GÖTEBORGS UNIVERSITET

University Ranking Lists – a directory

Division of Analysis and Evaluation

Report: 2010:03

University of Gothenburg
Division of Analysis and Evaluation
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UNIVERSITY RANKING LISTS - A DIRECTORY

This is a translation of the report *Rankinglistor för universitet – en katalog*. The exclusively Swedish ranking lists have been excluded from this English edition.

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INTRODUCTION

University rankings have been highly publicised in recent years, and the Division for Analysis and Evaluation has been tasked with monitoring this area within the framework of our operating environment analysis. This document provides details of the international lists that are deemed to be of relevance to the University of Gothenburg.

A summary is given of each ranking list, together with the positions of Swedish universities on the list in question. A method score is also assigned to each list, as well as details of how much attention the list attracts; the principles and method behind these assessments are described in the two chapters that follow.

One of the appendices contains a short bibliometric glossary for readers who are interested in, but not familiar with, bibliometric methods.

For those who wish to understand ranking lists as a phenomenon, as well as possible strategies that universities can adopt in relation to the lists, I would recommend (Cavallin & Lindblad 2006). Boulton (2010) provides a useful summary of the criticisms that have been directed at ranking lists.

The ability and will of those who produce the lists to publish information about their respective rankings varies considerably, and it can at times be extremely difficult to find secure data that cover a range and level of detail that is satisfactory. Furthermore, the ranking lists are constantly changing, new lists are added and interest in them fluctuates. This report will therefore be updated as new information about the rankings is made available to us, and according to changes in the rankings field. We invite any readers who are able to contribute information to contact us. That applies both to information that readers feel is missing from the report, as well as information that readers feel is either incorrect or misleading.

RANKING LISTS

Business Week

Interest in the ranking: Considerable
Overall method score: -[1]

The magazine *Business Week* assesses and ranks MBA courses of various kinds, i.e. courses in business administration and management. Five different types of MBA courses are ranked: *EMBA*, *Full-Time MBA, Part-Time MBA, Executive Education* and *Distance*. (They also rank undergraduate business schools, but only for the United States.) The rankings are only described here in outline, since they are limited to MBA-type courses and because they are relatively complex.

Full-Time MBA

Full-time courses, typically two years, for people in employment.[2]

Only MBA courses approved by one of the major accreditation firms are ranked, and additional requirements are set in relation to the programme's age, volume, etc.

Three data sources are used: a student survey, a corporate recruiter survey and published articles (Business Week counts the number of published articles in selected journals.) The surveys contribute 45% each to the final ranking, while the published articles contribute 10%. If the response rate for the surveys is too low, the institution is not ranked.

Part-Time MBA

Part-time evening and weekend courses, for people in employment.[2]

To date, only US-American part-time courses have been ranked, but there are indications that foreign courses may also be considered.

[1] No method score has been assigned, since the ranking is only marginally relevant to the University of Gothenburg.
[2] Description taken from Wikipedia.

Executive Education

Short courses, often customised, for people in employment.[1]

Several (stated in brief) conditions need to be satisfied in order for the course to be ranked, including age of programme, number of corporate customers and financial turnover.

The ranking is entirely based on a student survey (alumni, in practice).

EMBA

MBA programme, typically part-time, aimed at people with a fair amount of professional experience, typically in managerial positions.[2]

Only EMBA courses approved by one of the major accreditation firms are ranked, and additional requirements are set in relation to the programme's age, volume, etc.

Two data sources are used: an alumni survey and a programme manager survey. The alumni survey contributes 65% to the final ranking, while the programme manager survey contributes 35%. The typical response rate needed is at least 20% for the programme to be ranked.

Distance MBA

Distance MBA programme.

This still appears to be quite a sketchy ranking; not all of the method details are revealed, and only US-American programmes are ranked.

Results for University of Gothenburg

There are no Swedish universities included in any of Business Week's rankings. However, the Stockholm School of Economics is mentioned as a provider of EMBA and Executive Education.

Additional information

Ranking's website:
http://www.businessweek.com/bschools/rankings/

[1] Description taken from Financial Times.
[2] Description taken from Wikipedia.

CHE (Zeit)

Interest in the ranking: Moderate[1]
Overall method score: 3.1

The Centre for Higher Education Development (CHE) is a non-profit organisation, which is largely financed by the Bertelsmann Foundation. CHE defines itself as a reform think tank for higher education. They compile several ranking lists, one of which is known as CHE Excellence Ranking. In this ranking, CHE compares the biggest European universities in seven separate areas: biology, chemistry, mathematics, physics, economics, political science and psychology. The main purpose is to help students choosing master's and PhD programmes.

The comparison contains several interesting indicators (see below), and is also interesting in that it does not result in a total, numerical score. The universities are instead awarded stars if they, for a given indicator, are among those institutions that account for at least 50% of the achievement within the area. (We presume that the universities are sorted in descending order in terms of size and awarded stars in turn until the accumulated volume exceeds 50%.)

Those universities that earn three stars or more are included in the excellence group for the subject area in question[2]. The universities are never assessed in total, but rather per subject.

CHE has endeavoured to overcome many of the problems that other ranking lists have brought with them and for which they have been criticised. They have managed to achieve this to a respectable degree. The list is quite useful for a student looking for a master's or PhD programme in one of the subjects examined. One should remember, however, that the list does not provide a strict ranking but a rough grading. Several universities can come top in a particular subject.

However, a number of weaknesses remain: the subject areas that are used are still very broad, which means that research environments of world class can be lumped together with environments of mediocre quality; only a few of the subjects have been investigated; only awarding points for EU-funded research projects and educational programmes favours universities that happen to be used to, or have a preference for such projects/programmes; and there is no indicator to measure actual results for master's and PhD programmes.

The first ranking was carried out in 2007 for the subjects mathematics, physics, biology and chemistry. The second round was carried out in 2009 for the subjects political science, psychology and economics. The natural sciences were investigated again in 2010.

[1] The ranking generates a lot of interest in Germany, but hardly any outside the country.
[2] The exact criteria for the excellence group have varied somewhat, so that certain indicators are deemed more important.

Indicators

1. Number of publications in Web of Science.

2. Field-normalised citations (CROWN), excluding self-citations.

3. Number of (active) academic staff awarded the Nobel Prize, Fields Medal or on the Thomson Reuters list of highly cited researchers. (Only used for the four natural sciences.)

4. Number of Marie Curie projects. (Only used for the four natural sciences.)

5. Number of doctoral and master's students who completed part of their course at another university. (It is not clear exactly how this is calculated.)

6. Number of teachers who taught at another university within the ERASMUS programme.

7. Number of master's programmes that receive Erasmus-Mundus funding from the EU.

8. Number of ERC-funded research projects. (Only used for the four natural sciences.)

9. Book citations. Only as a supplement to the publications indicator. (Only used for the three social sciences.)

Additional indicator information was compiled on top of these nine basic indicators, and information that later proved to maintain a high quality and function across country borders formed the basis of the awarding of additional stars. The following indicators satisfied the requirements for this:

9. Students' Judgement

10. Proportion of international members of staff.

11. Percentage of international doctoral and master's students.

12a. Gender balance (divergence from 50/50) among staff.

12b. Gender balance (deviation from a 50/50 distribution) among master's students.

12c. Gender balance (deviation from a 50/50 distribution) among doctoral students.

13. Number of subject-specific scientific journals available in the library. (Only used for the three social sciences.)

14. Number of memberships in editorial boards of major scientific journals per ten members of the scientific staff.

15. Number of renowned scientific prizes won by staff members. (Political science only.)

16. Number of international conferences held or organised by the department in 5 recent years per ten members of the scientific staff. (Political science only.)

17. Average percentage per year of scientific staff teaching in summer schools. (Political science only.)

Results for University of Gothenburg

The University of Gothenburg is judged as excellent in political science, psychology and biology. In political science, the Department of Political Science was awarded excellence stars for citations and teaching staff mobility (indicators 2 and 6). No data were submitted for indicators 9-17.

In psychology, the Department of Psychology was awarded excellence stars for publications and citations (indicators 1 and 2). No data were submitted for indicators 9-17.

In biology, the Department of Cell and Molecular Biology was awarded excellence stars for publications, citations, Marie Curie projects and teaching staff mobility (indicators 1, 2, 4 and 6). The department was also awarded four excellence stars under Students' Judgements (transparent and fair examinations, good laboratories, good support regarding formal procedures, as well as good study rooms), and excellence stars for the percentage of international master's students, the staff gender balance and the gender balance among master's students (indicators 9, 11, 12a and 12b).

The following other Swedish universities were awarded at least two[1] stars in a subject (number of subjects stated in brackets): Uppsala University (6), Lund University (5), Stockholm University (3), KTH Royal Institute of Technology (3), Karolinska Institutet (2), Chalmers (2), Stockholm School of Economics (1), Örebro University(1), Swedish University of Agricultural Sciences (1).

Additional information

Description of ranking, including results:

Berghoff, S. et al., 2010. *Identifying the Best: the CHE ExcellenceRanking 2010*, Gütersloh, Germany: CHE. [Electronic resource: http://www.che.de/downloads/CHE_AP137_ExcellenceRanking_2010.pdf]

[1] At least three stars in biology, chemistry, mathematics, physics, and at least two stars in economics, political science and psychology.

CWTS (the Leiden Ranking)

Interest in the ranking: Moderate.
Method score: 2.4

The Leiden Ranking is produced by the Centre for Science and Technology Studies (CWTS), a research unit within Leiden University and a commercial company owned by the same university. The ranking has been published three times, in 2007 (European universities only), 2008 and 2010.

The ranking consists entirely of bibliometric indicators based on data from Thomson Reuters. CWTS ranks both the 100 and the 250 biggest universities in Europe, and the 100, 250 and 500 biggest universities worldwide. Five bibliometric indicators are calculated for these groups, all resulting in 25 different lists. The indicators are not merged, so there is no total ranking.

Indicators[1]

P: Number of publications (probably whole counts). The indicator is heavily dominated by subjects that produce a lot of journal articles (medicine and some of the natural sciences).

CPP/FCS (Crown): Average field-normalised citation score, normalised at university level.

MNCS2 (Alternative Crown): Average field-normalised citation score, normalised at publication level.

*P*CPP/FCSm:* A kind of levelling off of the number of field-normalised citations the university has received. This indicator can be described as measuring the university's impact, and corresponds to the Swedish government's bibliometric indicator for allocating funding.

CPP: Average number of citations: (Not field-normalised.)

The lists (2010) are based on articles from 2004-2008 and citations from 2004-2009.

Results for University of Gothenburg

The positions of the Swedish universities in the Europe top 250 ranking, sorted by indicator *P*CPP/FCSm,* are shown in the table below.

[1] See appendix 1 for an explanation of the bibliometric terms.

Table 1: Positions of Swedish universities in the Leiden Ranking, 2010.

University	2008	2010
Karolinska Institutet	9	11
Lund University	15	19
Uppsala University	21	32
University of Gothenburg	45	46
Stockholm University	86	81
Umeå University	97	106
KTH Royal Institute of Technology	96	121
Swedish University of Agricultural Sciences	134	141
Linköping University	120	142
Chalmers	122	150

Additional information

2010 ranking:
http://socialsciences.leiden.edu/psychology/students/news/leiden-ranking-2010-cwts.html

2008 ranking:
http://www.cwts.nl/ranking/LeidenRankingWebSite.html

Financial Times

Interest in the ranking: Considerable
Overall method score: -[1]

The *Financial Times* assesses and ranks MBA courses of various kinds, i.e. courses in business administration and management. Four different types of MBA courses are ranked: *Full-Time MBA, Executive Education, Master in Management* and *EMBA*. The newspaper also ranks European business schools. The rankings are only described here in outline, since they are limited to the field of economics and because they are relatively complex.

[1] No method score has been assigned, since the ranking is only marginally relevant to the University of Gothenburg.

Full-Time MBA (since 1998)

Full-time courses, typically two years, for people in employment.[1]

Only programmes that have been approved by the accreditation companies AACSB, Equis or Amba are ranked. The programmes must also have been running for at least four years, and their first batch of students must have graduated at least three years ago. At least 30 students should be enrolled on the courses.

Three data sources are used: an alumni survey, data reported by the business school itself, as well as publications in 40 selected journals. The alumni survey must have a response rate of at least 20% and an absolute minimum of 20 respondents.

The following indicators are used:

Weighted salary (20%) – average alumni salary, with adjustment for variations between industry sectors.

Salary percentage increase (20%) – The percentage increase in average alumni salary from before the MBA to today as a percentage of the pre-MBA salary.

Value for money (3%) – A financial calculation for alumni that includes post MBA salary, course fees and loss of income for duration of course. (And probably also salary before course.)

Career progress (3%) – Extent to which alumni's careers have developed in terms of level of seniority and size of companies alumni are working for.

Aims achieved (3%) – The extent to which alumni fulfilled their goals by doing an MBA.

Placement success (3%) – Alumni who used the business school's careers service were asked to rank its effectiveness in their job search.

Employed at three months (2%) – The percentage of alumni who had found employment within three months of graduating.[2]

Alumni recommend (2%) – Alumni were asked to name three business schools from which they would recruit MBA graduates.

Women faculty (2%) – Percentage of female faculty.

Women students (2%) – Percentage of female students.

Women board (1%) – Percentage of female members of the advisory board.

International faculty (4%) – Percentage of faculty whose citizenship differs from their country of employment.

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[1] Description taken from Wikipedia.

[2] This could relate to alumni who *changed* jobs during the period in question.

International students (4%) – Percentage of students whose citizenship differs from the country in which they are studying.

International board (2%) - Percentage of the board whose citizenship differs from the country in which the business school is based.

International mobility (6%) – Calculated based on which country the students worked in before and after the MBA.

International experience (2%) – Weighted average of four criteria (not described in detail) that measure international exposure during the MBA programme.

Languages (2%) – Number of extra languages required on completion of the MBA.

Faculty with doctorates (5%) – Percentage of faculty with a doctoral degree.

FT doctoral rank (5%) – Percentage of doctoral graduates from each business school over the past three years. Additional points are given if these doctoral graduates took up positions at one of the top 50 MBA schools.

FT research rank (10%) – Calculated according to the number of publications per faculty employee in 40 selected academic and practitioner journals. Points are awarded to the business school at which the author is currently employed (not the place of employment at the time of publication).

Executive Education (since 1999)

Short courses, often customised, for people in employment.[1]

This ranking includes two classes of course; open enrolment and customised programmes. A business school must have revenues of at least USD 2 million annually in order to be considered in the ranking.

Two data sources are used: a questionnaire to top clients and data reported by the business schools themselves. The indicators that are used largely overlap with the indicators in the Full-Time MBA ranking.

Table 2 shows the Nordic business schools that are included in the 2009 ranking.

[1] Description taken from Financial Times.

Table 2: Positions of Nordic universities in the Financial Times ranking of *Executive Education* courses, 2009.

Institution	Position in *Open Enrolment*	Position in *Customised*
Stockholm School of Economics	46	40
Helsinki School of Economics	47	56
Norwegian School of Economics and Business Administration	43	61
BI Norwegian School of Management	-	64

Master in Management (since 2005)

For students without any previous professional experience.[1]

Two data sources are used; an alumni survey and data reported by the business schools themselves. The alumni survey must have a response rate of at least 20% and an absolute minimum of 20 respondents. The indicators that are used largely overlap with the indicators in the Full-Time MBA ranking.

The alumni survey is also distributed to students on programmes within Cems Master in International Management (Cems MiM), where Cems is a collaboration between approximately 25 European business schools. It is not clear whether all Cems MiM programmes are also ranked.

The following Nordic business schools are included in the 2009 ranking:

Table 3: Nordic business schools in the Financial Times ranking of *Master in Management* courses, 2009.

Institution	Position
Stockholm School of Economics	14
Copenhagen Business School	22
Helsinki School of Economics	30
Norwegian School of Economics and Business Administration	40
BI Norwegian School of Management	64

[1] Description taken from Wikipedia.

EMBA (since 2001)

MBA programme, typically part-time, aimed at people with a fair amount of professional experience, typically in managerial positions.[1]

Three data sources are used; an alumni survey, data reported by the business schools themselves and publications in selected journals. The indicators that are used largely overlap with the indicators in the Full-Time MBA ranking.

The following Nordic business schools are included in the 2009 ranking:

Table 4: Nordic business schools in the Financial Times ranking of EMBA courses 2009.

Institution	Position
Stockholm School of Economics	53
Helsinki School of Economics	55
Copenhagen Business School	58
Norwegian School of Economics and Business Administration	>95

European business schools (since 2004)

This is an accumulated ranking based on the four other ranking lists. It takes into account how many of these ranking lists the business schools have been included in and what points they have been awarded in them. The institution has to have been ranked in at least two of these lists in order to be included in the European business schools ranking.

Table 5 shows the Nordic business schools that are included in the 2009 ranking.

Table 5: Nordic business schools in the Financial Times ranking of European Business Schools, 2009.

Institution	Position
Stockholm School of Economics	15
Helsinki School of Economics	18

[1] Description taken from Wikipedia.

Institution	Position
Copenhagen Business School	31
Norwegian School of Economics and Business Administration	34
BI Norwegian School of Management	61

Additional information

Ranking's website:
http://rankings.ft.com/businessschoolrankings/

GreenMetric

GreenMetric World University Ranking is produced by Universitas Indonesia. The ranking aims to raise interest in and awareness of important global environmental issues such as climate change, energy and water supply, waste recycling and green transportation. The first ranking list was due for publication in November 2010, but there has been a delay.

The ranking is entirely based on data from the universities themselves, which participate on a voluntary basis. The data collected are grouped into three areas. The first area relates to the university's basic profile and contains information about size, whether it is in an urban or rural area and the percentage of green areas on site. The second area is about electricity consumption, and the third area covers transportation, water consumption, waste management etc. On top of this, information is also compiled regarding governing documents, measures and (internal?) communication, but it is not clear whether this information is used in the actual ranking.

The preliminary contribution of each indicator group is as follows:

- Green Statistics: 24%
- Energy and Climate Change: 28%
- Waste: 15%
- Water: 15%
- Transportation: 18%

The University of Gothenburg has submitted data to the GreenMetric list.

Additional information

Ranking's website:
http://greenmetric.ui.ac.id

HEEACT (Taiwan List)

Interest in the ranking: Minimal
Overall method score: 2.9

Performance Ranking of Scientific Papers for World Universities has been produced every year since 2007 by the Higher Education Evaluation and Accreditation Council of Taiwan (HEEACT), a Taiwan-based foundation/authority.

The 700 largest organisations in ESI (Essential Science Indicators, one of Thomson Reuters' products) are selected, non-universities are taken out and then the 500 biggest institutions are ranked using bibliometric indicators. As of 2009, a few other ranking lists are also referred to and any major universities from these lists that are not among the 700 are added.

The ranking only considers scientific production (scientific papers) and is entirely based on bibliometric data, partly from ESI and partly from SCI[1] and SSCI[2], and partly from JCR[3]. Articles within the fields of humanities and the arts are not considered in the basic data.

As of 2008, you can also sort irrespective of size, where the indicator values are divided by the number of research and teaching staff. You can also get lists for specific subject areas (engineering, natural sciences etc).

Indicators

Research productivity

1. (10%): Number of articles over the past 11 years.
2. (10%): Number of articles over the past year.

Research impact

3. (10%): Number of raw citations over the past 11 years.
4. (10%): Number of raw citations over the past 2 years.
5. (10%): Average number of raw citations per article over the past 11 years.

Research excellence

6. (20%): Institution's *h*-index for articles from the past 2 years.

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[1] SCI = Science Citation Index, one of Thomson Reuters' citation databases.
[2] SSCI = Social Science Citation Index, one of Thomson Reuters' citation databases.
[3] JCR = Journal Citation Report, a listing of scientific journals' citation numbers, produced by Thomson Reuters.

7. (15%): Number of highly cited papers (in the top 1% within the subject) over the past 11 years.
8. (15%): Number of articles in high-impact journals (in the top 5% within the subject) over the past year.

For each indicator, the number of points is calculated proportionally against the 'best' institution (which gets 100).

In 2007, the indicator 'Number of subject fields where the university demonstrates excellence' was also used, contributing 10% to the final ranking.

Since citations and publications are not standardised in terms of subject, those subjects that have high volumes of (journal) publications and citations tend to dominate. These subjects include mainly medicine and some of the natural sciences.

Results for University of Gothenburg

Table 6: Positions of Swedish universities on the HEEACT ranking, 2007-2010.

Institution	2007	2008	2009	2010
Karolinska Institutet	50	36	34	34
Lund University	69	69	64	73
Uppsala University	92	88	95	84
Stockholm University	184	167	195	192
University of Gothenburg	194	216	215	227
Umeå University	207	222	244	252
KTH Royal Institute of Technology	323	313	310	321
Linköping University	330	330	352	356
Chalmers	406	394	393	371
Swedish University of Agricultural Sciences	377	388	410	385
Malmö University	-	-	494	498

The order of the Swedish institutions has remained stable; the only change occurred in 2009, when Chalmers overtook the Swedish University of Agricultural Sciences.

Additional information

Ranking's website:
http://ranking.heeact.edu.tw/

High Impact Universities

Interest in the ranking: Almost none
Overall method score: 2.6

The ranking list *High Impact Universities* is produced by three employees at the University of Western Australia, Ba-Tuong Vo, Victor Sreeram and Ba-Ngu Vo. It is based entirely on bibliometric indicators based on Scopus.

The basic bibliometric indicator is the *g*-index, a development of the better known *h*-index (Hirsch 2005): the *g*-index for an institution is the highest number *g* of its highly cited publications, such that the average citation is at least *g* citations per publication.

The ranking is conducted per faculty, which means five broad subject areas, and then an average value is calculated from these five areas (with equal weighting). The subject areas are *Medicine, Dentistry, Pharmacology, and Health Sciences*; *Pure, Natural, and Mathematical Sciences*; *Engineering, Computing, and Technology*; *Life, Biological and Agricultural Sciences*; and *Arts, Humanities, Business, and Social Sciences*.

The division into subject areas and their equal weighting could result in specialised universities, such as Karolinska Institutet, ending up far down the list, but this is not the case. The outcome for the Swedish universities is shown in the table below.

Table 7: Outcome for Swedish universities in the *High Impact Universities ranking,* 2010.

Institution	Position
Uppsala University	67
Lund University	73
Karolinska Institutet	87
Stockholm University	203
University of Gothenburg	226
Umeå University	245
Linköping University	277
Chalmers	293
KTH Royal Institute of Technology	343
Swedish University of Agricultural Sciences	449

Comment: There is a close link between the *h*-index, which is often used for individual researchers, and career age (Hirsch 2005 p. 16571), and perhaps the same also applies to a certain extent for institutions. The seven highest ranked Swedish universities are also sorted in descending order of age.

Additional information

Ranking's website:
http://www.highimpactuniversities.com/

Jiao Tong (Shanghai List)

Interest in the ranking: Considerable
Overall method score: 2.8

The Academic Ranking of World Universities is produced by the Institute of Higher Education at Shanghai Jiao Tong University. The list has been published annually since 2003. Since 2007, the list has been available in five versions, i.e. the same number of scientific fields: Science, Engineering, Life Sciences, Medicine and Social Sciences. Since 2009 there has also been an alternative subject focus: Mathematics, Physics, Chemistry, Computer Science and Economics/Business. There is also a version that is not focused on a particular subject.

The ranking was set up as part of a plan to create a number of universities in China maintaining a level of global excellence. The methodology is (relatively) open, well-documented and objective. The indicators used have an elite focus and a long time frame. The ranking concentrates on research rather than education.

Due to the fact that no field normalisation is applied and because of the extent of the citation database, publications in biomedicine and natural sciences have much more of an impact than publications in engineering and social science subjects. Large universities have an advantage over small ones, since size normalisation is limited.

The Jiao Tong list is designed to separate out the world's absolute top universities, with a focus on the natural sciences and medicine. The list is quite striking from the point of view of Swedish universities as it is highly dependent on Nobel prize-winners from the first half of the 20th century.

Indicators

Alumni (10%): Alumni of an institution who have been awarded the Nobel Prize in Physics, Medicine or Chemistry, the Sveriges Riksbank Prize in Economic Sciences in Memory of Alfred Nobel, or the Fields Medal. Prizes that were awarded in 1991 or later result in full points for the institution in question, but older prizes have a lower weighting – 10% is deducted per decade (90% for 1981-1990, 80% for 1971-1980, etc.).

Awards (20%): Alumni of an institution who have been awarded the Nobel Prize in Physics, Medicine or Chemistry, the Sveriges Riksbank Prize in Economic Sciences in Memory of Alfred Nobel, or the Fields Medal, and who were working at the institution at the time of being awarded the prize. For emeriti, the rank-

ing counts the institution where they were last active. Prizes that were awarded in 1991 or later result in full points for the institution in question, but older prizes have a lower weighting – 10% is deducted per decade (90% for 1981-1990, 80% for 1971-1980, etc.).

HiCi (20%): Number of academic staff on Thomson Reuters' list of highly cited researchers. To be more precise, the indicator looks at 21 lists for as many scientific fields within natural sciences, medicine, engineering sciences and social sciences. These areas vary in size, both in terms of the number of papers and the number of researchers, but each list contains as many researchers (250). In practice this means that one does not need to be as distinguished within a small field such as *Space Sciences* as in a large field such as *Biology & Biochemistry* in order to be included in the ranking.

Researchers update their details themselves regarding which institution they work at, and researchers who have died are not automatically removed. University of Gothenburg has 1 researcher in this category (Lars Wilhelmsen); Karolinska Institutet has 19, Lund University has 12, Uppsala University has 4 and Stockholm University has 5.

N&S (20%): Number of original articles over the past five years from the institution that have appeared in the journals *Nature* and *Science*. Certain institutions that are regarded as specialising in humanities and social sciences are excluded from this indicator. It is not clear which institutions have been excluded and on what basis.

PUB (20%): Number of original articles in Science Citation Index Expanded (SSIE) and Social Science Citation Index (SSCI) over the past year[1]. SSCI articles get double weighting.

PCP (10%): The weighted point for the above five indicators divided by the number of academic staff (full-time equivalents). SJTU does not have access to information about academic staff for all countries, but they have information for, for example, Sweden, United States, the UK, Japan and Switzerland. The information used for Sweden is most likely personnel statistics retrieved from the NU statistics database.

[1] SSIE and SSCI are parts of Web of Science.

Results for University of Gothenburg

Table 8: Positions of the Swedish universities in the Jiao Tong ranking, 2003-2010.

Institution	2003	2004	2005	2006	2007	2008	2009	2010
Karolinska Institutet	39	46	45	48	53	51	50	42
Uppsala University	59	74	60	65	66	71	76	66
Stockholm University	102-151	97	93	84	86	86	88	79
Lund University	93	92	99	90	97	97	101-151	101-150
University of Gothenburg	152-200	153-201	153-202	201-300	203-304	201-302	201-302	201-300
Umeå University	152-200	202-301	203-300	201-300	203-304	201-302	201-302	201-300
Chalmers	251-300	202-301	203-300	201-300	203-304	201-302	303-401	201-300
KTH Royal Institute of Technology	201-250	153-201	203-300	201-300	203-304	201-302	201-302	201-300
Swedish University of Agricultural Sciences	201-250	202-301	203-300	201-300	203-304	201-302	303-401	201-300
Stockholm School of Economics			301-400	301-400	305-402	402-503	402-501	301-400
Linköping University	351-400	404-502	301-400	301-400	403-510	402-503	402-501	401-500

The University of Gothenburg was in the same range in 2010 as in 2009, which is 201-300. Jiao Tong University kindly provides the values for all indicators, which makes it possible to calculate the exact ranking position for all institutions, not just the top 100. Using this calculation one can see that the University of Gothenburg has advanced from 258 in 2009, to 212 in 2010. This is probably largely due to the fact that one of the university's researchers has joined the HiCi list.

It may be interesting to mention that the University of Gothenburg is ranked by Jiao Tong University as Sweden's second medical university, after Karolinska Institutet and before Uppsala University. (No other Swedish universities are included in the list.)

Additional information

List's website:
http://www.arwu.org/

Analysis for the University of Gothenburg

Gunnarsson, Magnus (2010). *Shanghai List. University of Gothenburg's position p Academic Ranking of World Universities (ARWU). Indicators and conclusions 2010*. PM 2010:01. Division of Analysis and Evaluation, University of Gothenburg. [http://www.analys.gf.gu.se/rapporter_underlag_och_presentationer/]

Analysis for Chalmers:

Lund, Tore (2008). *Shanghai List and the Swedish universities*. Chalmers. [http://www.lib.chalmers.se/bibliometrics/ranking/shanghai/]

Comparison between THE and Jiao Tong:

Cavallin, M., & Lindblad, S. (2006). *Världsmästerskap i vetenskap? En granskning av internationella rankinglistor och deras sätt att hantera kvaliteter hos universitet (An investigation into international university ranking lists)*. University of Gothenburg.

Mines ParisTech (Professional)

Interest in the ranking: Almost none
Overall method score: 2.2

The Professional Ranking of World Universities is produced by the Paris-based technical university, Mines ParisTech.[1]. The list has been published annually since 2007 (three times).

The ranking uses a single, somewhat unusual indicator: the number of alumni who are the CEOs (or equivalent) of one of the world's 500 biggest companies. The explanation for using this indicator is that it is an indication of the quality of the education.

The list of the world's 500 biggest companies is taken from the magazine Fortune, which publishes such a list every year. Graduates from more than one university are fractionalised, but if a company has joint leadership this is not fractionalised.

The United States has the most universities (145) on this list. France comes second (28), closely followed by Germany (25), China (23) and the UK (22).

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[1] The university is sometimes called École Nationale Supérieure des Mines de Paris.

Table 9: Positions of Swedish institutions on the Mines ParisTech list.

Institution	2007	2008	2009
Chalmers	18	23	42
KTH Royal Institute of Technology	89	89	64
Stockholm University		-	89
Linköping University	214	212	216
Uppsala University	60	212	216

Additional information

Ranking's website:
http://www.mines-paristech.eu/About-us/Rankings/professional-ranking/

Newsweek

Interest in the ranking: Moderate.
Overall method score: -[1]

The US-based magazine Newsweek published a ranking of the world's top 100 universities in August 2006. The magazine took the values from the THE and Jiao Tong lists, weighed them according to their own preferences and added an indicator about the size of the library.

Indicators

Three indicators were taken from the Jiao Tong list and given a weighting of 16.67 % each:

1. Number of academic staff on Thomson Reuters' list of highly cited authors.

2. Number of articles in *Nature* and *Science*.

3. Number of articles in Thomson Reuters' *Social Sciences Citation Index* and *Arts & Humanities Citation Index*[2].

Four indicators were taken from the then THE list, which is now called the QS list. They were given a weighting of 10% each:

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[1] The quality of the methodology has not been assessed, since the ranking has only been published once and there is hardly any information available on how it is constructed.
[2] The parts of Web of Science that cover humanities and social sciences.

4. Proportion of international academic staff.

5. Proportion of international students.

6. Citations per member of the academic staff.

7. Number of academic staff per student.

The final 10% was allocated to a newly constructed indicator:

8. Number of books in the university library.

Results for University of Gothenburg

The only Swedish institutions on the list were Lund University (position 76) and Uppsala University (position 88).

Additional information

Ranking's website:
http://www3.ntu.edu.sg/home/eylu/univ/Newsweek_top100_2006.pdf

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Observatory

Interest in the ranking: Almost none
Overall method score: 2.6

Chalmers, Delft University of Technology and the University of Barcelona have a partnership that goes under the name EESD Observatory, which produces a ranking of institutes of technology in Europe according to how well they support sustainable development. The aim is to monitor and encourage developments within engineering education for sustainable development.

The list has been published twice, in 2006 and 2008. It is based on a questionnaire that is sent out to institutions. The responses are translated using an unknown method into five equally-weighted indicators:

1. How big a commitment has the institution made to sustainable development within engineering education? (Is there an official plan?)

2. Undergraduate engineering courses specialising in sustainable development. (Number, extent, is it compulsory, ...)

3. Engineering courses at postgraduate and doctoral level specialising in sustainable development. (Number, extent, start year.)

4. Amount of sustainable development content included in syllabuses and programme descriptions.

5. Environmental management system.

Table 10: Positions of the Swedish institutions on the Observatory list, 2009.

Institution	Position
Blekinge Institute of Technology	3
Chalmers	5
KTH Royal Institute of Technology	10
University West	54

Additional information

Ranking's website:
https://www.upc.edu/eesd-observatory/why/reports

QS

Interest in the ranking: Considerable
Overall method score: 2.1

QS World University Rankings has been produced every year since 2004 by analysis firm QS[1]. Up until 2009, the ranking was commissioned by Times Higher Education (THE), and the list was then called THES. However, since 2010 THE has been working with a different company on university ranking. The level of interest that will be generated by the QS list when it becomes independent from Times Higher Education is an unknown, but at the time of writing (December 2010) it appears that there is still a significant amount of interest in the list.

The QS list is largely based on the reputation of an educational institution, partly among researchers but also among employers. The list has been much criticised, partly because it places so much emphasis on reputation surveys, and the fact that these are carried out using an insufficient number of respondents.

The reputation of the institution is measured using two surveys, both with a response rate of around or less than 5% (QS 2010). The bibliometric indicators are calculated

[1] The name comes from the surnames of the company's two founders, Nunzio Quacquarelli and Matt Symonds.

based on Scopus data, and information about finances, staff and students is compiled partly from a questionnaire completed by the institutions and partly through other available sources (websites, statistics authorities, etc.).

The University of Gothenburg provided details for the lists in 2008 and 2009 (when it was produced in cooperation with Times Higher Education), but not in 2010.

Indicators

Academic Peer Review (40%): Web survey sent to a huge number of researchers (probably more than 200,000). 9,386 responses in 2009 and 6,354 responses in 2008. Five broad subject areas are used and they are given equal weighting. The responses are also weighted so that three 'super regions' are represented equally: America; Europe, Africa and the Middle East; and Asia Pacific.

Employer Review (10%): A survey that is sent to an unknown number of potential employers (for graduates). 3,281 responses in 2009 and 2,339 responses in 2008.

Faculty Student Ratio (20%): Number of faculty divided by number of students. The data is compiled in various ways (from the institutions direct, authorities and statistics organisations).

Citations per Faculty (20%): Number of raw citations[1] divided by the number of permanent academic staff (full-time equivalents).

International Faculty (5%): Percentage of faculty with foreign citizenship.

International Students (5%): Percentage of students with foreign citizenship.

Change history

2008

- Respondents to the reputation surveys are asked to assess the institutions in their own country separately from institutions based abroad, and the responses are then adjusted to counteract bias.

2007

- Change from Thomson Reuters to Scopus.
- The respondents to the reputation surveys cannot assess their own institution.
- Only one response per computer is permitted in the web-based reputation surveys.
- The indicators are z-normalised. (The values were previously normalised against the value for the best institution for each indicator.)
- Full-time equivalents are used in place of people, both for staff and students.

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[1] See Appendix 1 for an explanation of 'raw citations'.

2005

- The Employer Reputation survey was added and given a 10% weighting, which was taken from the Academic Reputation survey.
- The citation window was reduced from 10 to 5 years.

Results for University of Gothenburg

Nine Swedish institutions are included in the QS ranking, and their positions over the years are displayed in the table below. As the table shows, the list is not particularly stable.

Table 11: Positions of the Swedish universities on the QS list.

Institution	2005	2006	2007	2008	2009	2010
Lund University	180	122	106	88	67	72
Uppsala University	180	111	71	63	75	62
KTH Royal Institute of Technology	196	172	192	173	174	150
Stockholm University	227	261	246	239	215	168
University of Gothenburg	190	284	276	258	185	183
Chalmers	166	147	197	162	198	204
Stockholm School of Economics	359	207	273	280	257	-
Umeå University	329	311	299	299	318	297
Linköping University	445	322	371	401-500	401-500	389

Additional information

Ranking's website:
http://www.topuniversities.com/university-rankings

Report on development of QS list from start until 2009:
Holmes, Richard (2010). The THE-QS World University Rankings, 2004-2009. *University Ranking Watch*, 2010-10-19.
[http://rankingwatch.blogspot.com/2010/10/the-qs-world-universities-rankings-2004.html]

Rater (Global University Ranking)

Interest in the ranking: Almost none[1]
Overall method score: 1.7

Rater is an institute that was established in 2005 on the initiative of a group of major Russian companies, which is partly financed by the Russian Academy of Sciences. In 2009 they published a ranking list that compared the best universities in the Former Soviet Union with foreign universities. All universities that have been ranked by the THE, Jiao Tong, HEEACT or Webometrics lists are included in the selection group, and other universities that want to be included are welcome to join. The overriding aim is to track trends in comparison with the top universities in Russia, similar to the aim of the Jiao Tong list in China. However, Rater emphasises that the chief task of the Russian universities is education and that this aspect is often missing in the other ranking systems.

Data are compiled partly via questionnaires sent to the selection group, and in those cases where no response is received, Rater tries to gather the information itself, mainly through the universities' websites, but in principle via all available sources.

Experts then assess the universities in a number of dimensions (indicators), and is weighed and adjusted to a 100-point scale. The details of this process are not published.

Indicators

Academic performance

- Number of educational programmes as per three levels (Bologna levels?) (previous academic year).
- Number of academic staff (previous academic year).
- Number of students (previous academic year).
- Number of students who have won international academic competitions since 2001.

Research performance

- Number of 'certificates on discoveries' and patents that the institution or its academic staff has had approved since 2001.
- Number of honorary professors and doctors who have been awarded the Nobel Prize or the Fields Medal since 2001.
- Number of research officers and scholars of the university who have been awarded the Nobel Prize or the Fields Medal since 2001.

[1] The name is not really specific enough to be able to assess it using Google Insights for Search. Neither is it possible to search for it in any useful way using Google.

Expertise of the faculty

- Number of publications (articles, textbooks, monographs, etc.) (previous academic year).
- Percentage of academic staff with university education (previous academic year).
- Number of professors who are members of national or international academies of science (previous academic year).
- Average number of citations and references made by foreign authors of lecturers at the institution (previous academic year).

Availability of resources

- University's total budget (previous year).
- Total cost of the training and laboratory facilities (previous year)
- Performance of the university's computer centre, measured in teraflops (10^{12} floating point calculations per second).

Socially significant activities of the graduates of the university

- The number of living alumni who have achieved public recognition: prominent people within science, culture and business; politicians; government officials; administrators of territories and cities (population > 100,000); leaders of key international organisations (FN, UNESCO, etc).

International activities

- International academic communities in which the university was involved during the previous academic year.
- Number of foreign universities with which the institution has bilateral agreements (previous year).
- Number of academic staff with honorary professorships or doctorates from foreign universities (previous year).
- Number of international students (previous year).
- Number of outgoing exchange students and number of professors who travelled to foreign universities to teach or conduct research (previous year).

Expert opinion

- Rank the ten foreign universities that you think are leading in terms of education and executive training quality.

Results for University of Gothenburg

The University of Gothenburg performs well in the indicators included under the category 'Internet audience' (position 49-53), and less well in those indicators that come under the category 'financial maintenance' (position 200-216). The positions of the Swedish universities vary enormously in the various indicator categories and it is impossible to distinguish any clear pattern.

Table 12: Positions of the Swedish universities on the Rater list, 2009.

Institution	2009
Uppsala University	78
Umeå University	121
Lund University	126
KTH Royal Institute of Technology	141-145
Chalmers	152-153
University of Gothenburg	156-157
Stockholm University	260-261
Linköping University	302-305

Additional information

Ranking list's website:
http://www.globaluniversitiesranking.org/

Scimago

Interest in the ranking: Minimal
Overall method score: 2.6

The Scimago Institutions Ranking is produced by Scimago, a research group with members in Spain, Portugal, Argentina and Chile. The list, which was published in 2009 and 2010, ranks over 2,800 research organisations. It is based entirely on bibliometric indicators based on Scopus.

Since 2010, the list also includes rankings within four broad subject areas: *Health Sciences, Life Sciences, Physical Sciences* and *Social Sciences and Humanities*.

One interesting detail is that Scimago has grouped all ranked organisations into five broad categories: *Higher Education, Health System, Government Agencies, Corporations* and *Others*.

Indicators

Output: Number of publications. The indicator is fractionalised, most likely per author.

International Collaboration: Percentage of publications with author addresses from at least two different countries.

High Quality Publications: Percentage of the institution's publications that are published in the top 25% highest ranked journals, measured using 'SCImago Journal Rank SJR Indicator' (González-Pereira et al. 2010).

Normalised Impact: Field-normalised citation score average.

The weighting of each indicator is not clear. Data from 2004-2008 were used in the 2010 ranking.

Change history

2010

- The indicators 'Cites per Document' (number of raw citations per paper) and 'Normalized SJR' (a field-normalised journal indicator) disappeared.
- The indicator 'High Quality Publications' was added.
- The indicator 'Field Normalized Citation Score' changed its name to 'Normalized Impact'.

Results for University of Gothenburg

Table 13: Positions of the Swedish universities on the Scimago list.

Institution	2009	2010
Karolinska Institutet	111	132
Lund University	151	153
Uppsala University	157	167
University of Gothenburg	244	259
Linköping University	284	298
KTH Royal Institute of Technology	241	360
Stockholm University	352	367
Chalmers	321	413
Umeå University	464	449
Swedish University of Agricultural Sciences	476	535

Luleå University of Technology	1139	1244
Örebro University	-	1716
Karlstad University	2004	2028
Kalmar University	-	2288
Växjö University	-	2384
Mälardalen University	-	2427
School of Health Sciences, Jönköping University	-	2735
University of Skövde	-	2739
Malmö University	1810	-

Additional information

Ranking list's website:
http://www.scimagoir.com

Times Higher Education

Interest in the ranking: Considerable
Overall method score: 2.3

World University Rankings is produced by the magazine *Times Higher Education* (THE). THE previously worked together with analysis firm QS, but since 2010 the list has been completely redesigned and the work is now carried out by Thomson Reuters (which also owns Web of Science).

The information upon which the ranking is based is taken from three sources: a survey, Web of Science and a questionnaire sent to the institutions themselves.

The survey measures the reputation of the institution and is conducted by the company Ipso Mori. All respondents are invited to participate and all are established academics spread across the world according to UNESCO statistics (North America 22%, Europe 28%, Asia 41%).

The University of Gothenburg provided basic information for the 2010 THE list.

Indicators

Industry income – innovation (2.5%)

1. Research income from industry, per academic staff (2.5%).

Research – volume, income and reputation (30%)

2. Reputational survey – research (19.5%)
3. Research income, scaled (5.25%)
4. Academic papers per academic and research staff (4.5%)
5. Public research income/total research income (0.75%)

Citations – research influence (32.5%)

6. Citation impact, normalised average citations per paper (32.5%)

International mix – staff and students (5%)

7. Ratio of international to domestic staff (3%)
8. Ratio of international to domestic students (2%)

Teaching – the learning environment (30%)

9. Reputation survey – teaching (15%)
10. PhD awards per academic (6%)
11. Undergraduates admitted per academic (4.5%)
12. Income per academic (2.25%)
13. PhD awards/bachelor's awards (2.25%)

Results for University of Gothenburg

Table 14: Positions of the Swedish universities on the THE list, 2010.

Institution	Overall	Teaching	Int'l Mix	Industry Inc.	Research	Cit.	Rank
Karolinska Institutet	67	65.8	-	73.3	72.7	62.3	43
Lund University	57.8	46.3	56.8	33.2	60.8	67.6	89
Stockholm University	54	36.9	-	31.7	49.2	75.9	129
Uppsala University	51.6	49.6	77.9	39.5	62.2	40.7	147
KTH Royal Institute of Technology	46.8	49.1	64.2	100	56.2	29.2	193
Swedish University of Agricultural Sciences	46.2	43.3	-	99.9	49.5	41.7	199
Chalmers	43.6	44.3	31.9	72	54.6	32.4	223

Institution	Overall	Teaching	Int'l Mix	Industry Inc.	Research	Cit.	Rank
Umeå University	39.2	32.7	43.5	77.9	36.7	43.9	273
University of Gothenburg	38.7	39.3	25.8	38.1	45.5	34.1	281
Linköping University	35.7	38.8	85.1	33.1	41.2	20.3	305

The 2010 results contained several surprises for many readers. As far as Sweden is concerned, one can see that compared with last year's list (see the QS list) and compared with several other rankings, the University of Gothenburg and Uppsala University are quite low down, while Stockholm University is high. If we compare the values attributed to the Swedish institutions for the five indicator groups, it emerges that it is the citation indicator that is the reason for the unusual position pattern. To illustrate we can compare Gothenburg and Stockholm universities. Both institutions have almost identical values for all indicator groups apart from for citations, where Stockholm has 75.9 and Gothenburg has 34.1. Since the citation indicator has a heavy weighting, this difference has a considerable impact.

Additional information

List's website:

http://www.timeshighereducation.co.uk/world-university-rankings

Detailed analysis:

Analysis and evaluation. (*2010*). *Resultatet av universitetsrankingen från Times Higher Education, 2010*. PM 2010:05. University of Gothenburg, Division of Analysis and Evaluation.

Comparison between THE and Jiao Tong:

Cavallin, M., & Lindblad, S. (*2006*). *Världsmästerskap i vetenskap? En granskning av internationella rankinglistor och deras sätt att hantera kvaliteter hos universitet (An investigation into international university ranking lists).* University of Gothenburg.

U-Multirank

U-Multirank is a collaboration between several organisations, including the bibliometric division at Leiden University, CWTS (see CWTS list), and the German institute, CHE (see CHE list). According to the schedule, the first list is due for publication in 2011.

An interim report has been published (U-Multirank 2010), which includes an outline of the basic concept behind the project. Two different rankings will be established, one for the entire institution and one for smaller divisions (faculties, departments) that match a subject area. It will also be possible to limit the ranking to organisations that are similar to each other, e.g. only fully fledged universities with a focus on education.

The sources of information that will be used include a bibliometric database (Scopus or Web of Science), official national statistics databases, data submitted by the institutions themselves, student surveys and if necessary patent databases. Surveys for academics (equivalent to those used by Times Higher Education and QS) will not be used.

Indicators

It has not yet been decided which indicators will be used, but the indicators listed below were considered relevant at a workshop with *stakeholders*. It is not yet clear whether the data for the indicators can be compiled to a high quality and with definitions that function across country borders.

Relevant indicators for the institution ranking:

International orientation

- Number of educational programmes in foreign language
- International teaching and research staff
- International joint research publications
- Joint degree programmes
- Incoming and outgoing students

Knowledge exchange

- Incentives for knowledge exchange
- Cooperative research contracts with industry
- Size of technology transfer unit
- Continuous professional development courses
- Third party cooperative funding (public and direct industry)
- University-industry joint publications
- Cultural awards and prizes won

Regional engagement

- Income from regional sources
- Community engagement
- Research contracts with regional business
- Graduates working in the region
- Regional impact of university

Research

- International prizes and scholarships won
- Heavily cited research publications
- Field normalized citation impact
- Research income
- Research output
- Research related HRM development
- Interdisciplinary research activities
- Art related outputs
- Expenditure on research
- Research income from competitive sources

Teaching and learning

- Interdisciplinarity of programmes
- Relative rate of graduate unemployment
- Graduation rate

Relevant indicators for faculty/department ranking:

International orientation

- International doctorate graduation rate
- International academic staff
- Incoming and outgoing students
- Joint international publications
- Internationalisation of programmes
- Joint international projects

Knowledge exchange

- Co-publications with industry (only for the field Business)
- Licence agreements
- Number of spin-offs
- Academic staff with experience in Industry
- Joint research contracts with private sector

Regional engagement

- Financial support by regional enterprises
- Regional participants in continuing education programmes
- Joint R&D projects with regional/local enterprises
- Student internships in regional enterprises
- Regional spin-offs
- Percentage of regional enrolment

Research

- Research publication output
- External research income
- Heavily cited research publications
- Post-doc positions
- Field-normalised citation rate

Teaching and learning

- Student satisfaction: libraries (only for the field Business)
- Investment in laboratories
- Interdisciplinarity of programmes
- Student satisfaction: computer facilities
- Student satisfaction: laboratories
- Student satisfaction: support by teachers
- Student satisfaction: quality of courses
- Student-staff ratio
- Student satisfaction: overall judgement
- Graduation rate
- Relative rate of graduate unemployment
- Percentage of academic staff with professional experience in business and industry

Additional information

List's website:

http://www.u-multirank.eu/

Critique:

Boulton, G. (2010). *University rankings: Diversity, excellence and the European initiative* (Advice paper No. 3, June 2010). League of European Research Universities.

Webometrics

Interest in the ranking: Moderate
Overall method score: 3.1

Webometrics Ranking of World Universities is produced by Cybermetrics Lab, which is a sub division of the Spanish National Research Council (CSIC). The list has been published since 2004 and ranks all the world's universities according to their online presence. Attempts are made to award points for electronic publications and Open Access, but the producers of the list maintain that online presence is important and that it measures other key aspects compared with rankings based solely on bibliometric indicators. It is published twice a year (January and July).

Cybermetrics Lab endeavours to identify all universities, university colleges and institutes around the world, and uses several different databases to find them. They then build their own database, which maps the organisation to one or more Internet domain names.

The data sources that are used are exclusively internet search engines.

Indicators

Size (20%): number of unique hits on the institution using four different search engines.

Visibility (50%): number of links to the institution's websites from other sites.

Rich Files (15%): number of documents with the file extension pdf, ps, doc or pps that are available under the institution's web domain and that can be found via Google.

Scholar (15%): number of publications in the Google Scholar database.

Results for University of Gothenburg

The Swedish institutions that are included in the top 500 are displayed in the table below.

Table 15: Results for the Swedish institutions on the Webometrics list, 2009-2010.

Institution	January 2009	July 2009	January 2010	July 2010
KTH Royal Institute of Technology	84	103	103	123
Uppsala University	104	80	107	129
Linköping University	107	92	117	146
Lund University	191	108	194	192
University of Gothenburg	209	184	260	243
Stockholm University	258	191	258	247
Umeå University	242	325	283	312
Chalmers	269	340	358	339
Karolinska Institutet	-	410	-	495
Lund University Faculty of Engineering	438	-	463	-
Luleå University of Technology	-	492	-	-

As the table shows, Cybermetrics Lab treated Lund University Faculty of Engineering as a separate institution, at least until the January 2010 ranking (this error has now been corrected). Closer examination of the Swedish institutions reveals that several errors of this kind remain: Sahlgrenska Academy is listed as a separate institution (position 3,473), as is 'Stockholm University Fysikum Physics Department' (position 1,788). Valand School of Fine Art and the IT faculty are probably also regarded as separate institutions, in which case they are too small to be ranked[1].

Additional information

Ranking's website:
http://www.webometrics.info/

[1] Cybermetrics Lab has been informed of the problems and promised to correct any errors for the January 2011 ranking.

4ICU Web Popularity Ranking

Interest: Little
Overall method score: -[1]

4ICU is primarily a portal aimed at students who are looking for a university. The ranking measures popularity on the university's websites using an algorithm that they have developed themselves, which is based on Google Page Rank, Yahoo Inbound Links and Alexa Traffic Rank. 4ICU states that it is not an academic ranking.

Table 16: The ten highest ranked Swedish institutions on 4ICU's list (October 2010).

Institution	Position
KTH Royal Institute of Technology	79
Lund University	210
Umeå University	252
Uppsala University	276
Linköping University	301
Stockholm University	304
University of Gothenburg	322
Chalmers University of Technology	363
Luleå University of Technology	490
Karolinska Institutet	530

Additional information

Ranking's website:
http://www.4icu.org/

[1] No overall method score is assigned here, since the list does not intend to measure the quality of an institution

ASSESSMENT OF METHODOLOGY – RANKING OF RANKINGS

Introduction

In order to gain a better understanding of the strengths and weaknesses of the various ranking lists, we would like to go through different aspects of the lists systematically and compare them with each other. In order to carry out such a comparison we need to set up norms that state the positive and negative aspects of ranking lists, and also how a comparison between different ranking lists should be done. The principle is well established within the university world, since it is commonly in contexts where peer review is used on a large scale. We have opted to base our comparison on an existing set of norms, what are known as the Berlin Principles.

Methodology

The Berlin Principles (IHEP 2006) are sixteen principles for ranking universities and university colleges, which were set up by *the International Ranking Expert Group*, IREG, at a meeting in Berlin in 2006. The precise origin of IREG is somewhat unclear. According to (IHEP 2006), IREG was founded in 2004 by *UNESCO European Centre for Higher Education* (UNESCO-CEPES[1]), based in Bucharest, and the *Institute for Higher Education Policy*, based in Washington D.C. According to IREG's website (http://www.ireg-observatory.org/) the founders were actually UNESCO-CEPES and 'a group of international ranking experts concerned with the quality of academic ranking'.

The Berlin Principles are detailed in Appendix 4. They can (with two exceptions, see Appendix 2) without much effort be reformulated to subscores for ranking lists[2]. As with peer review, subscores cannot be set without human input. A subjective assessment needs to be carried out. However, the quantity of the ranking lists in question is such that it is possible to arrive at an immediate assessment. The subscores are not entirely mutually exclusive but are to a certain extent mutually dependent, but no more than in that they function as separate subscores. It is also a major advantage to use a set of norms that has been developed independently of this current assessment assignment.

Allowing the assessment of the ranking lists to result in quantitative scores (1-5, where 5 is highest) for the various subscores means that the lists can be arranged in descending order according to how well they satisfy the Berlin Principles. This results in a ranking of the university rankings, which is shown below, p. 43.

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[1] The French name is 'le Centre européen pour l'enseignement supérieur de l'UNESCO'.

[2] IREG has also launched a project that will result in an audit of ranking organisations, based on the Berlin Principles. See (Labi 2010).

Subscores

The subscores, which are based on the Berlin Principles, are summarised in the following, together with the weighting they have been assigned when calculating the overall score. A more detailed description of the subscores, including instructions for the assessment criteria, can be found in Appendix 2.

The original numbering has been retained for the subscores in order to facilitate a comparison with the Berlin Principles, despite the fact that two points have been removed (number 1 and number 10).

Purpose and goals of rankings		**25%**
2. The purpose and target group of the ranking should be clearly stated.	30%	
3. The ranking should take the various missions and goals of institutions into account.	30%	
4. Several different data sources should be used for the ranking; these should be clearly stated and explained to the consumers.	30%	
5. The linguistic, cultural, economic and historical contexts of the institutions being ranked should be specified.	10%	
Total	*100%*	

Design and weighting of indicators		**40%**
6. The methodology used to create the ranking should be transparent.	20%	
7. Indicators should be chosen according to relevance and validity, and it should be clear what they are meant to represent.	50%	
8. Measure outcomes in preference to inputs whenever possible.	10%	
9. If several indicators are used, the weighting between them should be given a prominent position in the presentation, and changes to the weighting should be avoided.	20%	
Total	*100%*	

Collection and processing of data		**25%**
11. Only audited and verifiable data should be used.	33%	
12. Only data that have been collected according to the proper procedures for scientific data collection should be used.	33%	
13. The ranking process should be quality assured.	16.5%	
14. The work should be organised in such a way that it enhances the credibility of rankings.	16.5%	
Total	*100%*	

Presentation of ranking results		**10%**
15. Consumers should be given a clear explanation of all the factors used to develop a ranking, and they should be offered the opportunity to choose how the ranking is displayed.	33%	
16. The ranking should be presented in a way that eliminates or reduces errors in original data, and it should be organised and published in a way that makes it possible to detect and correct errors.	67%	
Total	*100%*	

The choice of weightings for the various subscores is naturally subjective, but a weighting is unavoidable. Granting equal weighting to all the subscores is, of course, also a weighting.

The four categories are all important aspects, but we have chosen to give the indicator category a higher weighting than the others, since the indicators form the core of the ranking. We have also chosen to give the presentations category a lower weighting than the other categories. The reason for this is that if the data sources and methodology are of high quality and well reported, then deficiencies in the presentation can be sorted out by the consumers themselves.

Under the category 'Purpose and goals of rankings' we believe that subscore 5, which indicates the linguistic, cultural, economic and historical contexts of the institutions being ranked, is less important. This is partly due to the strong interpretation that has been made of the underlying Berlin Principles, and partly because examining and presenting the institutions' linguistic, cultural, economic and historical contexts would involve a huge amount of work. It would also produce a lot of material for consumers to get to grips with.

Within the category 'Design and weighting of indicators' the choice of indicators has been given the highest weighting, since this must be regarded as the methodological core of the ranking lists – are the chosen indicators valid? Furthermore, subscore 8 ('Measure outcomes in preference to inputs whenever possible.') has a low weighting, since the underlying Berlin Principle does not actually entirely censure input indicators, but merely expresses a preference.

In the category 'Collection and processing of data', subscores 13 and 14 ('The ranking process should be quality assured' and "The work should be organised in such a way that it enhances the credibility of rankings') are regarded as two aspects of the same thing, namely quality assurance of the process. This is why they have together been given the same total weighting as the two other subscores have separately.

The final category, 'Presentation of ranking results', contains two subscores of fairly different kinds. Subscore 15, which concerns freedom of choice in the presentation, is in many respects a convenience issue for the consumer, while subscore 16, which

concerns readability, is a part of the quality assurance process. The latter aspect has been judged as being more important.

Data sources

All the ranking lists that have been examined use the internet as the main distribution channel, which is why we have opted to base our assessment of the ranking method on the information that is available in direct conjunction with the ranking list (i.e. on the same web site, usually). In some cases we have, via other sources – some more reliable than others – been given access to other information about the ranking lists, but we have chosen to disregard them.

Results

The university rankings that have been examined are displayed in the table below. We would like to emphasise that we have only assessed the ranking method, not the purpose of the ranking. It is also worth pointing out that the assessment is based exclusively on the information that is available via the ranking list's website or in the report that contains the ranking list.

Only lists for which we have satisfactory amount of information have been ranked; see the above description of each ranking list.

Table 17: International ranking lists

Position	Ranking	Overall method score
1	CHE	3.1
1	Webometrics	3.1
3	HEEACT	2.9
4	Jiao Tong	2.8
5	High Impact Universities	2.6
5	Observatory	2.6
7	Scimago	2.4
7	CWTS	2.4
9	THE	2.3
10	Mines ParisTech	2.2
11	QS	2.1
12	Rater	1.7

Several points are worth commenting on in connection with the quality rankings in the tables above. All rankings are given a score of 1 in the subscore 5, which is entitled 'The linguistic, cultural, economic and historical contexts of the institutions being ranked'. In the interpretation of them made here, the Berlin Principles have not had any effect at all in relation to this aspect.

The validity and coverage of the ranking indicators, which is measured by the heaviest weighted subscore, 7, has consistently low scores. This sits well with the common view within the university world that the university rankings are not successful in measuring the quality of a university.

Subscores 13 and 14, which measure quality assurance and organisation with regard to credibility, are almost always assigned the value 1. The production of ranking lists is largely characterised by what can at best be described as an art and at worst, amateurism.

The underlying details are almost always lacking in the presentation of the ranking results, which makes it much harder to check and understand. It is mainly this deficiency that brings down the value of subscore 16, 'The ranking should be presented in a way that eliminates or reduces errors in original data, and it should be organised and published in a way that makes is possible to detect and correct errors'.

For many ranking lists the score could be improved considerably with just a few simple adjustments. It should not be that difficult to clearly explain the purpose and target group, providing a detailed explanation of the methodology and data sources, and presenting data in a user-friendly and flexible manner.

Both THE and QS end up near the bottom of the list. This is in part due to their (assumed) difficult objective – to measure university quality – but it is also due to the poor reporting of their sources. CHE is high up the list because they have chosen to avoid many of the elements of rankings that complicate matters – they do not rank the entire institution, but instead look at subjects/departments; they do not compare different subjects with each other; they use very broad score ranges, which places many institutions in the same position in the ranking; and they only rank European institutions. Webometrics achieves its (relatively) high score in another way – by focusing on a simpler objective, namely online presence.

Finally it should be noted that we have had limited resources at our disposal in order to conduct the assessment, and there is scope for several improvements. However, we hope that the assessment in its current state will help the consumer to gain an understanding of the various rankings and the strengths and weaknesses of each one.

ASSESSMENT OF INTEREST

One important reason why universities care about ranking lists is that people are interested in them: prospective students and employers are influenced by the lists (Ejsing et al. 2008; Adams & Baker 2010). So trying to compare the level of interest in each ranking list can be a useful exercise. It is not easy to measure this in a reliable way, but the website *Google Insights for Search* can give us a rough idea. Google Insights for Search can be used to compare the frequency of various search words over a period of time. Comparing the search strings for the various ranking lists with each other can give us an idea of the level of public interest in the lists.

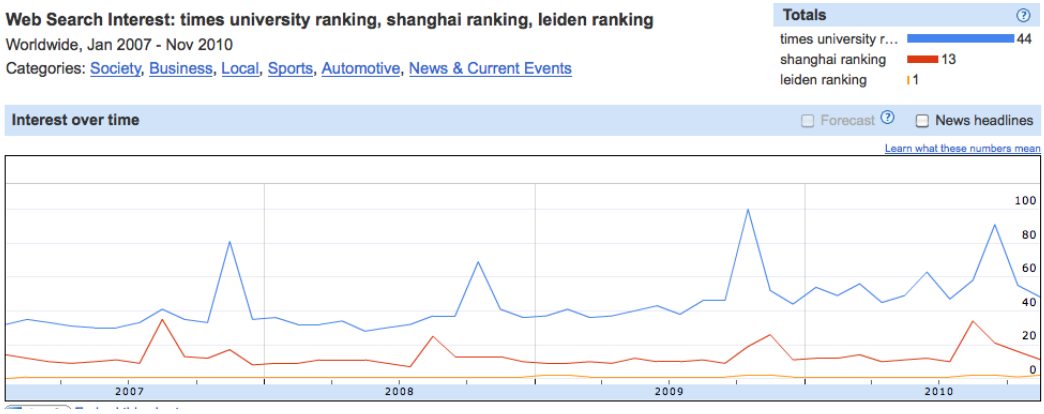

Figure 1: Screenshot from Google Insights for Search.

There are two problems with this method. The first is that the results displayed in Google Insights for Search are not absolute, but instead only show the size relationship between the strings entered. Since the most well-known rankings are much more popular than the least known ones, the result for the latter is 0 as soon as they are compared with the most well-known lists.

The second problem is that you can search for a particular ranking list in several different ways, which is why it is not obvious which search strings should be compared with each other in Google Insights for Search. For example, the Leiden ranking can be captured with 'leiden ranking', 'leiden university ranking' or maybe 'cwts university ranking'. For some lists, a short search string works well, while other rankings need a longer string. For example, 'leiden ranking' produces hits almost exclusively for CWTS university ranking, while 'taiwan ranking' brings up hits that include various different ranking lists containing the word 'Taiwan'. This is quite a serious methodological dilemma. We have chosen to use search strings that are as simple as possible, for which the first ten Google hits refer to the ranking in question. For the Leiden ranking, the short and simple string 'leiden ranking' works, but for the Times list a slightly longer string is needed, 'times university ranking'. For the Taiwan list, we need to use the fairly specialised string 'heeact ranking', and we assume that many of those interested are not aware that the organisation that produces the ranking is called HEEACT, which is why the statistics for the search presumably underestimate the level of interest in the Taiwan list.

One alternative to Google Insights for Search is the database Presstext and Mediearkivet. Presstext contains newspaper text from a large number of Swedish daily

newspapers, including Göteborgs-Posten, Dagens Nyheter, Svenska Dagbladet, Aftonbladet, Sydsvenskan, Expressen, GT, and Kvällsposten. Mediearkivet contains newspaper texts from a large number of Swedish daily newspapers (with a considerable overlap with Presstext), but also several specialist publications.

Unlike Google Insights for Search, a search for a particular ranking list in Presstext does not produce an answer to the number of times different people have tried to find texts about that particular ranking, but instead the number of times the list in question has been written about. A selection of comparative words is shown in the table below (all searches relate to the period 1 January 2007 - 1 September 2010).

Search	**Number of hits in Presstext**	**Number of hits in Mediearkivet**
fredrik reinfeldt[1]	14,255	45,263
göteborgs universitet (University of Gothenburg)	4,651	14,129
lantbruksmässa (agricultural fair)	41	148

Since there are significant methodological deficiencies in the method described here, we have chosen a simple classification of the ranking lists. The lists have been divided into four categories: *considerable interest, moderate interest, little interest* and *almost no interest*. The category 'considerable interest' includes THE, Financial Times, Jiao Tong, Business Week and QS, with the THE list (which generates the most interest of all) having just over five times as many searches as the QS list (which generates the least amount of interest among the lists in the group[2]).

Several of the lists are also written about in Presstext and Mediearkivet. THE and Jiao Tong are mentioned in 40-90 articles each, while the Financial Times list gets about 20 mentions in Mediearkivet, but none at all in Presstext. QS and Business Week are both mentioned just a few times.

The category 'moderate interest' includes Webometrics, Newsweek and CWTS, with the Webometrics list (which generates the most interest among the lists in the group) having just over three times as many searches as the CWTS list (which generates the least amount of interest among the lists in the group). Newsweek and Webometrics are mentioned a few times in Presstext and Mediearkivet.

[1] The name of the Prime Minister of Sweden.

[2] The QS and THE lists were one and the same up until autumn 2009, with the name THE. If the search is restricted to the last six months the difference is only about three times.

The category 'little interest' includes 4ICU, CHE, HEEACT and Scimago. 4ICU has the most searches in this group, which is around twice as many as Scimago generates. None of them are mentioned in Presstext or Mediearkivet.

Finally, the category 'almost no interest' includes four ranking lists, Mines ParisTech, Observatory, Rater and High Impact Universities. Searches for these rankings are not common enough to be able to analyse them using Google Insights for Search, and the lists are not mentioned in either Presstext or Mediearkivet.

Table 18: How much interest is generated by international ranking lists?

Ranking	**Interest**
Business Week	Considerable
Financial Times	Considerable
Jiao Tong	Considerable
QS	Considerable
Times Higher Education	Considerable
CHE	Moderate
CWTS	Moderate
Newsweek	Moderate
Webometrics	Moderate
4ICU	Little
HEEACT	Little
Scimago	Little
High Impact Universities	Almost none
Mines ParisTech	Almost none
Observatory	Almost none
Rater	Almost none

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APPENDIX 1: BIBLIOMETRIC GLOSSARY

Citations

When a researcher refers to another published work in their own publication, this is called a *citation*. In addition to bibliographic information about scientific articles, the Scopus and Web of Science databases also contain the articles' reference lists, which enable us to count the number of citations a given article has had from other articles in the database.

Interest in citations is derived from the assumption that citations reflect impact, and impact reflects quality. A good article is more likely to have an impact in the research world and thus more likely to be referred to in other articles. The assumption is that there is a statistical link between the number of citations and the article's scientific quality.

Fractionalised counting

A research article often has more than one author, and the authors often come from more than one institution. So when attempting to come up with a total number of articles from a particular institution we are faced with the issue of how to handle co-authored articles – should all the institutions represented be assigned one article each, or should they share the article? If we opt for the first option and assign one article to each institution it is called *whole counts*, and if the institutions share the article it is called *fractionalised counting*. With whole counts, the total of all institutions' articles becomes greater than the number of articles in the database.

The above approach to institutions can be applied correspondingly to entire countries or individual authors.

Field normalisation, field-normalised citation score

Traditions regarding how to refer to other articles and the number of references a researcher can include in an article vary depending on the subject areas. The citation databases also contain different percentages of the total production for different subject areas (approx. 95% of medical publications, approx. 5% of humanities publications). The average number of citations for articles therefore varies significantly between the subject areas – a chemistry article with five citations can be fairly ordinary, while a history of literature article with five citations is exceptionally highly cited.

In order to deal with this it is possible to divide the number of citations for an article by the average for the article's subject area (field). This process is called

field normalisation and the result is known as field-normalised citation score. So a value of 1 means 'as many citations as the world average for the subject area' and a value of 2 means 'twice as many citations as the world average for the subject area'.

h-index

The bibliometric indicator *h-index* or *Hirsch-index* was presented by Jorge E. Hirsch (2005). The *h*-index is the highest number of papers a scientist has that have each received at least that number of citations. E.g.: A person who has an *h*-index of 7 has 7 articles, each with a minimum of 7 citations. The person does not have 8 articles with at least 8 citations.

Raw citations

You can use the term 'raw citations' to indicate that you are not using field-normalised citations.

Scopus

Three general citation databases currently exist: *Scopus* from Elsevier, *Web of Science* from Thomson Reuters and *Google Scholar* from Google. Scopus and Web of Science are commercial enterprises, while Google Scholar is free. However, the basis of Google Scholar is extremely unclear, and the quality of the material it contains is at times very low, which is why analyses using Google Scholar are not terribly reliable.

Scopus and Web of Science are fierce competitors, and in many respects equally good. Scopus includes a few more journals/conferences than Web of Science, but on the other hand it does not go back as far in time.

Web of Science is essentially an online service, which has now changed its name to Web of Knowledge. The underlying database is based on several different products, which are sold separately (and that can overlap): *Science Citation Index, Science Citation Index Expanded, Social Science Citation Index, Arts & Humanities Citation Index*, and *Conference Proceedings Citation Index*.

Web of Science

See *Scopus*.

Whole counts

See *fractionalised counting*.

APPENDIX 2: ASSESSMENT CRITERIA FOR SUB-SCORES

Details of the subscores that have been used to rank the ranking lists are given below.

Two of the Berlin Principles could not be reformulated into useful subscores. One of them states that the ranking should be 'one of a number of diverse approaches to the assessment of higher education inputs, processes, and outputs', which is more of a suggestion to the consumer than to the producer of the ranking.

The second principle that could not be reformulated to a subscore states that the ranking producer should 'pay due attention to ethical standards and the good practice recommendations articulated in these Principles'. The first part of this principle asks the producer to follow ethical standards. This is of course important, but we cannot be expected to be able to decide the extent to which this has been done when assessing the ranking afterwards. The second part of the principle merely clarifies that the principles have a normative function.

The original numbering has been retained for the subscores in order to facilitate a comparison with the Berlin Principles, despite the fact that two points have been removed (number 1 and number 10).

The Berlin Principles are detailed in Appendix 3.

Category A: Purpose and goals of rankings

2. The purpose and target group of the ranking should be clearly stated.

A ranking can be carried out with various purposes and various target groups. In order to interpret the results it is important to provide details of the purpose and target group.

Score scale

5: It is easy to find the description of the ranking's purpose and target group, and furthermore these are well-defined and easy to understand.

4: The reader can find an explicit purpose and target group and both are fairly well-defined.

3: The reader can find an explicit purpose and target group, but they are vague or difficult to understand.

2: The reader cannot find any explicit purpose or target group, but it is possible to make a reasonable guess as to the purpose and target group, based on other elements of the description.

1: It is not possible to find details of any purpose or target group at all.

3. The ranking should take the various missions and goals of institutions into account.

Comparing the quality of institutions for a medical university with a strong focus on research with that of a university that focuses mainly on training teachers is of course problematic, but it has to be carried out in a way that does not put either of the institutions at a disadvantage on the basis of their profiles and missions.

Score scale

No exact criteria are stated for this subscore, but instead the score is set on a sliding scale from 5 to 1, where 5 means 'care has been taken to ensure that the differences between the goals and missions of the institutions are eliminated and the comparison is entirely fair', and 1 means 'the institution's different goals and missions have not been taken into consideration at all'.

4. Several different data sources should be used for the ranking; these should be clearly stated and explained to the consumers.

An individual data source is not able to offer a complete picture of an institution, which is why several sources should be combined in the ranking.

Score scale

5: There are several different data sources and it is easy to find a description of the data sources. Detailed and comprehensible information is given about the data sources' impact on the ranking.

4: There are several different data sources, these are stated and there is a general description of their impact on the ranking.

3: The data sources are stated, but some points are unclear. Or there is only one data source.

2: The data sources are stated but there are major issues that need clarifying.

1: It is not possible to find any details of the data sources.

5. The linguistic, cultural, economic and historical contexts of the institutions being ranked should be specified.

Different countries have differing opinions on what constitutes quality in an institution, and it should be clearly stated when such differences in opinion affect the ranking.

Score scale

5: The various linguistic, cultural, economic and historical contexts of the institutions are stated, as are their impact on the indicators, and are easily accessible. The consumer is reminded of the differences each time a comparison is made between different educational systems.

4: The various linguistic, cultural, economic and historical contexts of the institutions are stated and the differences are pointed out and discussed in relation to the ranking's indicators.

3: The various linguistic, cultural, economic and historical contexts of the institutions are stated.

2: The fact that the institutions come from different linguistic, cultural, economic and historical contexts is pointed out, and that this complicates the comparison.

1: Nothing is said about the various linguistic, cultural, economic and historical contexts of the institutions.

Category B:
Design and weighting of indicators

6. The methodology used to create the ranking should be transparent.

The way in which the ranking has been put together is central to the interpretation of the results. The exact definitions of the indicators and the precise algorithm for how the data have been transformed into a ranking position is essential if the user is to be able to understand and analyse the results.

Score scale

5: Details of the methodology are given in a way that is easily accessible, but at the same time with enough detail to enable someone else (with access to the data sources in question) to repeat the ranking and achieve the same result.

4: The method is explained with a level of detail that would enable people with experience of rankings to understand the theoretical design of the indicators.

3: The method is explained so that people with experience of rankings can understand in general terms the theoretical design of the indicators.

2: The method is stated, but not sufficiently well to allow people with experience of rankings to understand even in general terms how the indicators have been designed.

1: No details are given of the methodology at all.

7. Indicators should be chosen according to relevance and validity, and it should be clear what they are meant to represent.

This subscore can be difficult to set, since opinion is divided on the validity of different indicators for different quality dimensions, i.e. the various aspects of the institutions' operations that the ranking intends to measure. However, there is huge scope on this point between the various ranking lists, which facilitates the scoring process.

Score scale

5: The indicators have been chosen so that they are all extremely valid and relevant, do not overlap with each other and completely cover the area upon which the ranking is focused. One condition for this is that criterion 2 is satisfied.

4: The indicators have been chosen so that they are all extremely valid and relevant and cover most of the area upon which the ranking is focused. One condition for this is that criterion 2 is satisfied.

3: The indicators are largely valid and relevant and cover most of the area upon which the ranking is focused. One condition for this is that criterion 2 is satisfied.

2: The indicators chosen have a certain degree of validity and relevance, but only to a small part of the area on which the ranking is focused. One condition for this is that criterion 2 is satisfied.

1: Either criterion 2 has not been satisfied sufficiently for an assessment to be possible, or the majority of the indicators are invalid or irrelevant.

8. Measure outcomes in preference to inputs whenever possible.

It can be difficult to decide whether an indicator measures outcomes or inputs. More work needs to be done to develop this subscore.

Score scale

No exact criteria are stated for this subscore, but instead the score is set on a sliding scale from 5 to 1, where 5 means 'entirely appropriate balance between indicators that measure inputs and those that measure outcomes, with priority being given to

outcome indicators', and 1 means 'exclusively, or almost exclusively, inputs are measured, despite the fact that entirely feasible outcome indicators exist'.

9. If several indicators are used, the weighting between them should be given a prominent position in the presentation, and changes to the weighting should be avoided.

Since many rankings are very young, this subscore is harder for older rankings, which have had more time to change the weighting. However, since time series are desirable when interpreting statistics it is very important that these are actually reliable, which justifies tougher requirements on older rankings.

Score scale

5: The weighting is obvious and only minor changes have been made.

4: The weighting is sufficiently explained and only minor changes have occurred.

3: The weighting is sufficiently explained but has varied somewhat.

2: The weighting is not sufficiently explained, or has varied considerably.

1: There is no explanation of the weighting that has been used.

Category C:
Collection and processing of data

11. Only audited and verifiable data should be used.

No ranking is better than the data upon which it is based. The data that are used must therefore be stable and it should be possible to verify the data.

Score scale

No exact criteria are stated for this subscore, but instead the score is set on a sliding scale from 5 to 1, where 5 means 'all the data that have been used are openly accessible and free', and 1 means 'the majority of the data that have been used are inaccessible to anyone other than the ranking producers themselves'.

12. Only data that have been collected according to the proper procedures for scientific data collection should be used.

The data that have been used in the ranking must follow the same norms as data that are collected for scientific investigations. Distortions, measurement errors and conflicts of interest should be avoided.

Score scale

It is difficult to set up simple criteria for this subscore, since scientific quality is a broad concept. The score will therefore instead be set as an assessment on a scale of 1-5, with the following guidelines:

- National, official statistics in countries with a well developed public administration maintain a high level of scientific quality. They have a score of 5.
- The citation databases Scopus and Thomson Reuters maintain a high level of scientific quality in terms of data collection, but there are some deficiencies in terms of their overall systematic coverage (for example, medical journals are included to a greater extent than journals from the field of Human Sciences). They are therefore given a 4.
- Data that have been collected using questionnaires that are distributed to the institutions solely for the purpose of the ranking have fairly low scientific quality, and are as a rule given a 2. If support processes are applied (verification of data, feedback regarding the quality of the questions, etc.) or if distribution and collection are managed as a strict scientific measurement, the score can increase.
- A comprehensive study is, all things being equal, better than random sampling. It is therefore difficult to award a 5 to a random sampling.

13. The ranking process should be quality-assured.

Even if a ranking system has decided on a particular process, errors and negligence in the process can cause major problems. It is therefore important that the actual presentation of the ranking is also quality-assured, i.e. that checking and monitoring processes are introduced for the various stages in the process.

Score scale

5: The ranking process includes extensive quality assurance by independent examiners.

4: There is a thorough quality assurance system in place.

3: There is a rudimentary quality assurance system in place.

2: There are some elements of quality assurance in the process.

1: The ranking process is not quality-assured at all.

14. The work should be organised in such a way that it enhances the credibility of rankings.

A university ranking affects several different types of stakeholder, and their interest in the ranking can be conflicting. In order for a ranking to be credible at all layers, all stakeholders need to be represented in the ranking work and weighed against each other in a way that is satisfactory to all parties. For example, a reference group can be set up with all stakeholders represented to examine the methodology, data and presentation of the ranking.

Score scale

5: All stakeholders are represented on a supervisory body in such a way that no single stakeholder is allowed to dominate.

4: All stakeholders are represented on an advisory body in such a way that no single stakeholder is allowed to dominate.

3: There is no formal body in place, but representatives from various stakeholders are allowed to offer their opinions on the process.

2: Nobody other than the ranking producer is represented in the management of the ranking, but the ranking producer does not represent any particular stakeholder in the research and education policy debate.

1: Nobody other than the ranking producer is represented in the management of the ranking and the ranking producer him/herself represents a particular stakeholder in the research and education policy debate.

Category D:
Presentation of ranking results

15. Consumers should be given a clear explanation of all the factors used to develop a ranking, and they should be offered the opportunity to choose how the ranking is displayed.

Misinterpretation of ranking results is a danger that is often pointed out by universities, which is why it is important that even readers who do not study the results in detail can understand the fundamental characteristics of the ranking. At the same time, readers with more time and knowledge should be able to use the results too, to the greatest possible extent, thus the presentation should be highly flexible.

Score scale

5: The ranking is designed in a clear way for the consumer and the characteristics and peculiarities of the indicators are explained. If several indicators are used, the consumer is allowed to choose the weighting freely, and if different

kinds of institution are included in the ranking the consumer can choose how to filter and group them.

4: The ranking is designed in a clear way for the consumer. If several indicators are used, the consumer is allowed to choose the weighting, at least to some extent. Further, if different kinds of institution are included in the ranking the consumer can choose how to filter and group them, at least to some extent.

3: The presentation of the ranking includes an explanation of the input factors and the list can be displayed in more than one way.

2: The presentation of the ranking includes an explanation of the input factors, but despite the fact that several indicators are used, the list can only be displayed in one way.

1: The presentation of the ranking does not include any explanation of the input factors. (Being able to choose how to sort and group does not then make any difference.)

16. The ranking should be presented in a way that eliminates or reduces errors in original data, and it should be organised and published in a way that makes it possible to detect and correct errors.

The presentation of a ranking is an important quality assurance tool, since a good presentation facilitates the correct use of the ranking and the detection of any errors. Displaying original data, using control number of various kinds and grouping data into well-known categories can be a huge help in enabling the reader to assess the ranking's figures in terms of reasonableness. It is also important to present any errors that have been discovered.

Score scale

This subscore comprises several different components, which is why it has four subscores of its own.

A. Are original data[1] and the processing stage stated in connection with the list?
0 – No.
1 – Yes, partly.
2 – Yes, they are clearly stated.

B. Is it possible to group the ranked institutions?
0 – No.
1 – Yes, to a certain extent.
2 – Yes, with considerable flexibility.

[1] The information upon which the indicators are based. Number of teachers, number of degrees, size of research budget in appropriate currency, number of publications, compilation of survey responses, etc.

C. Are any previous errors presented in the ranking?

0 – No.
1 – Yes, but they are hidden away.
2 - Yes, in a prominent place.

D. Are the previous year's results easily accessible as time series?

0 – No.
1 – They are accessible, but not easily.
2 – Yes.

The total subscore is worked out according to the table on the following page.

Table 19: Table for scoring subscore 16.

A	B+C+D	Score
0	0-3	1
0	4-6	2
1	0-2	2
1	3-4	3
1	5-6	4
2	0-2	4
2	3-6	5

E.g.: If A has the value 1 and the total of B, C and D is 2, the score is 2.

APPENDIX 3: DETAILED METHOD SCORE

CHE (Zeit)

2. *The purpose and target group of the ranking should be clearly stated.* [4]

   The purpose and target group is easy to find, but the third and fourth target groups are unclear.

3. *The ranking should take the various missions and goals of institutions into account.* [4]

   They try to, but do not entirely succeed. The institutions are divided up by subject, but no more than that. However, they refrain from using indicators that they feel are inappropriate for making comparisons between countries (e.g. research budget). They also have a primary aim (consumer guidance for master's students), which reduces the significance of differences in missions and goals.

4. *Several different data sources should be used for the ranking; these should be clearly stated and explained to the consumers.* [4]

   Several of the data sources are not stated, but they are probably fairly standard. The survey material is not accessible.

5. *The linguistic, cultural, economic and historical contexts of the institutions being ranked should be specified.* [1]

   No information is given about this.

6. *The methodology used to create the ranking should be transparent.* [4]

   Information is provided about the methodology used and the reasoning behind it is fairly detailed, but there are some issues that are unclear. However, this mainly applies to those indicators that have not been used as selection criteria for the excellence group.

7. *Indicators should be chosen according to relevance and validity, and it should be clear what they are meant to represent.* [3]

   Many indicators that are reasonably valid and that together cover a large element of the purpose. They have also refrained from using indicators that are not regarded as being of sufficiently high quality, as well as from measuring subjects for which they do not feel there are any good indicators. However, there is a degree of overlap between the indicators and several aspects are missing. One major deficiency is that only EU projects, programmes and funding are counted.

8. *Measure outcomes in preference to inputs whenever possible.* [4]

   Difficult to say exactly, since no complete explanation is provided of the link between the indicators and the stars. However, the balance appears to be reasonable.

9. *If several indicators are used, the weighting between them should be given a prominent position in the presentation, and changes to the weighting should be avoided.* [3]

   The weighting is complicated, but details are provided. It is not entirely clear whether the weighting has been changed, but if it has then it is only a matter of minor changes.

11. *Only audited and verifiable data should be used.*[3]

    We know nothing about the survey material and some other areas. However, the sources that are used for the selection criteria for the excellence group are most likely OK (WoS and, probably, official EU statistics).

12. *Only data that have been collected according to the proper procedures for scientific data collection should be used.*

    The student questionnaire is sent to an extremely small selection. The contact person questionnaire was carried out solely for the purpose of the ranking. However, the sources that are used for the selection criteria for the excellence group are OK (WoS and, probably, official EU statistics).

13. *The ranking process should be quality-assured.* [1]

    Nothing is mentioned about this.

14. *The ranking should be organised in such a way that it enhances the credibility of rankings.* [2]

    Nothing is mentioned about this. However, CHE is independent.

15. *Consumers should be given a clear explanation of all the factors used to develop a ranking, and they should be offered the opportunity to choose how the ranking is displayed.* [3]

    Considerable flexibility, but difficult to know what the factors actually mean (they are often presented in a group). It is far from clear that certain stars carry more weight than others.

16. *The ranking should be presented in a way that eliminates or reduces errors in original data, and it should be organised and published in a way that makes it possible to detect and correct errors.*[1]

    A: 0. B: 1. C: 0. D: 0.

CWTS (Leiden)

2. *The purpose and target group of the ranking should be clearly stated.* [1]

   Have been unable to find any information on this.

3. *The ranking should take the various missions and goals of institutions into account.* [2]

   This is not really considered, but you can show the results per country, with some difficulty.

4. *Several different data sources should be used for the ranking; these should be clearly stated and explained to the consumers.* [2]

   It is either Scopus or Web of Science, but it is not stated.

5. *The linguistic, cultural, economic and historical contexts of the institutions being ranked should be specified.* [1]

   Not specified.

6. *The methodology used to create the ranking should be transparent.* [4]

   The methods are reasonably well explained, but not in enough detail to enable someone to repeat the ranking.

7. *Indicators should be chosen according to relevance and validity, and it should be clear what they are meant to represent.* [1]

   No score can be given for this since the purpose is not stated.

8. *Measure outcomes in preference to inputs whenever possible.* [5]

   All indicators measure results. It is not clear what a 'good balance' is in this context, since the purpose of the ranking is not stated.

9. *If several indicators are used, the weighting between them should be given a prominent position in the presentation, and changes to the weighting should be avoided.* [5]

   Weightings are completely clear and there have been no changes.

11. *Only audited and verifiable data should be used.* [4]

    Either Scopus or Web of Science is used.

12. *Only data that have been collected according to the proper procedures for scientific data collection should be used.* [4]

    Scopus or Web of Science.

13. *The ranking process should be quality assured.* [1]

    No information on this.

14. *The ranking should be organised in such a way that it enhances the credibility of rankings.* [1]

    Nothing about this is stated.

15. *Consumers should be given a clear explanation of all the factors used to develop a ranking, and they should be offered the opportunity to choose how the ranking is displayed.* [3]

    You can sort the list according to the desired indicator. However, weighting cannot be chosen and the factors are not explained.

16. *The ranking should be presented in a way that eliminates or reduces errors in original data, and it should be organised and published in a way that makes it possible to detect and correct errors.* [1]

    A: 0. B: 0. C: 0. D: 0.

HEEACT (Taiwan List)

2. *The purpose and target group of the ranking should be clearly stated.* [2]

   The purpose is to 'evaluate and rank the scientific research paper performance', which is more of an operational definition than a purpose. However, one can assume that they mean quality of research.

3. *The ranking should take the various missions and goals of institutions into account.* [2]

   This is not really considered, but it is easy to show the results per country.

4. *Several different data sources should be used for the ranking; these should be clearly stated and explained to the consumers.* [3]

   Only Web of Science, which is clearly stated.

5. *The linguistic, cultural, economic and historical contexts of the institutions being ranked should be specified.* [1]

   Nothing.

6. *The methodology used to create the ranking should be transparent.* [4]

   The methods are reasonably well explained, but not in enough detail to enable someone to repeat the ranking.

7. *Indicators should be chosen according to relevance and validity, and it should be clear what they are meant to represent.* [2]

   Assuming that they are trying to measure quality of research, the decision to only use bibliometric methods is not terribly appropriate.

8. *Measure outcomes in preference to inputs whenever possible.* [5]

   All indicators measure results.

9. *If several indicators are used, the weighting between them should be given a prominent position in the presentation, and changes to the weighting should be avoided.* [5]

   Weightings are completely clear and there have only been minor changes.

11. *Only audited and verifiable data should be used.* [4]

    The data come from Thomson Reuters (exact products are stated), but since it is an indirect source that is not open it is difficult to know the exact kind of data used.

12. *Only data that have been collected according to the proper procedures for scientific data collection should be used.* [4]

    The Thomson Reuters database is used in part, with the problems that entails, in combination with a proprietary name harmonisation process. It is not clear how this is done.

13. *The ranking process should be quality-assured.* [1]

    Nothing.

14. *The ranking should be organised in such a way that it enhances the credibility of rankings.* [2]

Nothing. However, HEEACT is independent.

15. *Consumers should be given a clear explanation of all the factors used to develop a ranking, and they should be offered the opportunity to choose how the ranking is displayed.* [4]

Reasonably well presented, but the consumer cannot choose the weighting freely, neither are the characteristics of the indicators explained.

16. *The ranking should be presented in a way that eliminates or reduces errors in original data, and it should be organised and published in a way that makes is possible to detect and correct errors.* [1]

A: 0. B:1. C: 0. D: 1.

High Impact Universities

2. *The purpose and target group of the ranking should be clearly stated.* [2]

Not really. '...proposition of a simple and transparent research performance index or institutional impact benchmark.' One can assume that they mean quality of research.

3. *The ranking should take the various missions and goals of institutions into account.* [1]

Nothing on this.

4. *Several different data sources should be used for the ranking; these should be clearly stated and explained to the consumers.* [3]

Scopus. Reasonably well explained.

5. *The linguistic, cultural, economic and historical contexts of the institutions being ranked should be specified.* [1]

Nothing on this.

6. *The methodology used to create the ranking should be transparent.* [5]

Completely clear.

7. *Indicators should be chosen according to relevance and validity, and it should be clear what they are meant to represent.* [1]

Unclear purpose, but measuring 'research performance' using only Scopus bibliometrics is not good enough.

8. *Measure outcomes in preference to inputs whenever possible.* [5]

It is all outcomes.

9. *If several indicators are used, the weighting between them should be given a prominent position in the presentation, and changes to the weighting should be avoided.* [5]

No changes yet (only published once).

11. *Only audited and verifiable data should be used.* [4]

    Scopus.

12. *Only data that have been collected according to the proper procedures for scientific data collection should be used.* [4]

    Scopus.

13. *The ranking process should be quality assured.* [1]

    No indication of this.

14. *The ranking should be organised in such a way that it enhances the credibility of rankings.* [1]

    No indication of this.

15. *Consumers should be given a clear explanation of all the factors used to develop a ranking, and they should be offered the opportunity to choose how the ranking is displayed.* [4]

    The indicators are explained clearly in connection to the list. You can sort in various ways. However, the characteristics of the indicators are not explained.

16. *The ranking should be presented in a way that eliminates or reduces errors in original data, and it should be organised and published in a way that makes it possible to detect and correct errors.* [1]

    A: 0. B: 0. C: 0. D: 0.

Jiao Tong (Shanghai List)

2. *The purpose and target group of the ranking should be clearly stated.* [2]

   They write that the list was established to compare Chinese universities with foreign ones.

3. *The ranking should take the various missions and goals of institutions into account.* [2]

   This is not really considered, but it is easy to show the results per country.

4. *Several different data sources should be used for the ranking; these should be clearly stated and explained to the consumers.* [3]

   Only a few data sources, but they are clearly stated.

5. *The linguistic, cultural, economic and historical contexts of the institutions being ranked should be specified.* [1]

   Not specified.

6. *The methodology used to create the ranking should be transparent.* [4]

   The methods are reasonably well explained, but not in enough detail to enable someone to repeat the ranking.

7. Indicators should be chosen according to relevance and validity, and it should be clear what they are meant to represent. [2]

This is difficult to assess, since the purpose is not clearly formulated. However, the heavy weighting of the Nobel Prize is a weakness, because only a few subjects are eligible for the Nobel Prize. WoS and the unweighted citations also give a distorted view of the subject division.

8. Measure outcomes in preference to inputs whenever possible. [4]

All indicators measure results. If the purpose is to compare Chinese universities with foreign ones, then inputs should also be of interest, such as research budgets and student-teacher ratio.

9. If several indicators are used, the weighting between them should be given a prominent position in the presentation, and changes to the weighting should be avoided. [5]

Weightings are completely clear and there have only been minor changes.

11. Only audited and verifiable data should be used. [4]

The data come from Thomson Reuters (exact products are stated), but since it is an indirect source that is not open it is difficult to know the exact kind of data used. A small amount of other data are also used and clearly stated.

12. Only data that have been collected according to the proper procedures for scientific data collection should be used. [4]

The Thomson Reuters database is used in part, with the problems that entails, in combination with a proprietary name harmonisation process. It is not clear how this is done. Furthermore, official statistics are collected, and these are of high quality.

13. The ranking process should be quality assured. [1]

Nothing.

14. The ranking should be organised in such a way that it enhances the credibility of rankings. [1]

Nothing.

15. Consumers should be given a clear explanation of all the factors used to develop a ranking, and they should be offered the opportunity to choose how the ranking is displayed. [4]

Reasonably well presented, but the consumer cannot choose the weighting. Neither are the characteristics of the indicators explained.

16. The ranking should be presented in a way that eliminates or reduces errors in original data, and it should be organised and published in a way that makes it possible to detect and correct errors. [1]

A: 0. B: 1. C: 0. D: 1.

Mines ParisTech (Professional)

2. *The purpose and target group of the ranking should be clearly stated.* [2]

   No such information has been found, but it can be assumed that it is about measuring the quality of education.

3. *The ranking should take the various missions and goals of institutions into account.* [2]

   This has not been done, but the results can be shown per country.

4. *Several different data sources should be used for the ranking; these should be clearly stated and explained to the consumers.* [1]

   Only a small proportion of the sources are stated. (How companies are selected.)

5. *The linguistic, cultural, economic and historical contexts of the institutions being ranked should be specified.* [1]

   Nothing.

6. *The methodology used to create the ranking should be transparent.* [4]

   The methods are reasonably well explained, but not in enough detail to enable someone to repeat the ranking.

7. *Indicators should be chosen according to relevance and validity, and it should be clear what they are meant to represent.* [1]

   Assuming that the ranking is trying to measure quality of education, the relevance and validity are very narrow.

8. *Measure outcomes in preference to inputs whenever possible.* [2]

   All indicators (the list only has one indicator) measure results. Assuming that the ranking is trying to measure quality of education, it is odd that no inputs are measured, such as the students' entry grades and suchlike.

9. *If several indicators are used, the weighting between them should be given a prominent position in the presentation, and changes to the weighting should be avoided.* [5]

   Weightings are completely clear and there have been no changes.

11. *Only audited and verifiable data should be used.* [1]

    It is not possible to assess this, since the sources are not stated.

12. *Only data that have been collected according to the proper procedures for scientific data collection should be used.* [3]

    The leaders of companies on the Fortune 500 list have to be regarded as a limited selection of successful entrepreneurs. It is not the institutions themselves that have compiled the information, but essentially the companies. The information (about the degrees held by the corporate leaders) is described as being official and is used in other contexts.

13. *The ranking process should be quality assured.* [1]

Nothing.

14. *The ranking should be organised in such a way that it enhances the credibility of rankings.* [1]

Nothing.

15. *Consumers should be given a clear explanation of all the factors used to develop a ranking, and they should be offered the opportunity to choose how the ranking is displayed.* [2]

Reasonably well presented, but consumers cannot choose the grouping.

16. *The ranking should be presented in a way that eliminates or reduces errors in original data, and it should be organised and published in a way that makes it possible to detect and correct errors.* [4]

A: 2. B: 1. C: 0. D: 1.

Observatory

2. *The purpose and target group of the ranking should be clearly stated.* [4]

Reasonably clear.

3. *The ranking should take the various missions and goals of institutions into account.* [3]

Not really, but many of the problems disappear by restricting the ranking to institutes of technology and solely to sustainable development.

4. *Several different data sources should be used for the ranking; these should be clearly stated and explained to the consumers.* [2]

Just one questionnaire. The institutions are assessed using a scale of one to ten, based on the responses. We do not know how.

5. *The linguistic, cultural, economic and historical contexts of the institutions being ranked should be specified.* [1]

Nothing.

6. *The methodology used to create the ranking should be transparent.* [1]

We do not know what the questionnaire looked like and we do not know how the assessment scale was designed.

7. *Indicators should be chosen according to relevance and validity, and it should be clear what they are meant to represent.* [4]

Highly relevant, but we do not know much about reliability

8. *Measure outcomes in preference to inputs whenever possible.* [5]

It is a little unclear what constitutes an input and an outcome in this case. However, the balance appears to be good.

9. If several indicators are used, the weighting between them should be given a prominent position in the presentation, and changes to the weighting should be avoided. [3]

All indicators are most likely given equal weighting.

11. Only audited and verifiable data should be used. [1]

Nothing.

12. Only data that have been collected according to the proper procedures for scientific data collection should be used. [2]

Very little information is available about this.

13. The ranking process should be quality assured. [1]

Nothing.

14. The ranking should be organised in such a way that it enhances the credibility of rankings. [2]

There is no systematic process for this, but the ranking producers work with *Alliance for Global Sustainability* (AGS) (a partnership between a handful of science and technology universities), and there are three institutes of technology that conduct the ranking together, and one of them does not come particularly high up the ranking.

15. Consumers should be given a clear explanation of all the factors used to develop a ranking, and they should be offered the opportunity to choose how the ranking is displayed. [3]

You can see each indicator on its own, which is good.

16. The ranking should be presented in a way that eliminates or reduces errors in original data, and it should be organised and published in a way that makes it possible to detect and correct errors. [1]

A: 0. B: 0. C: 0. D: 0.

QS

2. The purpose and target group of the ranking should be clearly stated. [2]

Have been unable to find any information on this. However, one can assume that it is about the overall quality of universities.

3. The ranking should take the various missions and goals of institutions into account. [3]

This is (perhaps) implicitly taken into account in the reputation surveys. Furthermore it is easy to display the results per country. The most interesting aspect is that they have introduced a classification system, which means that in theory you can limit the comparison to only look at institutions with a particular student volume, publication volume and specialisation. However, it is very disappointing that the consumer cannot filter the list using these classifications!

4. *Several different data sources should be used for the ranking; these should be clearly stated and explained to the consumers.* [2]

   We do not know much about the questionnaires and very little about the sources used to supplement the information provided by the institutions themselves.

5. *The linguistic, cultural, economic and historical contexts of the institutions being ranked should be specified.* [1]

   Not specified.

6. *The methodology used to create the ranking should be transparent.* [3]

   The methods are reasonably well explained, but not in enough detail to enable someone to repeat the ranking. There are no details of how the questionnaires are translated into indicators.

7. *Indicators should be chosen according to relevance and validity, and it should be clear what they are meant to represent.* [2]

   The indicators are generally valid, but in some cases there are deficiencies in their reliability (the reputation survey). Furthermore they do not cover the entire intended range of measurement. (e.g. actual education or research quality, collaboration, innovation, critical voices in society or breadth of recruitment are not measured).

8. *Measure outcomes in preference to inputs whenever possible.* [4]

   A mixture, with the emphasis on outcomes.

9. *If several indicators are used, the weighting between them should be given a prominent position in the presentation, and changes to the weighting should be avoided.* [3]

   Weightings are completely clear, but there have been significant changes.

11. *Only audited and verifiable data should be used.* [1]

    They use Scopus data, with the limitations that entails, but also conduct their own surveys, which are not explained very well. No details are given of what the institutions report.

12. *Only data that have been collected according to the proper procedures for scientific data collection should be used.* [2]

    The ranking uses Scopus data, which has its disadvantages, but the worst thing is that the questionnaires that are carried out do not appear to maintain a high level of scientific quality.

13. *The ranking process should be quality-assured.* [1]

    No information on this.

14. *The ranking should be organised in such a way that it enhances the credibility of rankings.* [2]

    There is no information on this, but the producer is independent.

15. *Consumers should be given a clear explanation of all the factors used to develop a ranking, and they should be offered the opportunity to choose how the ranking is displayed.* [3]

Reasonably well presented and the consumer can choose to sort by five broad indicator groups. Grouping opportunities are extremely limited.

16. *The ranking should be presented in a way that eliminates or reduces errors in original data, and it should be organised and published in a way that makes it possible to detect and correct errors.* [1]

A: 0. B: 0. C: 0. D: 1.

Rater (Global University Ranking)

2. *The purpose and target group of the ranking should be clearly stated.* [3]

The target groups are reasonably well stated, but the actual purpose is not clearly stated.

3. *The ranking should take the various missions and goals of institutions into account.* [1]

Nothing on this.

4. *Several different data sources should be used for the ranking; these should be clearly stated and explained to the consumers.* [2]

A clear explanation is provided of the questionnaire form, but the other sources are not clearly stated.

5. *The linguistic, cultural, economic and historical contexts of the institutions being ranked should be specified.* [1]

Nothing on this.

6. *The methodology used to create the ranking should be transparent.* [2]

There are major issues outstanding.

7. *Indicators should be chosen according to relevance and validity, and it should be clear what they are meant to represent.* [2]

There are a lot of indicators and they cover a large part of the intended quality dimensions. However, several are fairly irrelevant and above all they are of low quality: there are hardly any international student competitions in Sweden, and the institutions definitely do not monitor them; 'alumni who have achieved public recognition' is an impossible indicator in Sweden; 'cost of training and laboratory facilities' is hardly something that is distinguishable for Swedish institutions.

8. *Measure outcomes in preference to inputs whenever possible.* [5]

Reasonable balance.

9. *If several indicators are used, the weighting between them should be given a prominent position in the presentation, and changes to the weighting should be avoided.* [1]

This is not stated.

11. *Only audited and verifiable data should be used.* [1]

No access, or do not know what it is.

12. *Only data that have been collected according to the proper procedures for scientific data collection should be used.* [1]

This does not appear to be the case.

13. *The ranking process should be quality assured.* [1]

No indication of this.

14. *The ranking should be organised in such a way that it enhances the credibility of rankings.* [2]

No indication of this, but the producer is independent.

15. *Consumers should be given a clear explanation of all the factors used to develop a ranking, and they should be offered the opportunity to choose how the ranking is displayed.* [1]

No explanation or option to choose.

16. *The ranking should be presented in a way that eliminates or reduces errors in original data, and it should be organised and published in a way that makes it possible to detect and correct errors.* [1]

A: 0. B: 0. C: 0. D: 0.

Scimago

2. *The purpose and target group of the ranking should be clearly stated.* [2]

One indication of the purpose can be found in their assertion that they are examining 'research institutions'.

3. *The ranking should take the various missions and goals of institutions into account.* [2]

This is not really considered, but you can show the results per country, with some difficulty.

4. *Several different data sources should be used for the ranking; these should be clearly stated and explained to the consumers.* [3]

Scopus. Clearly stated.

5. *The linguistic, cultural, economic and historical contexts of the institutions being ranked should be specified.* [1]

Not specified.

6. *The methodology used to create the ranking should be transparent.* [4]

The methods are reasonably well explained, but not in enough detail to enable someone to repeat the ranking.

7. Indicators should be chosen according to relevance and validity, and it should be clear what they are meant to represent. [1]

Assuming that they are trying to measure quality of research, the decision to only use bibliometric methods is not terribly appropriate.

8. Measure outcomes in preference to inputs whenever possible. [5]

All indicators measure results.

9. If several indicators are used, the weighting between them should be given a prominent position in the presentation, and changes to the weighting should be avoided. [2]

Unclear weightings and significant changes.

11. Only audited and verifiable data should be used. [4]

All data come from Scopus.

12. Only data that have been collected according to the proper procedures for scientific data collection should be used. [4]

Scopus is used in part, with the problems that entails, in combination with a proprietary name harmonisation process. It is not clear how this is done.

13. The ranking process should be quality assured. [1]

No information on this.

14. The ranking should be organised in such a way that it enhances the credibility of rankings. [2]

No information on this, but the producer is independent.

15. Consumers should be given a clear explanation of all the factors used to develop a ranking, and they should be offered the opportunity to choose how the ranking is displayed. [3]

The list is long and published as a pdf document in a single version. However, this is reasonable considering the length and publication form of the list. The factors are explained in direct relation to the list, but the characteristics are not explained.

16. The ranking should be presented in a way that eliminates or reduces errors in original data, and it should be organised and published in a way that makes it possible to detect and correct errors. [1]

A: 0. B: 0. C: 0. D: 0.

Times Higher Education

2. The purpose and target group of the ranking should be clearly stated. [3]

It is not completely clear, but wording such as '[the indicators are] designed to capture the full range of university activities' indicates that they intend to measure university quality.

3. *The ranking should take the various missions and goals of institutions into account.* [2]

   These are not really taken into account, but it is possible to group the list by country and (perhaps) in the surveys these factors are implicitly considered.

4. *Several different data sources should be used for the ranking; these should be clearly stated and explained to the consumers.* [3]

   Web of Science, reputation questionnaires with surveys, as well as data from the institutions themselves. WoS is not specified, and no details are provided of the reputation surveys. The information from the institutions is clearly explained.

5. *The linguistic, cultural, economic and historical contexts of the institutions being ranked should be specified.* [1]

   Nothing.

6. *The methodology used to create the ranking should be transparent.* [3]

   There are some deficiencies in the methods relating to publication statistics, and in particular there are no details at all on the reputation surveys.

7. *Indicators should be chosen according to relevance and validity, and it should be clear what they are meant to represent.* [2]

   The indicators are generally valid, but in some cases there are deficiencies in their reliability (the reputation survey). Furthermore they do not cover the whole intended range of measurement. (e.g. actual education or research quality, collaboration, innovation, critical voices in society or breadth of recruitment are not measured).

8. *Measure outcomes in preference to inputs whenever possible.* [4]

   There are some input indicators.

9. *If several indicators are used, the weighting between them should be given a prominent position in the presentation, and changes to the weighting should be avoided.* [4]

   Weightings are completely clear. There have been some major changes, but the producer also states that it is an entirely new ranking.

11. *Only audited and verifiable data should be used.* [1]

    Nothing is open. (Except Web of Science, which is open but not free. However, that constitutes only a small part of the data sources of the rankings.)

12. *Only data that have been collected according to the proper procedures for scientific data collection should be used.* [2]

    WoS is counted as 4, but the questionnaires and information from institutions is only counted as 2.

13. *The ranking process should be quality-assured.* [1]

    Nothing.

14. *The ranking should be organised in such a way that it enhances the credibility of rankings.* [2]

    They talk about listening, but there does not appear to be anything formalised. However, the producer is independent.

15. *Consumers should be given a clear explanation of all the factors used to develop a ranking, and they should be offered the opportunity to choose how the ranking is displayed.* [3]

The factors are explained in general but not in direct association with the ranking list. Their characteristics are not explained. You can sort by five broad groups of indicators and it is possible to group by continent and country. Some division by subject.

16. *The ranking should be presented in a way that eliminates or reduces errors in original data, and it should be organised and published in a way that makes it possible to detect and correct errors.* [1]

A: 0. B: 1. C: 0. D: 0.

Webometrics

2. *The purpose and target group of the ranking should be clearly stated.* [5]

Very clear.

3. *The ranking should take the various missions and goals of institutions into account.* [1]

Nothing.

4. *Several different data sources should be used for the ranking; these should be clearly stated and explained to the consumers.* [3]

Details of the databases that are used to find universities are not given in full, but this is not particularly significant: they obviously try to gather all the information they can. But I cannot say that the sources are explained particularly well.

However, online presence is not only about the number of hits using search engines, it is also about the presence on appropriate forums, etc.

5. *The linguistic, cultural, economic and historical contexts of the institutions being ranked should be specified.* [1]

Nothing.

6. *The methodology used to create the ranking should be transparent.* [4]

Quite good. However, there is not much detail given about the Google Scholar indicator. They could have also made an attempt at a more precise description of how the searches are actually done.

7. *Indicators should be chosen according to relevance and validity, and it should be clear what they are meant to represent.* [4]

The purpose and methodology are fairly interwoven here. However, online presence is not only about the number of hits using search engines, it is also about the presence on appropriate forums, etc. Neither is the number of pages a perfect indicator, since it is the content that is important. An institution that has chosen a web solution that generates a lot of URLs will come higher up the ranking without necessarily offering more content. They would need a balancing indicator.

8. Measure outcomes in preference to inputs whenever possible. [5]

Difficult to decide what is an input and an outcome here. They do not appear to think themselves that it is only outcomes.

9. If several indicators are used, the weighting between them should be given a prominent position in the presentation, and changes to the weighting should be avoided. [4]

The weighting is clear, but we know nothing about how it has changed.

11. Only audited and verifiable data should be used. [4]

Only open sources, but indirectly (the search engines' indices, etc.) they are not open. This is not too much of a problem for the standard search engines, since they are in themselves a definition of visibility, but it is problematic for Google Scholar.

12. Only data that have been collected according to the proper procedures for scientific data collection should be used. [2]

Not really, they are after all mostly secret algorithms, etc.

13. The ranking process should be quality-assured. [2]

Some elements of quality assurance.

14. The ranking should be organised in such a way that it enhances the credibility of rankings. [2]

They seem to have the right approach, but have not established a formal influence. The producer is independent.

15. Consumers should be given a clear explanation of all the factors used to develop a ranking, and they should be offered the opportunity to choose how the ranking is displayed. [1]

No explanation is provided of the indicators and there is no option for re-weighting or sorting by a different indicator. However, you can group per country and continent, and the indicators are presented in separate columns.

16. The ranking should be presented in a way that eliminates or reduces errors in original data, and it should be organised and published in a way that makes it possible to detect and correct errors. [1]

A: 0. B: 1. C: 0. D: 0.

Appendix 4

Berlin Principles on Ranking of Higher Education Institutions

Rankings and league tables of higher education institutions (HEIs) and programs are a global phenomenon. They serve many purposes: they respond to demands from consumers for easily interpretable information on the standing of higher education institutions; they stimulate competition among them; they provide some of the rationale for allocation of funds; and they help differentiate among different types of institutions and different programs and disciplines. In addition, when correctly understood and interpreted, they contribute to the definition of "quality" of higher education institutions within a particular country, complementing the rigorous work conducted in the context of quality assessment and review performed by public and independent accrediting agencies. This is why rankings of HEIs have become part of the framework of national accountability and quality assurance processes, and why more nations are likely to see the development of rankings in the future. Given this trend, it is important that those producing rankings and league tables hold themselves accountable for quality in their own data collection, methodology, and dissemination.

In view of the above, the International Ranking Expert Group (IREG) was founded in 2004 by the UNESCO European Centre for Higher Education (UNESCO-CEPES) in Bucharest and the Institute for Higher Education Policy in Washington, DC. It is upon this initiative that IREG's second meeting (Berlin, 18 to 20 May, 2006) has been convened to consider a set of principles of quality and good practice in HEI rankings—**the Berlin Principles on Ranking of Higher Education Institutions.**

It is expected that this initiative has set a framework for the elaboration and dissemination of rankings—whether they are national, regional, or global in scope—that ultimately will lead to a system of continuous improvement and refinement of the methodologies used to conduct these rankings. Given the heterogeneity of methodologies of rankings, these principles for good ranking practice will be useful for the improvement and evaluation of ranking.

Rankings and league tables should:

A) Purposes and Goals of Rankings

1. *Be one of a number of diverse approaches to the assessment of higher education inputs, processes, and outputs.* Rankings can provide comparative information and improved understanding of higher education, but should not be the main method for assessing what higher education is and does. Rankings provide a market-based perspective that can complement the work of government, accrediting authorities, and independent review agencies.
2. *Be clear about their purpose and their target groups.* Rankings have to be designed with due regard to their purpose. Indicators designed to meet a particular objective or to inform one target group may not be adequate for different purposes or target groups.
3. *Recognize the diversity of institutions and take the different missions and goals of institutions into account*. Quality measures for research-oriented institutions, for example, are quite different from those that are appropriate for institutions that provide broad access to underserved communities. Institutions that are being ranked and the experts that inform the ranking process should be consulted often.
4. *Provide clarity about the range of information sources for rankings and the messages each source generates*. The relevance of ranking results depends on the audiences receiving the information and the sources of that information (such as databases, students, professors, employers). Good practice would be to combine the different perspectives provided by those sources in order to get a more complete view of each higher education institution included in the ranking.
5. *Specify the linguistic, cultural, economic, and historical contexts of the educational systems being ranked*. International rankings in particular should be aware of possible biases and be precise about their objective. Not all nations or systems share the same values and beliefs about what constitutes "quality" in tertiary institutions, and ranking systems should not be devised to force such comparisons.

B) Design and Weighting of Indicators

6. *Be transparent regarding the methodology used for creating the rankings*. The choice of methods used to prepare rankings should be clear and unambiguous. This transparency should include the calculation of indicators as well as the origin of data.
7. *Choose indicators according to their relevance and validity.* The choice of data should be grounded in recognition of the ability of each measure to represent quality and academic and institutional strengths, and not availability of data. Be clear about why measures were included and what they are meant to represent.
8. *Measure outcomes in preference to inputs whenever possible*. Data on inputs are relevant as they reflect the general condition of a given establishment and are more frequently available. Measures of outcomes provide a more accurate assessment of the standing and/or quality of a given institution or program, and compilers of rankings should ensure that an appropriate balance is achieved.

9. *Make the weights assigned to different indicators (if used) prominent and limit changes to them*. Changes in weights make it difficult for consumers to discern whether an institution's or program's status changed in the rankings due to an inherent difference or due to a methodological change.

C) Collection and Processing of Data

10. *Pay due attention to ethical standards and the good practice recommendations articulated in these Principles.* In order to assure the credibility of each ranking, those responsible for collecting and using data and undertaking on-site visits should be as objective and impartial as possible.
11. *Use audited and verifiable data whenever possible.* Such data have several advantages, including the fact that they have been accepted by institutions and that they are comparable and compatible across institutions.
12. *Include data that are collected with proper procedures for scientific data collection*. Data collected from an unrepresentative or skewed subset of students, faculty, or other parties may not accurately represent an institution or program and should be excluded.
13. *Apply measures of quality assurance to ranking processes themselves*. These processes should take note of the expertise that is being applied to evaluate institutions and use this knowledge to evaluate the ranking itself. Rankings should be learning systems continuously utilizing this expertise to develop methodology.
14. *Apply organizational measures that enhance the credibility of rankings.* These measures could include advisory or even supervisory bodies, preferably with some international participation.

D) Presentation of Ranking Results

15. *Provide consumers with a clear understanding of all of the factors used to develop a ranking, and offer them a choice in how rankings are displayed*. This way, the users of rankings would have a better understanding of the indicators that are used to rank institutions or programs. In addition, they should have some opportunity to make their own decisions about how these indicators should be weighted.
16. *Be compiled in a way that eliminates or reduces errors in original data, and be organized and published in a way that errors and faults can be corrected.* Institutions and the public should be informed about errors that have occurred.

Berlin, 20 May 2006