



Is measuring the knowledge creation of universities possible?: A review of university rankings



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ABSTRACT

University ranking indexes are considered very useful benchmarking tools in comparing the performance of universities around the world. Being placed in these prestigious indexes provides a strong advertisement for a university and helps them to attract high-quality students and academicians all over the world. However, there are some important deficiencies of university ranking indexes such as taking into account the whole university as a single unit without differentiating according to different fields of study or research, being limited to some well-known universities, and not considering institutional characteristics such as size or age. This study aims to explore the leading global university rankings to determine the similarities and differences in terms of their ranking criteria, main indicators, modeling choices, and the effects of these on the rankings. Designating the Times Higher Education World Rankings as the base ranking, a comprehensive comparison of the positions of the top universities of the base index with the matched positions of the same universities under other leading indexes including ARWU, QS, Leiden, and URAP is given. Correlations highlight the significant differences among some indexes even in measuring the same criterion such as teaching or research.

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1. Introduction

Universities play a central role in the development of societies across the world with their teaching and research missions for centuries. While carrying out these missions, they also create growth strategies and play significant roles in raising the employment of graduates, increasing the education level of society, creating opportunities for individuals, and the development of knowledge and technologies. In this sense, universities develop strategies to fulfill their historic mission of teaching and research and they also undertake a significant role in producing and diffusing new knowledge in today's ever-changing world. [Etzkowitz and Leydesdorff \(1999\)](#) impose a new function of facilitating research and technology transfer on universities in their popularized model of the “triple-helix” (university–industry–government). [Benneworth et al. \(2009\)](#) conceptualize universities as knowledge-explorers, being one of the two sub-systems of regional innovation systems wherein firms form the other sub-system, i.e., the knowledge-exploiters, complementing and interacting with universities, resulting in new regional innovative capabilities.

Given the significant role of universities in the development of societies, measuring and assessing the universities' performances becomes crucial for various stakeholders, including government, industry, and

society. University league tables are published each year in the UK in leading newspapers using the statistical data from central Higher Education Statistical Agency, the national funding agencies, and the national Quality Assurance Agency mainly to guide prospective students in their choice of future enrollment ([Eccles, 2002](#)).

The world's most prestigious universities have been annually ranked by popular ranking systems such as UK's Times Higher Education (THE) World University Rankings and Quacquarelli Symonds' (QS) World University Rankings starting in 2004. Since 2003, Shanghai Ranking Consultancy and Center for World-Class Universities of Shanghai Jiao Tong University publish annually the Academic Ranking of World Universities (ARWU). CWTS Leiden Ranking is another emerging study published by the Centre for Science and Technology Studies of Leiden University. While many of these international rankings, especially THE World and ARWU, confirm the US universities' leading role among other universities of developed countries, there also exist more than 30 national rankings employed around the world ([Saisana et al., 2011](#)).

Having achieved higher rankings in any one of these so called “prestigious” ranking systems is crucial for the university management as they publish this as news or reports in their brochures, catalogs, and annual reports to attract better students and faculty, and increase their public and private funding ([Hazelkorn, 2008](#); [Shin and Toutkoushian, 2011](#)). However, many of the good quality universities are left out of the top lists because they are young, focus on a few fields, or are non-English speaking universities ([van Raan, 2005](#); [Harvey, 2008](#)). Times Higher Education released the global university rankings for under 50

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in 2012 (Soh, 2013) claiming older universities have a wider and deeper alumni network and reputation, biasing the results in favor of these universities (reported in THE, 2015). Similarly, ARWU started releasing global rankings according to the broad subject fields starting in 2007 in order to meet the diversified needs of various stakeholders (Shanghai Ranking Consultancy and Center for World-Class Universities of Shanghai Jiao Tong University, 2015).

Moreover, university rankings also diversified over time such as new rankings focusing on only one criterion which were developed by leading indexes. It is easier to employ research indicators such as counting indexed publications or citations that depend on hard data since measuring teaching is not as straightforward as measuring research. Because teaching indicators are mainly dependent on reputational surveys or data provided by the universities, new rankings such as Leiden Ranking has emerged employing a methodology emphasizing more transparent indicators based on research (Centre for Science and Technology Studies, Leiden University, 2015).

Although university ranking systems have improved and adapted themselves over time, they are generally deficient in responding to different needs of the users in terms of specialized rankings across regions, fields, or subjects with objective measures of research and teaching criteria. Also, these rankings do not adequately reflect academic excellence to the majority (Hurtado, 2012). Moreover, many stakeholders question how comprehensive the global rankings are given that the same universities are repeatedly chosen as the highest performers year after year (Lincoln, 2012).

All these issues point to question the role rankings play in measuring the quality of higher education systems on one hand, and on another hand, how beneficial these ranking systems are to all users since currently this is the only tool excessively used by all stakeholders in measuring the performance of higher education institutions. This issue is clearly related to the indicators and the methodology of the existing leading global ranking systems. Thus, a need emerges to understand the similarities and differences among the ranking systems in terms of both the chosen indicators and data. Their transparency and reflections as to which universities appear in the rankings can then be evaluated.

The remainder of the study is organized as follows. Section 2 provides conceptual arguments to understand the role ranking indexes undertake in measuring higher education quality, while giving a synopsis of the university rankings all over the world. In Section 3, we first determine the main criteria measured by the leading global rankings, grouping the used indicators of the chosen rankings under these criteria. We then compare the positions of the best universities of a chosen base ranking with the matched positions of the same universities under other leading ranking indexes. Lastly, we elaborate on the correlations of the universities' positions across different rankings to put forward the strong and weak points of such rankings and make suggestions for the decision-makers and users of these rankings in Section 4.

2. Ranking indexes in measuring higher education quality

The massification of higher education, increased competition at the national and international levels, and internationalization of higher education created the public concern for measuring the quality of such institutions and as a result the spread of the university rankings has accelerated since the 1990s (Teichler, 2011). While university rankings are one of the essential ways of measuring the quality of higher education, quality measurement in higher education is a multi-dimensional problem that cannot be based solely on rankings.

First of all, defining quality within the context of higher education institutions is challenging, as quality relates to frequently conflicting objectives of meeting or exceeding expectations in two primary functions of higher education institutions: teaching and research. While many institutions in the UK, Germany, South Korea, etc. adapted the American model (so called post-Humboldtian model) of combining research and teaching within the same university, performing well in one function

might well result in lower performance in the other, highlighting the difficulty of achieving a balance in both (Shin and Toutkoushian, 2011). Second, measuring quality is another challenge, as there exist various indicators that can be used to measure teaching, research, and service quality in addition to a variety of sizes of institutions, weightings of indicators, and disciplinary, and regional differences of underlying institutions.

2.1. Quality measurement in higher education systems

University rankings emerged as a response to the needs of policymakers, higher education institutes, academicians, and the general public since the beginning of the 1980s when media and research institutions across the world began releasing improved and specified versions of rankings. University rankings are definitely a critical criterion in decision making for various stakeholders, yet there are possible negative side effects of rankings (van der Wende and Westerheijden, 2009; Dill, 2000; Shin and Toutkoushian, 2011). Many university executives focusing on raising their rankings in leading indexes face losing mission diversity (van der Wende and Westerheijden, 2009).

Given the drawbacks of university rankings, Shin (2011) draws attention to the other mechanisms of quality assurance and accountability along with rankings in measuring organizational effectiveness. Many universities' performance has long been measured by external agencies such as the American Assembly of Collegiate Schools of Business (AACSB) by applying principles of quality management used in the US (Mergen et al., 2000). While many universities adapt the voluntary accreditation mechanisms in North America, many other countries including UK, New Zealand, Sweden, and Hong Kong have been employing new forms of academic accountability, the so called "academic audits" in order to assure the quality of learning and standardization of the degrees offered (Dill, 2000). Östling (1997) draws attention to the significance of academic audits on focusing on the quality of work but not on quality of outcomes since work process is one of the three elements of standardization along with input skills and output (Mintzberg, 1979), which is not really emphasized in many quality assurance mechanisms.

In comparing accountability, quality assurance, and ranking methods, Shin (2011) states the primary goal of rankings is to provide information to their target customers, mainly students, parents, and higher education institutions while on the other hand quality assurance and accountability mechanisms focus on improving quality and financial accountability. In line with this, Shin and Toutkoushian (2011) suggest that future directions of quality measurement in higher education should be combining these mechanisms in order to contribute to enhancing institutional performance in addition to providing information to the target readers of such rankings. A hybrid system embedding quality assurance and accounting mechanisms into ranking would be specific at the country level given the national quality assurance and government styles of the underlying country. However, a global university ranking system summarizes the "quality" of the institution with one metric easy to understand by various stakeholders at any level resulting in the popularization of rankings internationally over the last few decades.

2.2. Rising trend of rankings in measuring higher education quality

Teichler (2011) refers to the prominent role of university rankings in the higher education arena becoming more global and stratified, demanding higher quality in teaching, increased research productivity, and better use of resources. There is no doubt university rankings gained a central place in measuring higher education quality where many media or institutional based rankings attempted to provide better rankings at national and international levels. Among these newly introduced rankings each year, a few of them remained to be the leading ones, while there is little theoretical guidance on the variability of

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