

The pressure induced by the rankings

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The academic's burden. University professors under perverse pressure?

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The invasion of performance indicators

- The evaluation culture has invaded the university environment over the last 15 years
- University and research administrators are adopting «business models» based on competition and comparison
- Academics and managers spend more and more time doing evaluation and selection
- → They want tools that simplify their tasks
- Quantitative indicators are simple: « Any number beats no number»

The four levels of performance evaluation

- Evaluating the researcher
 - * Number of publications, number of citations
 - * h-index, g-index and the like
- Evaluating the journal
 - * 2-year impact factor, 5-year impact factor
 - * Classification of journals
- Evaluating the institutions
 - * International rankings (Shanghai, THE, Leiden, U-Multirank, etc)
- Evaluating the countries
 - * World rankings of countries based on aggregates of the institutions

The use of these indicators is leading to manipulation

Engineering the indicators: the misuses and their consequences

1. The individual researcher

The focus on publication numbers and citation numbers has resulted in a number of deleterious effects:

- ❖ Authors tend to split their research findings into several papers, rather than a comprehensive paper
 - Bad for pedagogy
 - Explosion of published papers
- ❖ Authors revise their accepted papers even when they know their results have been superseded
- ❖ Researchers stay away from long-term or risky research topics: they want fast results leading to fast publications

These patterns are particularly prevalent among young researchers who must build up their CV

Engineering the indicators: the misuses and their consequences

2. The journals

The impact factor (IF) of a journal is an extraordinarily poor measure of «quality» for different reasons:

- it measures instantaneous impact, which has nothing to do with quality
- it has more to do with reviewing time and publication delays than with impact
- an author who is ahead of his time or visionary is often not cited until many years later

Worst of all, the IF is used for the evaluation of individuals !!

This is the level where the manipulations and abuses are taking the most enormous proportions

San Francisco Declaration On Research Assessment (DORA)

General Recommendation:

Do not use journal-based metrics, such as Journal Impact Factors, as a surrogate measure of the quality of individual research articles, to assess an individual scientist's contributions, or in hiring, promotion, or funding decisions.

Initiated by the American Society for Cell Biology; now signed by more than 400 editors and institutions, thousands of researchers including many Nobel Laureates.

See their latest editorial:

«For assessing individual works, a journal's IF is simply meaningless.»

Engineering the indicators: the misuses and their consequences

3. The institutions

Enormous efforts and budgets are spent by many universities to improve their positions in the world rankings.

Engineering the position in the rankings sometimes takes precedence over the pursuit of the university's stated objectives.

Examples of bad practices

- Hiring prestigious academics for short term visits at huge expense, and requesting them to put the university in their affiliation in all future publications.
- Mandating newly hired academics to publish at least so many articles in their first 3 years.

The university rankings are having a disastrous
effect on our university environment !!!

Engineering the indicators: the misuses and their consequences

4. The countries

Politicians are spending large amounts of money to evaluate their academics and their universities on the basis of performance indicators.

Budgets are allocated on the basis of performance indicators.

Ministers in charge of Higher Education are reorganizing the university landscape with the goal to score higher in the rankings

Engineering the indicators: the misuses and their consequences

This engineering has a huge cost in terms of

- ★ the man-hours invested that are diverted from other goals
- ★ the type and quality of the research
- ★ the integrity and credibility of the scientific community

Qualities of a good performance indicator

Yves Gingras: «Criteria for evaluating indicators», to appear, MIT Press 2014

The 3 criteria of Yves Gingras

Professor at the Centre Interuniversitaire de Recherche sur
la Science et la Technologie (CIRST, Montréal)

1. Adequacy of the indicator to the object it measures
Example: does the number of Nobel Prizes among graduates reflect quality of education ?
2. Sensitivity to the intrinsic inertia of the object
Example: universities have a huge inertia → be suspicious of a ranking where the relative position of universities changes by a large number in one year
3. Homogeneity of the dimensions of the indicator
Example: h-index is a heterogeneous indicator: it mixes quantity of papers published with citation counts

Combining different indicators into a single number is like transforming a multi-dimensional space into a single point, thus losing nearly all the information contained in the different axes (Gingras)

Qualities of a good performance indicator

My own additional quality criteria

4. Insensitivity to small variations in the data - don't rely on small numbers

Example: one additional Nobel Prize should not change the ranking of a university significantly

5. Normalization w.r.t. to field, size of institution, time period

Example: Normalized Impact (NI) set up by Karolinska Institute, Stockholm

For a more complete analysis, see:

Michel Gevers, "Scientific performance indicators: a critical appraisal and a country by country analysis", in 'Bibliometrics: Use and Abuse in the Review of Research Performance', Blockmans, Wim, Engwall, Lars and Weaire, Denis (eds.), Portland Press, London, 2014 (available on request)

The university rankings

- ❖ The most commonly used rankings (Shanghai, THE, Leiden, etc) violate most of these five quality criteria; Shanghai violates all of them.
- ❖ Yet most universities, including in Belgium, have become obsessed with these rankings.
- ❖ For many universities the objective is no longer high quality research, teaching and service to society, but high position in the rankings
- ❖ **Worst: the universities are now transferring the pressure induced by these university rankings onto their researchers, particularly on the young and newly hired ones**
- ❖ This is having disastrous consequences on the academic environment

The present situation in Belgium

- ❖ Belgium has seen a spectacular improvement in the quality of the research teams over the last 20 years.
- ❖ Collaboration (ARC/GOA - PAI/IAP) has been a key factor
- ❖ But budgets have not followed
- ❖ This leads to fierce competition, individualism, and a radical change in the academic environment
- ❖ The risk: the abuse of poor quality performance indicators means that this competition is based on rules that do not foster quality and long-term vision.

What can be done ?

- ❖ Development of better performance criteria ?
 - ★ U-multirank and others are underway
- ❖ Top universities could take the lead in rejecting the use of inadequate criteria just like top journals have done about IF
 - ★ The DORA people are calling for that
 - ★ «This university is not ruled by rankings», on the model of «This university is an equal opportunity employer»
- ❖ Why would the rectors of the belgian universities not take an initiative? We have excellent contacts with the top US and UK universities
- ❖ The media and politicians need to be educated about the dramatic consequences of using quantitative and often inappropriate criteria for the distribution of funds