THE NECESSITY OF RANKING RESEARCH ORGANIZATIONS IN VIETNAM

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Abstract:

Through the study on the world ranking of research organizations[1], the authors looked at the effect of rating the performance of the institutions concerned. There are two types of rankings, i.e ranking of research institutions in the world (called international ranking) and ranking of research institutions in the country (known as national ranking). This article analyzes the views on the international ranking published by Scimago and Thomson Reuters, and the national ranking of Germany (published by the Federal Science Council of Germany) and Japan (published by Thomson Reuters) to clearly understand the significance of ranking of research institutions. The authors also analyzed the views on the necessity of ranking of research institutions in Vietnam for science and technology (S&T) development policy makers and the research organizations themselves as well as for local public, in general. From the analysis, the authors considered that in the present context of S&T of Vietnam, ranking the research organizations was a necessary task to perform in parallel with the periodic review of their performance.

Keywords: *Ratings; Research Organizations*; *Policy Planning; Science and Technology development*

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1. Introduction

The publication of the evaluation results and ranking of research institutions in the world has just been thriving since the late 1990s and early 2000s, but it has become a major concern in the society and research community in many countries around the world. In a number of scientific forums, people hotly debated on the ranking and the published line-up. There was not only much praise for rankings, but also controversial reaction - criticism for some rankings. International rankings had competitive nature in terms of reputation while national rankings were often associated with the purpose and objectives of the country strategy.

[1] Research Organizations in this article include research and development centres, research institutes and universities

This article is to concentrate on finding out how a country deals with the ranking of research institutions, not go into a thorough analysis on the criteria and the way to implement such rankings. From there, the author will analyze the views about the necessity of the ranking of research institutions in Vietnam.

2. The significance of ranking research institutions

In recent years, a number of agencies have carried out the ranking of research institutions and their report caused due attention of many researchers and managers. Here we will analyze the views of some famous rankings to clearly understand how countries deal with ranking research organizations, and the significance of this activity:

SCImago Lab is a team from the University of Granada, Spain which implemented the Project on Ranking research organizations (the project title was The SCImago Institutions Rankings). They analyzed the research results of the research organizations. The fundamental purpose of the project was to design analytical tools to help research organizations in monitoring and evaluation of their research results and make decisions improve the efficiency of the research and create the opportunity to receive financial support. The most important output of this project is the reports ranking research organizations in the world- SIR World Report[2], including a list of line-up research organizations having published large number of world's leading scientific papers and also supplements for different regions. The project also conducted ranking of scientific journals and the countries in different fields of research. This was an information portal providing science indicators of journals and nations based on the information collected in Scopus[3]. These indicators were used to evaluate research areas of concern. SCImago have done this job in a basic manner since 2009 and up to now has five reports published, which were the products analyzed respectively for the period 2003-2007 (published in 2009); 2004-2008 (published in 2010); 2005-2009 (published in 2011); 2006-2010 (published in 2012); and 2007-2011(published in 2013). SCImago implemented rating/ranking based on the analysis of indicators on the performance of research organizations. The indicators were: *scientific impact*-ie the position of research institutions in the research community of a country or region or worldwide; *scope of output* - articles published; and *International*

[2] Scimago Institutions Rankings - SIR World Report in 2009, 2010, 2011, 2012 và 2013

[3]Scopus is a database (belongs to the Publisher Elservier) on the peer-reviewed publications: scientific journals, books and conference proceedings. Scopus provides overview analytical data output in research fields: science, technology, medicine, social sciences, arts and humanities.

linkages/cooperation-proportion of articles having international collaboration with other research organizations in one or more other countries[4]. The ranking reports always get special concern of policy-makers, managers, researchers, the media and general public - who are interested in research capacity of institutions around the world.

Thomson Reuters: This famous communicating company holds very large block of assets of scientific databases (Thomson Scientific Database). From the exploitation and analysis of data, they have published a lot of useful results for researchers' reference. One of the outstanding results of the analysis chain was the ranking of research institutions in 22 fields of study by the system of "Essential Science Indicators"- ESI[5]. Those are the indicators which allow to determine the influence of individuals, organizations, articles/publications and a country on a certain field of study, as well as to identify emerging areas of research that may affect their development.

In 2012, TOKYO - Thomson Reuters published a new ranking of research institutions in Japan in 22 areas of research[6] in the period from 2001 to 2011[7], in which the key criterion was the level of *citations* of articles published from January 2001 to December 2011. Compared with research organizations in the world it could be noticed that research organizations of Japan in 5 areas (materials science, physics, chemistry, biology/biochemistry and immunology) were identified as ranked in the World Top 5 and Top 10; This demonstrated the important special contribution of Japan in the world research community. In particular, the research organizations of Japan in three areas (materials science, physics and chemistry) have very strong influence. So research organizations and researchers in Japan have always been targeted partners to cooperate. In Japan, the results of rating research institutions has increasingly been used in many important work. Many research institutions use this data for strategic development of their organizations. The ranking of these organizations may also be changed each year, so people have to rely on the evaluation results within a process of 10 years to ensure a fair judgement. In late December 2012, Japan used the data analysis and the ranking to make decision to merge some universities and research institutes. Like Japan, long time ago, the Max-Planck Institute (Germany)[6] and the Academy of Sciences of China (CAS)[7] came into being

[4] Summary of Scimago reports "Scimago Institutions Rankings", 2013

[5] The essential scientific indicators - ESI is a database providing statistical data on publication and citation trends used to measure the efficiency of study. ESI, based on data from Thomson Reuters for 10 years, is a collection of information about researchers, research institutions with highest ranking in the world based on the number of citations published. ESI data is updated for every 2 months.

[6] Information taken from "Report of the International Commission for System Evaluation of the Deutsche Forschungsgemeinschaft and the Max Planck Society", Hanover 1999.

as a result of the unification of the organization through the analysis of ranking results.

Federal Republic of Germany Scientific Council - WR: Since early 2003, the WR has submitted their study findings and proposed methodology, plan to conduct the rating of research institutions and from July 2003, WR has officially started implementing this plan[8]. In the first steps of implementation, with the motto "check and balance" methodology, a group of local and international experts entrusted by WR was to develop the methodology of rating research institutions. From practical evaluation in Germany, WR confirmed that comparative assessment or rating could increase the transparency on the operational efficiency of the research system and also help the organization itself have "input materials" to develop a strategy to increase competitiveness, enhance their reputation in the local and global research community. For ranking research institutions, the main assessment criteria include: *quality* - this is the indicator to ensure the novelty of research results with the number of citations of scientific articles/publication has been used; *impact* - the contribution of research organizations to the development of the research field, the indicator is the number of scientific papers published; *performance efficiency* - based on the relationship between research outputs and resources; *encouragement of young researchers* - is the indicator corresponding to the number of post-graduate students, young researchers with independent scientific position; *relevance* - the association of research results with other research fields; *in industrial applications* - for manufacturing, service sector…; *continuous contributions to education* - training courses; contribution to the *dissemination of knowledge* to the public - advisory services and transfer of research results.

Thus, the significance of ranking of research institutions is a wish to show the rank in terms of performance efficiency, quality of outputs and the fundamental contribution of the organization to the research community for the ones to make reference in their making decisions. This ranking brings significant value/ benefit, but also encounters many difficulties/ criticisms.

3. Value and difficulty in ranking research organizations

Ranking research institutions *brings following basic values*:

- *Provided information*: At national level, the ranking system of research organizations can provide useful information for government S&T

[7] Currently, the Chinese Academy of Sciences - CAS has developed the ranking of research institutions based on a series of research output indicators. Document provided by CAS.

[8] Information taken from the report: "Recommendations for rankings in the system of Higher education and research", of German Science Council (WR), 12th November 2004

agencies, managers, policy makers. Ranking also makes important contribution in shaping the quality of research and also ensures compliance of science standards. The orientation of research can be "entrusted" through defined ranking criteria, indicators. For individual researchers, ranking is as a source of data to make comparison between the performance of research organizations, helping them to have better choice of which organizations they want to work for;

- *Improved quality*: The ranking is considered as an useful role to play in focusing on important aspects of scientific achievements. In promoting quality of research, everyone believed that research organizations wanted to be "No. 1" and the country wanted to have research institutions held the top rank in the world. Therefore, the rating can boost scientific community to try to improve their quality, encourage competition and improve efficiency of study;
- *Promoted healthy competition*: The ranking sometimes facilitates research organizations to express their significant outstanding features. Thus, ranking will lead to higher quality and enable organizations "to meet global standards";
- *Positive impact on the organization*: Research institutions can use the rating system to compare their operations with those of other organizations, managers can use the ranking results to assess the strengths and weaknesses in specific areas of science. Therefore, the rating can be used to encourage organizations to improve internal operational efficiency. In addition, it encourages organizations to undertake greater responsibility;
- *Improving the transparency and public accountability*: These purposes can be achieved if the ranking is well carefully and closely planned, thus it can provide important information and serve as an effective tool for public accountability.

Rating in fact is associated with practical not theory issues, therefore conducting ranking of research institutions may face *difficulties and challenges, basically are as follows*:

- *Methodological challenges*: In the ranking, many indicators, rating points/scores and weightings are not based on theoretical but on arbitrarily basis and they are used to build a picture of all the organizations to be ranked together, it reflects the views of the Publishers/ranking persons. The criticisms on the identification of indicators and weightings include: (i) weights are usually used for several different sectors, while the nature of studies in different sectors is

quite different; (ii) the use of international awards like the Nobel as comparator to show the excellence may "cool down" many branches of social sciences and humanities -which are the areas not for Nobel prizes; (iii) The number of articles published is not necessarily related to quality (like the quantity is high but the quality is low "orviceversa" high quality but low number"), causing embarrassment; (iv) the way to evaluate research publications sometimes is overlapping; (v) Use quotes/citations only emphasize the documents written in English, not include the document in another languages. This tends to ignore citations in other languages; (vi) "Prestige" is often used as a way of assessing the quality of science in the eyes of media evaluation. Many of ratings of high prestige based on more than 50% weighting score. This is just a subjective assessment and inaccurate; (vii) The rating system was also received great criticism due to constant change of methodology - although the organization can not make a significant change, its rank can fluctuate from year to year due to the weightings provided for each indicator have been changed. Change of methodology and making new rankings are considered "market tricks" of the media, to increase rankings, it can be misleading; (viii) Some organizations tend to focus only on the indicators and weightings used in the ratings to help them achieve higher rank, ignoring the other important aspects;

- *Lack of recognition and diverse circumstances*: Different organization has different mission, goals, purposes, while the rankings tend to ignore these issues. Ratings almost do not give value to promote quality improvement efforts to achieve the goals and mission of the organization.
- Sometimes these rankings is source of creating this illusion of a fair play field - where organizations thought they could improve achievement without need to rely on its own efforts; In the line-up, organizations in the English-speaking countries seem to have more advantage. On the other hand, the relevance of the assessment indicators is largely dependent on the research in each national context - an indicator may have important implications in this country but it does not necessarily make sense in other countries even the criteria are good, and it should carefuly consider their relevance in specific condition, not necessarily be common globally;
- *Creating unfair competition*: Organizations must compete to get high rank in the standing, therefore they may refuse to cooperate with other organizations that they think detrimental to their individuals, organizations, and the science in general;

- *Making contribution to the brain drain*: ranking as a factor encouraging post-graduate students and outstanding researchers looking for organizations with high rank in the standing. Ranking may potentially exacerbate inequality in human resources and even in financial resources among countries.

4. What Vietnam needs in ranking of research institutions?

In recent years, many policy makers have been interested in address the issue of ranking research institutions. They wanted to know more about what was the rank research institutions of Vietnam were standing, whether in top organizations of the world or top organizations in Asia.

In 2012, the research, academic community in Vietnam was glad that in SIR World Report[9] 2012 (where published the list of research organizations of the world's leading science; organizations were ranked based on the scientific papers published in 5 previous years prior to the reporting year) provided the standing of 3,290 organizations around the world which had more than 100 scientific works internationally published as recorded from 2010, whereby Vietnam had 4 organizations as: Vietnam Institute of Science and Technology, Vietnam National University of, Ho Chi Minh City, Hanoi National University, Hanoi University of Science and Technology. The SIR World Report reported similarly in 2013 and 2014 and recorded in the list of the four above Vietnamese organizations. In addition, Webometrics[10] also confirmed the Hanoi National University was in the top 1,000 world universities (in 2013 and 2014 it ranked number 907 out of 21,248 and 894 out of 23,868 universities, respectively), in the Top 200 (2013 it ranked No. 187/7292 and at No. 226/8916 universities in Asia, respectively (ratings based on the indicators on scientific publications in 5 years 2006-2010). However, four organizations present on the international scene was very small number of the total of nearly 1,600 public S&T organizations[11] of Vietnam.

Policy makers in S&T development in all countries agreed that: only by evaluation, open and transparent comparison, it can guarantee sustainable development. “Comparison” is considered as the most powerful tool for research organizations to recognize their position they have reached. Many S&T managers, and policy makers want to know, our country has how many strong research institutions (compared among research institutions in

[9]Scimago Institutions Rankings - SIR World Report 2012, 2013 và 2014.http://www.scimagoir.com/research.php

[10]Ranking of universities in research, see: http://www.webometrics.info/en/Asia_Pacifico?page=2

[11]Data provided by the Department of Organization and Personnel, Ministry of Science and Technology in 2013

Vietnam) in the various fields of study to find ways to foster organizations to become well known on the international arena. Ranking of organizations on the one hand helps managers identify potential organizations, and on the other hand enables research organizations to clearly see their performance with the view to striving and improving their competitive capacity for enhanced development of S&T. Because of the importance of such evaluation and ranking, some organizations have developed criteria for ranking research institutions and higher education establishment at international standard level. For example, in early 2013, Hanoi National University developed a set of the criteria for research universities[12] at international standards with the objective was to determine those criteria for developing standardized research universities in the context of international integration; Quantification of criteria to serve as the basis for Hanoi National University and its subordinate research units to make analysis, review, comments on the current situation, setting up a right plan and priorities of development strategy; and promoting all the units to gradually become a qualified international and regional research university. In the plan, Hanoi National University launched the indicators of research university in the world top 500 to strive.

For S&T development policy makers, evaluation is an important link in the process of management. Therefore, in the process of implementing the Law on S&T 2013, dated 16th December 2014, the Minister of S&T issued the Circular No. 38/2014/TT-BKHCN regarding provisions on evaluation of S&T organizations. The Circular regulates methods, procedures and criteria for periodical review of every aspects related to the operation of research and development institutions within and outside the university. However, in practice, the implementation of this Circular was still very difficult because there were no provisions dealing with funding source for the evaluation. Meanwhile, there is recently a new push, i.e on 06th May 2015, the Minister of S&T signed Decision No. 1318/QD-BKHCN approving main S&T orientations, objectives and tasks for the period 2016-2020 which required "*evaluation and ranking of S&T institutions must be conducted and published annually*"[13]. Obviously, it is necessary to evaluate, identify and

[12]See the website of the National University Hanoi at https://www.vnu.edu.vn/ttsk/?C2576/N16816/Xay-dung-dH-nghien-cuu:-Quy-trinh-IT-%E2%80%93-I&T.htm. In 2013, for the first time, the National University Hanoi issued the guidance of 1206/HD-DBCLGD (referred to as the 1206 criteria set) on the criteria of a research university as a basis for internal analysis, management, planning and its development roadmap. After one year of implementation, in 2014 the position of National University Hanoi in international rankings continued to be improved.

[13]Section 4, item 4.8 of Part III - The main tasks of S&T operation, Decision No. 1318/QD-BKHCN approving major S&T orientations, objectives and tasks for the period 2016-2020 of the Minister of S&T signed on 05th June 2015.

then nurture and develop capable research institutions of being engaged in global integration so that it progressively affirmed the position/reputation of the S&T of Vietnam on the international arena. But, according to international experience (as analyzed above) it shows that the ranking of agencies could be the most practical measure in this moment - it can say this is *a "natural" measure to create competitive pressure in upgrading the position in the standing list to attract more funding and increased capacity development as well as reputation for both organizations and individuals in research community*. In the context of present S&T in Vietnam, it should start from ranking of basic research institutions with publized achievements (quantity and quality), especially the international publications obtained by that organization as the most important criterion[14]. This is also *the "motivated" requirement of research organizations themselves and the research community*, in general. Moreover, not only for policy makers and researchers, the public *also needs to "be aware*", they are very interested and sometimes ask questions such as: Which organization, in which field of research has been ranked high in the system of research institutions in our country and in the world?... The level of interest of the public is also different depending on the purpose of understanding.

The number of research institutions in our country is quite large. Periodic review of the overall operation of all organizations[15] at the moment is very difficult, therefore, in the first phase, it is proposed that to conduct evaluation of overall performance and rating/ranking of research institutions in parallel (according to the provisions on the evaluation of S&T stipulated in Circular No. 38/2014/TT-BKHCN). The way to proceed with this exercice should be in the following order: (i) Grouping of organizations; (ii) Rating each identified group; (iii) Review and rating by outputs, then rankings; (iv) Making recommendations, for organizations of lowest level of ranking they should be restructured (adjustment or merging or dissolution), for organizations are of highest ranking they should be further strengthened and developed to be able to take assignment of urgent, important national tasks,… or both, depending on the context or specific purpose of management agencies.

[14] Since 2007 and 2008 some scientists have strongly voiced their support on this view, see: http://tiasang.com.vn/Default.aspx?tabid=62&News=162&CategoryID=3, and http://www.jaist.ac.jp/~bao/Writings/danhgiaNCCB.pdf

[15] As stipulated in Article 17 of the Law on S&T dated 18th June 2013: public S&T organizations must be evaluated for state management purposes.

5. Conclusion

Ranking of research institutions (both international and national rankings) is of many countries' interest and attention. There are many different reasons explaining why they, at different levels, (diversified objects) were interested in the ranking and paid attention to this. However, there was one common feature that the ranking could be one of the measures to create competitive pressure, developing reputation for organizations and individuals in the research community. Moreover, from the ranking results, policy makers have basis to identify partners supporting the development of S&T and identify potential research organizations and areas need to invest. Therefore, ranking and published annual rankings of research institutions in Vietnam is essential and should be conducted in parallel with the periodic review of the performance of organizations as specified in Circular No. 38/2014/TT-BKHCN./.

REFERENCES

In Vietnamese*:*

1. Decision No. 1318/QD-BKHCN dated 05th June 2015 by Minister of S&T approving the key S&T directions, objectives and tasks for the period 2016-2020.
2. Circular No. 38/2014/TT-BKHCN dated 16th December 2014 by Minister of S&T issuing regulations on evaluation of S&T organizations.
3. Guidance No.1206/HD-DBCLGD dated 23rd April 2013, by Hanoi National University on the criteria of the research university.

In English*:*

4. *Scimago Institutions Rankings* - SIR World Report 2009, 2010, 2011, 2012, 2013.
5. *Thomson Reuters Announces Ranking of top Japanese Research Institutions for all Fields*, 2001-2011.
6. *Report of the International Commission for System of Evaluation of the Deutsche*.
7. *Forschungsgemeinschaft and the Max Planck Society*. Hanover, 1999.
8. *Recommendations for rankings in the system of higher education and research*. German Council of Science and Humanities - WR, 12 November 2004.
9. *Criteria and indicators for ranking of Chinese Academy of Sciences* - CAS, 2010.
10. *Research University Ranking*. http://www.webometrics.info/en/Asia_Pacifico?page=2.