



An Anthology of Selected Papers of APQN Annual Academic Conference

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ASIA-PACIFIC QUALITY NETWORK

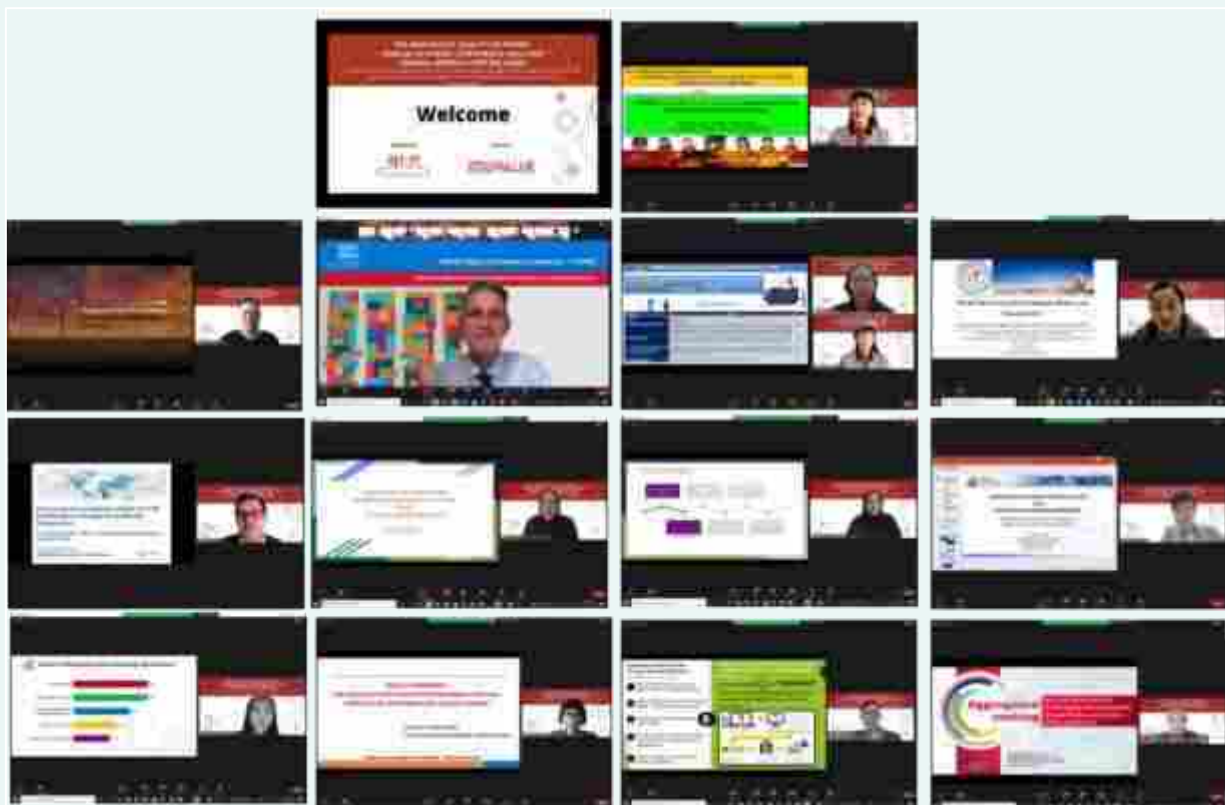
Asia-Pacific Quality Network (APQN)

Dissolving Boundaries for a Quality Region

Founded in 2003, the Asia-Pacific Quality Network (APQN) is a non-governmental and non-profit network who has been striving for “Enhancing the Quality of Higher Education in the Asia-Pacific Region” and "Dissolving Boundaries for a Quality Region". APQN has 250 members from 45 countries/territories, becomes the largest and the most influential international organization on higher education in this Region. APQN has played a crucial and unique role in improving the quality assurance mechanism, exchanging theory and practice experiences, promoting substantive co-operations, establishing Consultant Bank, reviewing Asia-Pacific Quality Register (APQR) and Asia-Pacific Quality Label (APQL) in this Region.

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Lead Consultant-Strategic, EDUVALUE, Singapore

Digital Publisher:

EDUVALUE

Eduvalue Pte Ltd (Singapore)

<https://www.eduvalue.com.sg>

Email: support@eduvalue.com.sg Tel: +65 90016733



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Aggregated Ranking as a Tool for Quality Evaluation and Positioning of Asia-Pacific Universities at the Global Level

Prof. Galina Motova, Ph.D., D.Sc.

Deputy Director of the National Centre for Public Accreditation

Prof. Vladimir Navodnov, Ph.D, D.Sc.

Director of the National Centre for Public Accreditation

Abstract

The paper presents the results of research into eleven most famous global institutional rankings and the analysis of their key characteristics. The authors suggest a new results aggregation method of education evaluation (rankings, accreditation), i.e., the method of league analysis, which is used to build the Global aggregated university ranking. The method relies on a variety of approaches used for the evaluation of university achievements, reduces subjectivity in evaluation and presents a position a university occupies at the global, regional and national levels. Such information may be used to shape the national educational policy, and to monitor the progress of the world's leading universities and national educational systems.

1. Introduction

Building global rankings of higher education institutions is a relatively new trend in globalization and internationalization of higher education. Due to the growing interest of the academic community in this issue the number of global rankings is increasing, primarily as a result of the emergence of new rankings in the developing countries, and the expanding activity of the existing ranking agencies, which include more and more higher education institutions in ranking procedures.

According to the IREG Observatory on Academic Ranking and Excellence (IREG), there are currently more than 100 academic rankings in the world: international, national, regional. The first national university ranking emerged in the United States in 1983 as a response to image and economic challenges. The first global ranking is considered to be the ranking released by Shanghai Jiao Tong University and called the Academic Ranking of World Universities (ARWU) or the Shanghai Ranking. The development team aimed to identify the world's best practices in higher education in order to study and apply them at the national level and thus to raise the quality and competitiveness of the Chinese educational system. China used the benchmarking for political purposes in order to strengthen the reputation branding of the country at the international level. The developing countries (Russia, the UAE, Turkey, etc.) are following the same path at the moment and are beginning to release their global rankings, which include HEIs from the developing countries in addition to elite American and European universities.

The IREG listing contains 17 Global University Rankings, which are developed and maintained by various organizations, mostly by specialized university laboratories.

The terms "global ranking" and "world ranking" have not been clearly defined yet. But they are actively used in the system of education. Neither there is a clear definition of the concept of "world university" (all universities have national affiliation) and in most cases the established concept of "world-class universities" is meant (Salmi J., 2016) As a rule, global and world rankings are understood as rankings which include higher education institutions from different countries. In the absence of a global (supranational) organization to conduct comparative studies of universities from different countries, the subjects of the rankings are organizations that have their national identity and promote their national interests. However, it must be recognized that the same universities

objectively occupy different positions in different global rankings, since the agencies offer different methods of ranking construction.

The purpose of this research is to analyze the goals and principles of building global rankings, to develop the methodology for building a uniform aggregated global ranking, and to identify the position of Asia Pacific Universities at the global level.

2. Analysis of goals and principles of building global assessment systems

Eleven global academic rankings were selected for the research. All these rankings were to meet the following criteria: stability (the ranking has existed for more than three years), frequency (the ranking is published annually), mass character (over a thousand universities from all the continents are included in the ranking), publicity (all information is publicly available).

Along with the economic and image goals of ranking compilation, the political goal to increase the competitiveness and attractiveness of the national education system as a whole, rather than that of individual universities is becoming more and more pervasive. Accordingly, the more universities in the country are included in the global rankings, the more competitive the national educational system is. This explains why the state education authorities of individual countries (especially those of the developing countries) urge their universities to participate in the rankings.

The analysis of the number and share of national universities located in the country where the ranking agency is located clearly shows there is an emphasis on national interests. This may be due to a lack of awareness or interest on behalf of universities themselves to participate in the rankings built by other countries.

Rankings use statistical information from databases and an expert assessment of the university's reputation. Both require sufficient financial and human resources from ranking agencies. The analysis showed that these agencies, as a rule, are not state organizations, they are usually funded by publishing companies or universities, including through the provision of additional consulting services. At the same time, the example of ARWU with obvious political and financial support of the Chinese Government, as well as the example of Moscow Ranking MosIUR show how quickly and on what scale the launch of a new global ranking can be carried out.

Most of the existing ranking companies that take into account scientometric data, with the exception of ARWU, actually use one of the two databases: Web of Science (WoS), owned and developed by Clarivate Analytics (until 2016 – Thomson Reuters), or Scopus, owned and developed by Elsevier Publishing Corporation. WoS mainly uses English-language texts in biology, psychology, medicine, physics, astronomy, economics, to a lesser extent in law, political science, mathematics and computer science. The Scopus bibliographic and abstract database was developed in 2004 on the basis of the Science Direct platform of Elsevier Publishing Corporation (founded in 1880 in Amsterdam), one of the four system-forming scientific publishing houses in the world along with Springer, Wiley, Informa. It publishes about a quarter of all scientific journals.

Thus, academic rankings focus primarily on the scientific activities of universities, evaluating research outcomes (publications, their citations, patents), outstanding achievements of teachers and students. Much less attention is paid to the third mission (service to society), and most often through the prism of the impact of scientific research on the regional (national, international) labor markets and economic sectors. There is practically no assessment of the quality of education. For example, the results of comparative studies of students' achievements (academic contests, competitions, grants, etc.) are not included in the evaluation due to the obvious insufficiency of such studies at the

global level, few participating countries and the lack of databases on the results of achievement assessment. At the same time, it is the quality of education that should be the main indicator of the effectiveness and the quality of a university's performance.

Ranking agencies are reluctant to disclose information about their activities, particularly concerning organizational and financial operation, as well as information about the methods of calculating and the indicators used. In most cases the calculations use weight coefficients for indicators that are subjectively selected by the agency. The conclusion is obvious: with some general approaches to evaluation the reputation and activity of a university, the calculation methods vary from ranking to ranking, therefore, the results for a particular university may also vary significantly. That is why the same university can take completely different positions in different rankings. As a rule, the same 10% of all higher education institutions are found in most global rankings. It is not only because they are the best, but rather because they are more active.

Another important criticism of the existing rankings is that these evaluation systems lack an important element – the site visit, which verifies the documented data and above all, gives a holistic three-dimensional picture of the university's activities: educational, research, international, and others. The site visit is an essential component of any accreditation procedure.

Given certain limitations of rankings in terms of evaluating universities, the International Partnership Issues Groundbreaking Principles on Ranking of Higher Education Institutions, the agreement officially adopted at the second conference of the International Association IREG (Berlin, May 18-20, 2006) states: "when correctly understood and interpreted, they (rankings) 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" . If the objective is set to evaluate and improve the quality of education, then even the most reputable rankings cannot be considered as the only indicator of quality, moreover, they act as a supporting indicator. But such a remark is valid provided the two conditions are met: accreditation agencies are recognized at the international level, and these agencies have open databases of their accreditation procedures (Motova, Navodnov, 2019).

There is only one international database of higher education institutions and programs accredited by agencies recognized at the European level - the Database of External Quality Assurance Results (DEQAR) which is supported by the European Union's Erasmus+ program through different projects. This database includes only those universities and programs that have been accredited by an accreditation agency included in the European Quality Assurance Register EQAR. It means that the agency has undergone international review and proved its compliance with the European standards (ESG) and as a result of this recognition, was granted the right to carry out international accreditation procedures regardless of the location of a higher education institution. The international recognition of the agency is an important condition to ensure the consistency of its activities and the quality of the accredited universities and educational programs.

Despite the fact that DEQAR is a European project, and currently contains information on universities from 43 countries of the European higher education area, it can still be called global. The DEQAR database (as of September 1, 2021) contains information about 2,797 accredited universities from the European Higher Education Area (EHEA) and about 119 universities from 39 countries that have been accredited by the agencies recognized by EQAR, including 43 universities from 13 countries of the Asia-Pacific region.

It is important to mention that accreditation procedures, unlike rankings, include site-visits, and thus validate documented findings in all the key areas of a university's activity.

3. Methodology. Principles for building a global aggregated ranking

Rankings have recently gained in popularity for obvious reasons: they provide users with information which is clear, simple, and easily accessed, and they help users make decisions regarding their studies, work, investments or political ambitions. However, the question of how to get a more objective picture using a variety of different approaches and taking into consideration a number of subjective opinions in the assessment still remains unanswered. Is it possible to build a "consolidated ranking" that could act as a reference ranking scale? A new method of league analysis "MetALeague" could be a feasible solution. The main principles of the ranking aggregation methodology are as follows:

- There are definite criteria for selecting global rankings used to build an aggregated ranking: stability, publicity, frequency, mass character. For our research we have selected eleven global rankings included in the listing of IREG Observatory on Academic Ranking and Excellence. The methodology could be extended to other rankings, and most importantly, other global assessment systems if any. For the purpose of our research, we have also used the Database of External Quality Assurance Results (DEQAR).
- Rankings are converted into league tables. This approach makes it possible to consolidate totally different ways of university assessment and take a comprehensive look at the system from different perspectives. The rating scale is designated by letters: A, B, C, D, ...
- The McKinsey-Abel vector approach is used for aggregation. According to this approach, the position of the university in various rankings is characterized by vector assessment.
- In order to build a consolidated league table, we use the mathematical apparatus of the Theory of voting in small groups, i.e., Borda's convolution (Emerson, 2013), plurality, etc., rather than linear combination with weighting factors.
- We introduce new "weak" convolutions, i.e., we do not use all the ranking results, but only a certain number of the best ones. In our research we have used 7 out of 12.

According to Webometrics.info data, there are at least 25 thousand higher education institutions in the world. Taking into account all the universities represented in the sample of eleven rankings, their number comprised 2,930 higher education institutions from 120 countries, i.e., a little over 10% of the total number. The fact that these 10 global academic rankings are included in the 10 % is a significant accomplishment. We can call this sample TOP 10, i.e., 10% of the best world-class universities.

When building an aggregated ranking, it is important to determine the number of leagues into which all higher education institutions will be divided. There is a well-established practice of dividing scientific journals into four quartiles. In the case of global ranking, we divided higher education institutions into seven leagues:

- TOP-1 (1% of the best universities in the world) includes about 250 universities;
- TOP-2 (2% of the best universities in the world) includes 500 universities with 250 universities from TOP-1;
- TOP-3 (3% of the best universities in the world) includes 750 universities;
- TOP 4 includes 1,000 best universities in the world;

- TOP-5 includes 1,250 best universities in the world;
- TOP-10 (10% of the best universities in the world) included in the global rankings;
- TOP-15 (15% of the best universities in the world) included in the global rankings.

The choice of one percent of the best universities as the leaders at the global level is as prestigious as the choice of top 100, moreover, it is more accurate if we take into account the number of universities under consideration. We argue that this is a more justified scale to analyze the positioning of universities in global and/or other rankings. And a more correct strategic objective for universities is on being included in the top 1% of the best universities in the world rather than top 100.

The TOP group can rank universities in descending order of the Board index. Based on this method we assessed 2,930 higher educational institutions included in the global aggregated ranking. The Global Aggregated Ranking (GAR), built on the basis of the league analysis methodology, provides ample opportunities for analytical research. One of its possible applications is to analyze the positioning of universities in certain countries: the number of universities in the country included in the ranking and their distribution by leagues (Table 1).

	Total in GAR	TOP distribution							No of HEIs in the country ¹	Percentage in the GAR (%)
		TOP-1%	TOP-2%	TOP-3%	TOP-4%	TOP-5%	TOP-10%	TOP-15%		
China	399	23	28	36	28	27	251	6	1,062	37.5%
United States	383	72	56	38	31	17	169	0	2,120	18%
Japan	153	8	7	7	13	14	103	1	765	20%
France	139	12	8	7	17	21	73	1	408	34%
India	137	0	4	6	5	11	108	3	812	17%
United Kingdom	109	26	14	18	14	11	26	0	248	44%
Russian Federation	108	1	8	6	5	8	78	2	578	18.5%
Germany	93	19	25	10	4	8	27	0	359	26%
Turkey	82	0	0	6	7	4	65	0	173	47%
South Korea	78	7	6	10	6	6	42	1	248	31.5%
Brazil	74	1	5	2	8	7	50	1	1,048	7%
Italy	68	9	16	10	10	4	19	0	100	68%
Spain	66	5	12	9	14	6	20	0	112	59%
Poland	64	0	2	5	11	10	36	0	349	18%
Iran	56	0	2	5	7	5	37	0	263	21%
Chinese Taipei	55	1	4	9	1	3	36	1	142	39%
Canada	53	10	9	5	3	2	24	0	141	37.5%
Australia	39	8	16	5	3	5	2	0	94	41.5%
Egypt	28	0	1	0	4	2	21	0	55	51%
Pakistan	28	0	0	1	2	1	24	0	154	18%

(Table 1. Ranking of countries/territories by the number of universities listed in the Global Aggregated Ranking-2021 (as of 2020). Top-20 countries are listed below. The results for other countries are available on www.best-edu.ru. (1. according to the World Higher Education Database <https://whed.net/home.php>)

Through the use of specially developed software the suggested ranking allows sampling and comparative analysis of two or more countries. For example, let us take HEIs in the Asian region (Table 2).

Country/territory	Total	TOP 1%	TOP 2%	TOP 3%	TOP 4%	TOP 5%	TOP 10%	TOP 15%	No of HEIs in the country	%
China	399	23	28	36	28	27	251	6	1,062	37.6
Japan	153	8	7	7	13	14	103	1	765	20.0
India	137	0	4	6	5	11	108	3	812	16.9
Russia	108	1	8	6	5	8	78	2	578	18.5
Turkey	82	0	0	6	7	4	65	0	173	47.4
South Korea	78	7	6	10	6	6	42	1	248	31.5
Iran	56	0	2	5	7	5	37	0	263	21.3
Chinese Taipei	55	1	4	9	1	3	36	1	142	38.7

Pakistan	28	0	0	1	2	1	24	0	154	18.2
Malaysia	26	1	3	1	1	1	19	0	81	32.1
Saudi Arabia	23	2	1	1	0	1	18	0	71	32.4
Kazakhstan	19	0	0	1	2	3	13	0	112	17.0
Thailand	17	0	2	0	2	3	10	0	146	11.6
Iraq	14	0	0	0	0	1	13	0	94	14.9
Indonesia	13	0	0	0	2	2	9	0	1,258	1.0
Israel	10	4	1	2	0	0	3	0	58	17.2
Lebanon	8	0	1	0	0	2	5	0	39	20.5
Jordan	8	0	0	1	0	1	6	0	31	25.8
UAE	8	0	0	1	1	1	5	0	53	15.1
Vietnam	8	0	0	0	0	0	8	0	172	4.7
Philippines	7	0	0	0	0	1	6	0	1,332	0.5
Singapore	6	2	0	0	0	2	2	0	9	66.7

(Table 2. Ranking of countries/territories by the number of Asian universities listed in the Global Aggregated Ranking-2021, as of 2020)

Table 3 shows the leading universities worldwide distributed by their locations

Continent	Total	TOP 1%	TOP 2%	TOP 3%	TOP 4%	TOP 5%	TOP 10%	TOP 15%
Asia	1,302	54	67	97	84	101	884	15
Europe	1,061	118	119	98	115	105	502	4
North America	472	83	65	45	35	21	223	0
South America	256	1	8	6	12	13	115	1
Africa	118	2	4	1	8	10	93	0
Oceania	48	9	19	8	4	5	3	0

(Table 3. Ranking of countries by the number of universities located in different continents and listed in the Global Aggregated Ranking-2021 (as of 2020)

4. Conclusions

The construction of the Global Aggregated Ranking (GAR) makes it possible to understand how universities are positioned at the international level. The use of generalized results of several different rankings can significantly enhance the credibility of quality assessment of every university and provide a more comprehensive picture of its achievements.

The results of various global rankings and quality assessment systems consolidated into one database make it possible to carry out a comparative analysis of a country's universities and national educational systems, to follow the dynamics of their achievements, to monitor the effectiveness of financial contributions, to make forecasts and strategic planning of higher education development (Bolotov et al., 2019).

The paper may be of interest to national education authorities and national governments responsible for the strategic planning of higher education development.

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Author's bio



Prof. Galina Motova, Ph.D., D.Sc. Deputy Director of the National Centre for Public Accreditation (2010 – present time). Vice-President of Asia-Pacific Quality Network (2019 – present time). Editor-in-chief of the journal “Accreditation in Education” (2005 – present time). Deputy Director of the National Accreditation Agency (1996-2009). Member of CEENet (Central and Eastern European Networking Association) Management Committee (2006-2010). Honored Worker of Education of the Russian Federation. Distinguished Worker of Public Education of the Russian Federation. One of the authors of the National Reports for the Bologna Process in 2007, 2009, 2015. The author of more than 200 publications, including 3 monographs, 2 student manuals approved by the Ministry of Science and Higher Education of the Russian Federation.



Prof. Vladimir Navodnov, Ph.D., D.Sc. Director of the National Centre for Public Accreditation (2009 – present time). Honored Worker of Education of the Russian Federation. Director of the National Accreditation Agency (1995-2009). Honored Worker of Science of the Mari El Republic. Academician of the Russian Academy of Natural Sciences. Honorary Citizen of Russia. Research and teaching experience is more than 30 years. One of the authors of the National Reports for the Bologna Process in 2007, 2009. The author of more than 250 publications, including 3 monographs, 2 student manuals approved by the Ministry of Science and Higher Education of the Russian Federation.