CWTS performs its own citation matching (i.e., matching of cited references to the publications they refer to). Furthermore, in order to calculate the various indicators included in the Leiden Ranking, CWTS identifies publications by industrial organizations in Web of Science, CWTS performs geocoding of the addresses listed in publications, CWTS assigns open access labels (gold, hybrid, bronze, green) to publications, and CWTS disambiguates authors and attempts to determine their gender. Most importantly, CWTS puts a lot of effort in assigning publications to universities in a consistent and accurate way. This is by no means a trivial issue. Universities may be referred to using many different name variants, and the definition and delimitation of universities is not obvious at all.

The Leiden Ranking ranks universities worldwide by number of academic publications according to the volume and citation impact of the publications at those institutions. The ranking takes into account the English language, discipline and institutional size. In addition to citation impact, the Leiden Ranking also ranks universities by scientific impact indicators, scientific collaboration, including collaboration with other institutions and collaboration with an industry partner, open access publication indicators, and gender diversity indicators.

Selection of universities for 2020 Ranking

The Leiden Ranking 2020 includes 1176 universities from 65 different countries. These are all universities worldwide that have produced at least 800 Web of Science indexed publications in the period 2015–2018. Only so-called core publications are counted, which are publications in international scientific journals. Also, only research articles and review articles are taken into account. Other types of publications are not considered. Furthermore, collaborative publications are counted fractionally. For instance, if a publication includes five authors of which two belong to a particular university, the publication is counted with a weight of 2 / 5 = 0.4 for that university.

Same as, Webometric or UniRank Ranking, it is important to note that universities do not need to apply to be included in the Leiden Ranking also. The universities included in the Leiden Ranking are selected by CWTS according to the procedure described above. Universities do not need to provide any input by themselves.

Methodology

The CWTS Leiden Ranking 2020 offers a sophisticated set of bibliometric indicators that provide statistics at the level of universities on

1. scientific impact,
2. collaboration,
3. open access publishing, and
4. gender diversity

The indicators available in the Leiden Ranking are discussed in detail
https://www.leidenranking.com/information/indicators

Data quality limitations

The assignment of publications to universities is not free of errors, and it is important to emphasize that in general universities do not verify and approve the results of the Leiden Ranking data collection methodology. Two types of errors are possible. On the one hand, there may be false positives, which are publications that have been assigned to a university when in fact they do not belong to the university. On the other hand, there may be false negatives, which are publications that have not been assigned to a university when in fact they do belong to the university. The data collection methodology of the Leiden Ranking can be expected to yield substantially more false negatives than false positives. In practice, it turns out to be infeasible to manually check all addresses occurring in Web of Science. Because of this, many of the 5% least frequently occurring addresses in Web of Science have not been manually checked. This can be considered a reasonable upper bound for errors, since most likely many of these addresses do not belong to universities.

Figure #1: Top 10 Universities World-Wide (2020)

In 2020 CWTS Ranking, the Top 10 universities (see figure 1) world-wide based on Scientific Impact are mostly dominated by China with 4 Universities followed by three universities of USA, then Canada, Brazil and South Korea one each published by CWTS Leiden Ranking Universities of 2020.

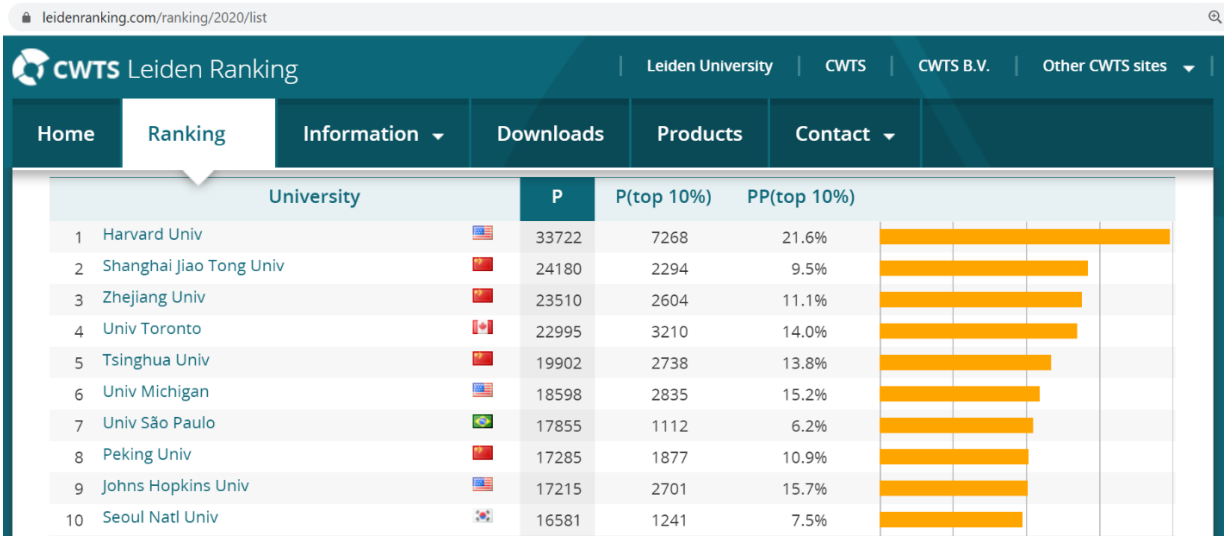
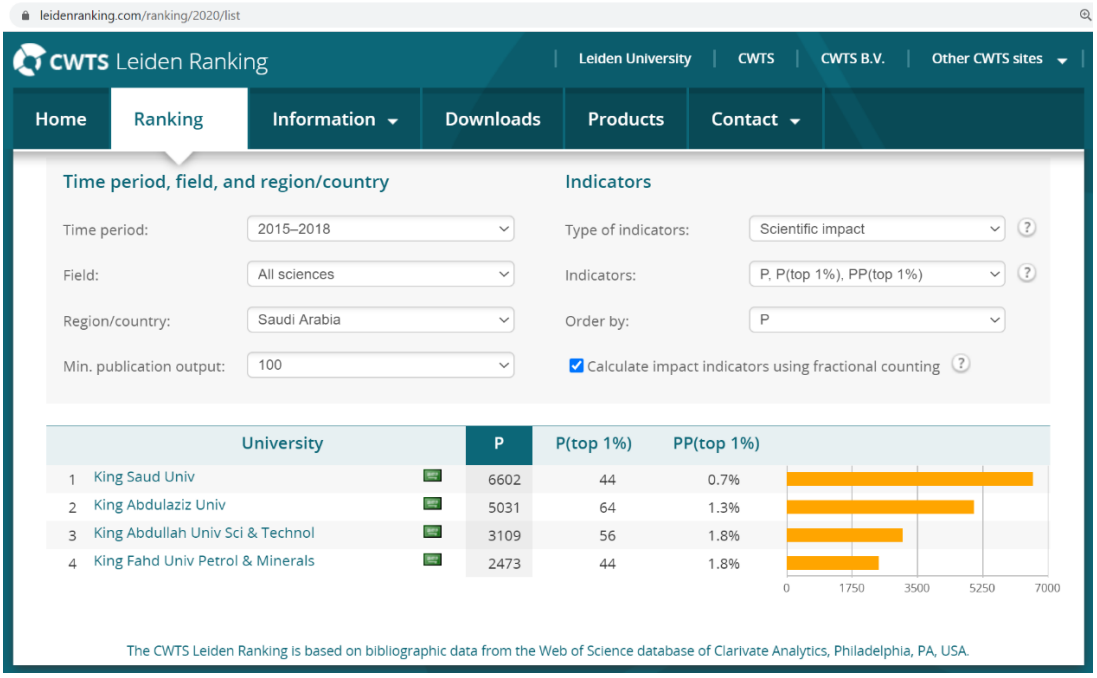


Figure #2: Top Saudi Universities qualified for CWTS Leiden Ranking 2020

The top Saudi Universities able to qualify for CWTS Leiden Ranking 2020 are mentioned below, with King Saud University top the tally with maximum publication of 6,602 followed by King Abdulaziz, King Abdullah University of Science & Technology (KAUST), and KFUPM. As mentioned, CWTS extract data from WOS, & doesn't accept data from universities, thus, IAU has to wait for 2021 (WOS data would be extracted from 2016-2019 for IAU) for which IAU has better chances to be featured in CWTS Leiden ranking 2021 for which we are committed.



P= No. of publications of a university during 2015-2018. Collaborative publications are counted fractionally.

P (top 1%) = Number of top 1% publications: Number of publications of a university belonging to the top 1% of their field.

PP (top 1%) = Proportion of top 1% publications: Proportion of the publications of a university belonging to the top 1% of their field.

Reference: leidenranking.com/ranking/2020/list