Global university rankings in research evaluation: a comprehensive literature review

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Global University Rankings in Research Evaluation:
A Comprehensive Literature Review

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We address the question of why global university rankings should not be used for research evaluation. To answer this question, we analyze four groups of literature (academic vs non-academic literature, English-language vs Russian-language literature). The analysis shows that most researchers agree that rankings should not be used to evaluate research. However, they are still used for these purposes directly or indirectly, although recent developments give us hope for a change in the situation in the near future.

1. Introduction

Rankings have been used for quite a long time in various fields of human activity, in this regard, university rankings are no exception. However, global university rankings are a relatively new phenomenon, dating back to the *Academic Ranking of World Universities (ARWU)* in 2003. Rankings may have been originally conceived as a marketing and benchmarking tool, but very quickly penetrated the realm of policies and research evaluation. The appearance of the first global ranking was due to the implementation of excellence initiatives in China (*Projects 211 and 985*). In turn, ARWU stimulated the emergence of excellence initiatives in Europe (*Exzellenzinitiative* in Germany, *Initiatives d'excellence* in France, etc.). Thus, global university rankings have become de facto a tool for research evaluation and funding allocation. The idea of "one-button" evaluation looked too attractive to governments and university administrators.

Espeland and Sauder (2016) explored the cultural, economic, political, and social implications of academic rankings in the context of higher education. The authors delved into the historical development of rankings and how they have come to shape accountability mechanisms within academia. Through extensive research and analysis of primary sources, Espeland and Sauder argued that rankings have become powerful engines of anxiety that drive universities to prioritize reputation management over educational quality. They discussed how rankings influence university decision-making, resource allocation, and even individual career trajectories. The book challenges the prevailing belief that rankings reflect objective measures of excellence and instead presents them as socially constructed systems that perpetuate inequalities and narrow definitions of success in academia.

Since their emergence, global university rankings, or rather their use in policy initiatives, have been the subject of heated debate. Huang (2012) provided an overview of the debate around the *QS World University Rankings (QS)*. Iesbik Valmorbida, Rolim Ensslin, Ensslin, & Ripoll-Feliu (2016) identified 20 university rankings and major areas of criticism. These two reviews provide a good starting point for our research. At the same time, we do not just supplement these reviews with more recent literature, but we try to make our study more focused. The aim of this study is to provide an overview of the literature on the use of university rankings in research evaluation and excellence initiatives, focusing both on how university rankings are used in practice in research evaluation and on how different authors believe university rankings

should or should not be used in research evaluation. We analyse relevant literature in English, identified using *Web of Science*, as well as Russian-language literature. The choice of Russia is not accidental in the light of the objectives of the study. In 2013–2020, the Russian government implemented an excellence initiative called Project 5top100. The very name of the initiative stands for "five Russian universities should get into the top 100 of global university rankings"; thus, rankings played an exceptional role in this project. The review is supplemented by an analysis of grey (non-academic) literature.

2. Method

To search for relevant literature in English (with very few Spanish and Portuguese documents) we used Web of Science, search query "ranking* NEAR/2 university AND ("research evaluation" OR "research assessment" OR "research performance" " OR "research quality" OR "excellence initiative*")". The query returned 161 results (2005-2022). In the next step, we manually filtered out documents that did not match the research question. The "core" comprised 33 articles. In addition, to ensure that no relevant papers were omitted, we performed a forward snowballing search, which identified five additional papers.

To search for Russian-language literature, we used similar methods, but in general we analysed a wider body of literature on university rankings in Russian (the sample comprised 64 papers). The review was supplemented by an analysis of non-academic (grey) literature in both English and Russian. Due to the lack of a selective mechanism for grey literature, the sample was formed on the basis of expert opinion.
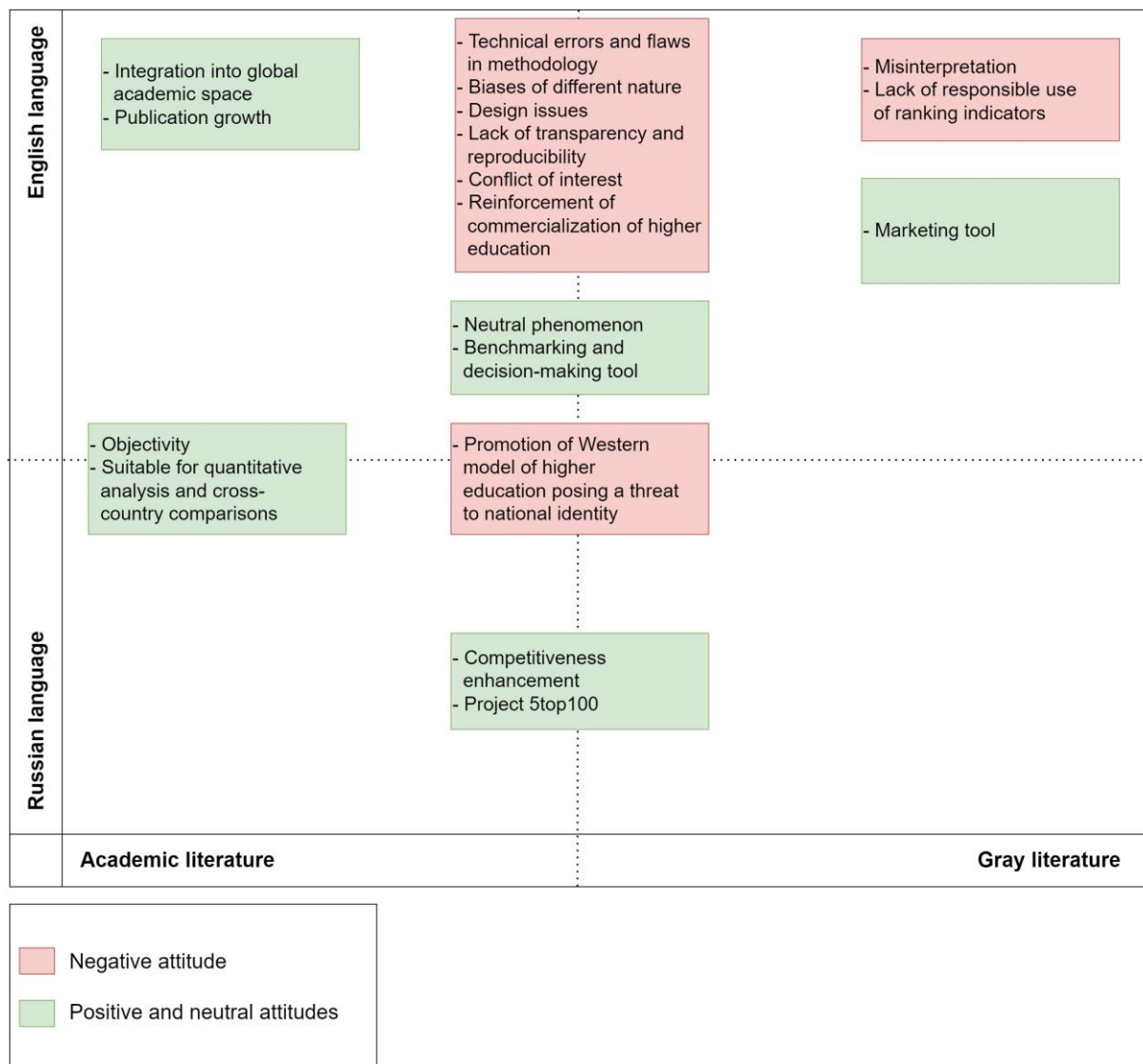
3. Results[1]

Different approaches to global university rankings and their use in research evaluation are generalized in Fig. 1.

Figure 1: Map of views on global university rankings
and their use in research evaluation

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[1] This section presents only key results, the full literature review has been published in the two preprints: *"University Rankings in the Context of Research Evaluation: A State-of-the-Art Multilingual Review"* (available at https://doi.org/10.31235/osf.io/hykze) and *"A Review of Russian-language Academic Literature on University Rankings with an Overview of Global Perspective"* (available at https://doi.org/10.31235/osf.io/9gdy2).

English language

- Integration into global academic space
- Publication growth

- Technical errors and flaws in methodology
- Biases of different nature
- Design issues
- Lack of transparency and reproducibility
- Conflict of interest
- Reinforcement of commercialization of higher education

- Misinterpretation
- Lack of responsible use of ranking indicators

- Marketing tool

- Neutral phenomenon
- Benchmarking and decision-making tool

- Objectivity
- Suitable for quantitative analysis and cross-country comparisons

- Promotion of Western model of higher education posing a threat to national identity

Russian language

- Competitiveness enhancement
- Project 5top100

Academic literature   **Gray literature**

■ Negative attitude

■ Positive and neutral attitudes

3.1. Major areas of criticism
1. First, a significant part of the academic literature points to technical problems and bugs in the methodologies used by rankings. This is the most extensive part of the criticism, so we have divided it into several narrower areas.

Technical problems associated with bibliometric data sources. Van Raan (2005) pointed out errors related to the identification of cited/citing publications as well as affiliations (see also Billaut, Bouyssou, & Vincke, 2010; Dimzov, Matošić, & Urem, 2021; Ioannidis et al., 2007). Pandiella-Dominique, Moreno-Lorente, García-Zorita, & Sanz-Casado (2018) also drew attention to the problem of incorrect data retrieval. Huang et al. (2020) based on a comparative analysis of the three largest databases, revealed discrepancies in bibliometric data, which can significantly affect the positions of universities in the ranking. Krauskopf (2021) based on the analysis of the methodology of ARWU subject rankings, revealed the problem of uneven distribution of Web of Science categories between different ARWU subjects (54 categories are absent altogether). It is noteworthy that most of the criticism of bibliometric data sources related to ARWU and, accordingly, Web of Science.

Problematic application of bibliometric indicators in a number of areas (technical, social sciences and, in particular, humanities). Different disciplines are characterized by different levels of citations (Ioannidis et al., 2007; van Raan, 2005).

Methodological bugs. Ioannidis et al. (2007) identified key challenges for ranking methodologies, including the need to take into account the size of the institution, measurement of average versus measurement of extremes, timeframe of measurements, and allocation of credit for excellence. Billaut et al. (2010) singled out several methodological issues of the ARWU ranking:

- There is a long-time lag between doing research and being awarded the Nobel or Fields Prizes. In addition, these awards represent only a small part of the spectrum of scientific fields.
- Highly cited researchers tend to be quite mature and have changed several universities over the course of their careers. Again, there is a time lag, due to which the relationship between the indicator and research performance of the institution being assessed is not obvious.
- Weighting coefficients for authoring articles in Nature and Science are illogical.
- The number of articles tells nothing about the quality of the research, just because a significant proportion of the articles have not been cited by anyone.
- "The number of Full Time Equivalent (FTE) academic staff" indicator is not clearly defined, so the Productivity criterion is questionable.

Huang (2012) drew attention to the issues associated with QS reputation questionnaires. The ranking methodology suggests that questionnaires can serve as an indicator of university performance, but in fact they are only an indicator of reputation. The return rate and lack of control over experience and qualifications of the respondents casts doubt on the representativeness of the sample. Krauskopf (2021) highlighted arbitrariness of top journals identification (ARWU) among other methodological flaws.

Pandiella-Dominique et al. (2018) drew attention to the critical issue of *reproducibility*. INORMS Research Evaluation Working Group (2022); Waltman, Wouters, & Eck (2020) also note the problem of transparency and reproducibility among other ranking issues.

Arbitrariness of the assignment of weights in the composite index calculation. This is a potential source of distortion in the calculation and interpretation of rankings using such index. (Bellantuono et al., 2022; Fauzi, Tan, Mukhtar, & Awalludin, 2020).

2. Methodological flaws contribute to the emergence of *biases* of various origins. One of the most widespread biases is *linguistic bias*, which arises due to the fact that bibliometric databases takes into account mainly publications in English (Bellantuono et al., 2022; Billaut et al., 2010; van Raan, 2005; van Raan, van Leeuwen, & Visser, 2011). In turn, linguistic distortions lead to the emergence of *territorial bias* (Fauzi et al., 2020; Safón, 2013; van Raan, 2005). Huang (2012) found a correlation between the number of reputation questionnaires returned and the number of universities from that country in the QS institutional rankings. Finally, there is a *reputational bias* that researchers mainly associate with a group of leading American universities (Safón, 2013; Safón & Docampo, 2020). All these distortions together lead to the *Matthew effect* in rankings. This effect can be explained not only by experts voting for well-known universities (this effect is clearly present in the QS and THE questionnaires), but also

by the fact that universities from the leading group can better attract financial and human resources compared to the rest.

3. Rankings evaluate only certain areas of university performance with a clear *emphasis on research*. None of the university rankings evaluate research and education equally, the focus is always on research (Iesbik Valmorbida et al., 2016; Ioannidis et al., 2007). In addition to education, other aspects of university activities such as university management and professional development do not receive proper attention. None of the global university rankings is suitable for evaluating the university as a whole (Vernon, Balas, & Momani, 2018). Ranking compliers consider what is easy to count, but not what not what should be taken into account (Abramo, 2017). Loukkola, Peterbauer, & Gover (2020) argued that a single "indicator may indeed reflect one aspect of an institution's performance, but it should not be generalized to reflect the institution's performance in relation to other aspects, or the entire institution altogether" (Loukkola et al., 2020, c. 24).

4. A number of researchers believe that global university rankings pose a *threat to the national identity of higher education*. Based on the example of the institutional reconfiguration of Asian universities as part of excellence initiatives, Li (2016) showed that rankings have become a tool for spreading the Western archetype of higher education. Global university rankings have played a key role in the Taiwanese government's excellence initiatives (Shreeve, 2020). The author noted the ambiguity of the rankings' impact on the national system of higher education. On the one hand, global rankings pose a threat of academic colonialism; on the other hand, the national system itself cannot exist in isolation, rankings can play the role of an integration tool. Gao & Zheng (2020) showed that excellence initiatives and new managerialism have a number of negative consequences for the development of social sciences and humanities (SSH) in Chinese universities.

In the Russian-language literature, some researchers also consider global university rankings as a tool for promotion of the Western model in higher education (Lazar, 2019; Pyatenko, 2019). There is also a more aggressive "isolationist" discourse, which is gaining strength in the current situation (see, for example, Bolsherotov, 2013; Eskindarov, 2022).

5. Many of the problems associated with global university rankings are not related to the methodology itself, but to the *misinterpretation of results* and the *non-responsible use of rankings* in general. However, this aspect is more often analysed in the non-academic literature ("More Than Our Rank," 2022; Waltman et al., 2020).

6. In case of most global university rankings (such as THE, QS, ARWU, and U.S. News & World Report), the league tables are compiled by *profit-seeking organizations* that generate revenue by selling to universities additional data, services (consulting), and other types of subscription-based content (Lim, 2021). Chirikov (2022) analyzed the ranking positions of 28 Russian universities that contracted Quacquarelli Symonds for the provision of consulting services in 2016-2021. The results showed an anomalous increase in ranking positions, not supported by changes in the characteristics of universities in national statistics. Thus, it can be assumed that QS acts as a *bias for itself*.

3.2. Positive and neutral outlook on rankings
There are not so many studies of university rankings that take a positive or neutral perspective. In a number of studies, the authors highlight the objective nature of rankings and the possibility of their use for cross-country comparisons (e.g., Docampo, 2011). Very often, these studies are

reduced to an attempt to reveal the underlying factors of rankings that determine the position of a university (Docampo & Cram, 2014; Klumpp, 2019; Pakkan, Sudhakar, Tripathi, & Rao, 2021). It is argued that rankings can be used as a benchmarking tool (Tuesta, Bolaños-Pizarro, Neves, Fernández, & Axel-Berg, 2020).

In the final report on the Rankings in Institutional Strategies and Processes (RISP) project, Hazelkorn, Loukkola, & Zhang (2014) indicate the possible areas for the use of rankings by universities:

- Information source
- Benchmarking tool
- Evidence in the process of decision-making
- Marketing promotion tool

In the Russian-language literature, rankings are most often viewed through the prism of competitiveness and integration into the global educational space (e.g., (Leonova, Malanicheva, & Malanicheva, 2017; Puzatykh, 2019). This interpretation of the rankings is mainly due to the fact that in Russia in 2013-2020, the Project 5top100 excellence initiative was implemented. The very name of the project contains the goal of five Russian universities to get into the top 100 of the global university rankings, so the rankings played a key role in this initiative. Accordingly, a significant part of the academic literature analyses university rankings in this context (Arefiev, 2014, 2015; Guzikova & Plotnikova, 2014; Kushneva, Rudskaya, & Fersman, 2014). The results of Project 5top100 were summed up by the Accounts Chamber of the Russian Federation ("Bulletin of the Accounts Chamber Vol. 2 (279)," 2021). The authors acknowledged that the main goal of the project was not achieved, while all participants experienced a significant increase in the number of publications and promotion in rankings (mainly in subject ones).

4. Discussion and Conclusions

We have explored four groups of literature (academic vs grey literature, Russian-language vs English-language literature). It is interesting to note that the various sections of the review have only one single thesis at the intersection of all the perspectives, i.e., threat to national identities in higher education. At the same time, English-language academic literature intersects in certain aspects with English-language non-academic and Russian-language academic literature, and Russian-language academic literature additionally has points of intersection with Russian-language grey literature.

Few studies consider global university rankings as a neutral or positive phenomenon. In these studies, as a rule, the authors mention objectivity and the possibilities of using ranking data for quantitative analysis and cross-country comparisons. However, our literature review showed that under the guise of apparent transparency and objectivity, there are many shortcomings that negatively affect all the stakeholders in the higher education ecosystem. Rankings can be used as a marketing and benchmarking tool, but only if the limitations of the methodology are recognized.

Thus, most researchers support the view that global university rankings should not be used for research evaluation, but they are still used, nonetheless. On the other hand, constant criticism from the academic community led to the development of rankers' *"discursive resilience: the ability to engage with critics in a productive way in order to navigate a potentially hostile*

environment" (Hamann & Ringel, 2023). In this regard, we would like to mention two events in 2022 which may radically change the future situation.

Firstly, the Agreement on Reforming Research Assessment was developed (CoARA, 2022), which, as of March 12, 2023, has been signed by 487 universities. The document clearly states that the use of rankings should be avoided when evaluating research (and researchers). At the same time, the drafters of the agreement admit the possibility of using rankings for the purposes of comparative analysis, but in this case, the limitations of the methodology should be recognized.

Secondly, at the end of 2022, some prestigious American law and medical schools announced their intention to quit the U.S. News & World Report (Hamann & Ringel, 2023). This is not the end of the *"ranking power,"* but more than a clear signal from the academic community.

A recent report published by Universities of the Netherlands (*Ranking the university: On the effects of rankings on the academic community and how to overcome them*, 2023) provided specific recommendations for cultural change in the use of university rankings, focusing mainly one-dimensional league tables. The proposed strategy for achieving the desired cultural change involves implementing initiatives at three distinct levels. Firstly, in the short term, universities need to individually undertake initiatives. Secondly, in the medium term, there need to be coordinated initiatives implemented at the national level, for example joint initiatives by all universities in the Netherlands. Finally, long-term, coordinated initiatives must be set up at the international level, for example at the European level.

If we all stop perceiving rankings in a certain way, they will no longer determine the evaluation of research. Therefore, we would focus on several specific stops:
- Stop evaluating academics based on university ranking indicators. Start rewarding the contributions of faculty and researchers in all areas of university activity.
- Stop constructing university strategies based on university rankings. Do not use ranking tiers in analytical reports for management decision making; instead, focus on the actual contributions made by a university (scientific, educational, and societal).
- Stop evaluating universities based on ranking indicators. Every university has a unique mission, and only fulfillment of this mission really matters.
- Stop using ranking information in national strategies and other kinds of ambitions. Only universities' contributions to national and global goals should be considered.
- Stop paying money for consulting services to ranking compliers. This is a pure conflict of interests.

Open science practices
Conducting this study made me think about the Helsinki Initiative on Multilingualism in Scholarly Communication (Helsinki: Federation of Finnish Learned Societies, Committee for Public Information, Finnish Association for Scholarly Publishing, & Universities Norway & European Network for Research Evaluation in the Social Sciences and the Humanities, 2019), which is rarely mentioned in this context. In the process of preparing the review, I came across the fact that the scientific quality of the articles of Russian authors in English is significantly higher than in Russian. In my opinion, this is a direct consequence of the phenomena analysed in this paper. The race for ranking promotion and quantitative indicators leads to the degradation of the national academic discourse, especially in the field of SSH. Therefore, in parallel with the English version, I will post a preprint in Russian and in the future, I will do the same with all the studies that I publish.

Competing interests
The author is affiliated with the Centre for Science and Technology Studies (CWTS) of Leiden University, which is the producer of the Leiden Ranking. The author is also a former employee of the Ministry of Science and Higher Education of the Russian Federation that implemented the Project 5top100 excellence initiative. No confidential information received by the author during the period of public service in the Ministry was used in this paper.

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