Case Study 5: University Rankings (Performance Measurement)

University rankings are becoming increasingly influential. They are particularly popular with the media and the public. However, the universities themselves also appreciate these rankings, especially if they are doing well, and use their rank as a marketing tool to strengthen their reputation. Not only potential students and employees, but also scientists, politicians, and other stakeholders are guided by university rankings in their assessment of educational institutions. The creators of these global rankings are usually media or educational institutions, which update and publish them annually.

Two rankings have gained international recognition in recent years:

1. the *QS World University Rankings*, which were first published by Quacquarelli Symonds (QS) together with Times Higher Education in 2004 and have been an independent ranking since 2009, and
2. the Academic Ranking of World Universities (ARWU) (*Shanghai Ranking*), which has been conducted by Jiao Tong University since 2003.

This case study is based on published information and documents on the websites of the rankings addressed.

QS World University Rankings

The QS World University Rankings are based on qualitative and quantitative indicators in five areas. The selection of indicators and their weighting were slightly adjusted after the first implementation of the ranking. The evaluation criteria are set out below:

- Academic reputation
- Employer reputation
- Faculty/Student ratio
- Citations per faculty member
- International faculty ratio/International student ratio

This evaluation has resulted in a worldwide ranking of over 1,000 universities. Table 1 gives details of the evaluation criteria and shows how they are measured and weighted. Table 2 shows the results of the top five universities in the QS World University Ranking of 2020.

Table 1: Criteria, Indicators, and Weighting in the QS World University Rankings

Criteria	Indicators	Weighting 2020
Academic reputation	Based on an academic survey, the expert opinions of over 94,000 individuals in the higher education space are collated regarding teaching and research quality at the world's universities	40%
Employer reputation	It is assessed how successful institutions are at providing preparation for the employment market. This metric	10%

	is based on almost 45,000 responses to a QS Employer Survey.		
Faculty/Student Ratio	The teacher/student ratio is used as a proxy metric for teaching quality. It assesses the extent to which institutions are able to provide students with meaningful access to lecturers and tutors.	20%	
Citations per faculty	The number of citations per faculty member is used to measure institutional research quality. It is calculated using the total number of citations received by all papers produced by an institution across a five-year period divided by the number of faculty members at that institution. Citations are 'normalized', taking into account that different research fields have very different publishing cultures.	20%	
International faculty ratio/International student ratio	A highly international university demonstrating an ability to attract faculty and students from across the world is, in turn, assumed to possess a strong international brand.	5% each	

Table 2: Results of QS World University Rankings 2014/15 and 2020 (Top 5)

Rank 2020	Rank 2014/15	Institution	Country	Citation	International students	International faculty	Faculty/student	Employer reputation	Academic reputation	Overall score
1	1	Massachusetts Institute of Technology (MIT)	USA	99.8	94.1	100	100	100	100	100
2	7	Stanford University	USA	98.6	67.7	99.8	100	100	100	98.4
3	4	Harvard University	USA	99.6	62.2	86.3	98.7	100	100	97.4
4	5	University of Oxford	UK	84.7	98.5	99.7	100	100	100	97.2
5	8	California Institute of Technology (Caltech)	USA	100	87.3	99.4	100	81.2	97.8	96.9

Shanghai Ranking

The Shanghai Ranking evaluates more than 1,000 universities and publishes the top 500. Its analysis of universities is compared and evaluated based on six quantitative indicators, with a focus on research. Table 3 shows the criteria, indicators, and weighting of the Shanghai Ranking, and Table 4 lists its Top 5 in 2019.

Table 3: Criteria, indicators, codes and weights in the Shanghai ranking 2019

Criteria	Indicator	Code	Weight
Quality of education	Alumni of an institution winning Nobel Prizes and Fields Medals	Alumni	10%
Quality of faculty	Staff of an institution winning Nobel Prizes and Fields Medals	Award	20%
	Highly cited researchers in 21 broad subject categories	HiCi	20%
Research output	Papers published in Nature and Science	N&S	20%
	Total number of papers indexed in Science Citation Index-expanded and Social Science Citation Index	PUB	20%
Per capita performance	Per capita academic performance of an institution, i.e., the weighted scores of the above five indicators divided by the number of full-time equivalent academic staff	PCP	10%

The values for each indicator are weighted and incorporated into the overall rating. The university with the highest total score is assigned a score of 100, and the other institutions are assigned a percentage of the top score.

Table 4: Results of the Shanghai Ranking 2019 (Top 5)

Rank 2019	Rank 2015	Institution	Country	Alumni	Award	HiCi	N&S	PUP	PCP	Total
1	1	Harvard University	USA	100	100	100	100	100	78.2	100
2	2	Stanford University	USA	45.2	88.5	73.3	79.2	76.6	53.8	75.1
3	5	University of Cambridge	UK	80.7	99.8	53.9	58.1	71.9	58.9	72.3
4	3	Massachusetts Institute of Technology (MIT)	USA	72.0	83.6	49.2	69.4	65.2	68.1	69.0
5	4	University of California, Berkeley	USA	67.1	78.4	58.7	68.5	64.7	57.1	67.9

Basic Principles for Better Rankings

In order to account for the complexity of universities, an international expert group was convened in 2004 by the UNESCO European Centre for Higher Education (UNESCO-CEPES[1]) and the Institute for Higher Education Policy in Washington, which has developed a set of minimum standards for school rankings. The Berlin Principles on Ranking of Higher Education Institutions are divided into four areas (only a selection of these principles is presented here):

A. The aim and purpose of the ranking: defined purpose; clear target groups; diversity of institutions; disclose sources of information that are the basis of the ranking; perspectives as well as the historical, cultural, and economic context of the university systems assessed.

B. Design and weighting of indicators: transparency regarding the methodology used for the ranking; select relevant and valid indicators; if possible, measure outcomes instead of inputs; weighting of indicators and keep changes in weighting to a minimum.

C. Procurement and processing of data: take into account good practice recommendations; ranking preparers should be as objective and independent as possible; use verifiable data; use data collected using scientific approach; evaluate rankings; take organizational measurements to enhance the credibility of the ranking (e.g., advisory or supervisory bodies with international participation).

D. Presentation of ranking results: To make consumers understand how a ranking was developed and to take individual preferences into account when presenting the results (instead of an aggregated total value); the occurrence of errors should be reduced; any defects should be corrected and the public should be informed.

Questions about the case

1. As an employee of an educational institution, you have the task of establishing an international university ranking which must be limited to the field of teaching the social sciences (e.g., anthropology, archaeology, business and management, economics, geography, linguistics, communication, political science, psychology, and sociology). The new ranking must comply with the basic principles for university rankings set out in the case text. For the areas of effectiveness and quality, name two useful and valid indicators and justify your selection.

2. Compare the QS World University Rankings with the Shanghai ranking. Do the two rankings produce the same results? If not: Why?

3. What are the risks of performance measurement? Argue with the example of university rankings.

4. If a university is not in the top 100 of a ranking: Identify the various stakeholders who are affected and outline their options for action.

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[1] UNESCO-CEPES Centre was closed in 2011 due to a lack of funding. However, we can still use these principles as guidelines in the framework of this case study.