EXPERIENCE OF SOME COUNTRIES IN THE EVALUATION OF RESEARCH IN UNIVERSITIES AND SUGGESTIONS FOR VIETNAM

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Abstract:

By means of document analysis, the authors of this article presented an extensive experience of the Netherlands, the United Kingdom, Denmark and Australia - four of the countries which had established the evaluation system of research activities in universities in a comprehensive way, at national level - with the content including starting time and purpose of evaluation; main evaluation methods; and basic criteria of evaluation. From the analysis, the authors found advantages and challenges that the evaluation organizations was faced when performing evaluation of research, assessment of R&D organizations, in general and evaluation of research in universities, in particular. The study also reflected some remarks, made recommendations in connection to the preparation and implementation of the evaluation as mentioned above so as that it would be appropriate to practical conditions of present Vietnam for better management of science and technology (S&T).

Keywords: *Evaluation; Research activity; University; R&D Organization.*

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1. Introduction

In order to foster socio-economic development, Government of many countries around the world has increased the level of funding for research at universities. However, the increased investment for research depends on the efficiency and effectiveness of the research system. Evaluation of research outputs in universities in both terms, quantitative and qualitative, is a fundamental step towards improving the efficiency of research. It was the reason explaining why the assessment of R&D activities, in general and the evaluation of research in universities[2], in particular had been the general world trend for 20 years now.

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[2] The phrase "evaluation of research" or "assessment of R&D activities" in this article is meant the evaluation of one or some variables in the value chain, as follows: orientation of research, resources to conduct research and outputs of research. Evaluation of research in universities is the evaluation of the above indicators of the value chain of an university.

Review of the operation of R&D organizations and evaluation of research in universities is a necessary work of each country with the primary purpose of promoting the process of improving the efficiency of the system of R&D institutions. In addition, the evaluation also helps R&D organization going on right track, in right direction of the national science and technology development strategy, conducting their research with the best performance according to the functions and responsibilities assigned. In developed countries, if an institution was established and funded by state, it will be subject to inspection and control of the state. This arrangement creates an opportunity for R&D organizations to work in the right direction and ensure the use of state funds in a right and most effective way. Independent and objective evaluation is a scientific measure that many advanced countries in the world use, in parallel with public opinion in society, to exercise the inspection and control over the state owned bodies.

In the framework of this article, the authors will present the basic content of principles and methodology of research evaluation in universities through lessons learnt of some countries for further consideration to apply in practical condition of Vietnam.

2. Experience of some countries in the evaluation of research in universities

The evaluation of research in universities stems from the need of management of the state and it is normally conducted by government inspecting agencies. Evaluation results are used as an input for the R&D management, and a basis for policy makers in making decisions to improve S&T management, provide direction to research, enhance effective use of infrastructure and resources for research *(J. van Steen and M. Eijffinger, 1998)*. Evaluation results are also used as a basis of funding decisions for research activities. The funding allocation based on evaluation results will provide greater efficiency *(Aldo Geuna and Ben R. Martin, 2003)*. Furthermore, the results of evaluation will be a source of data for ranking universities. This evaluation exercise is also of great significance in strengthening the accountability of R&D organization, in general and universities, in particular to the higher government management agencies and society *(Vereniging van Universiteiten Koninklijke et al, 2003)*. Evaluation methodology was formed starting from defining objectives, criteria, planning of the evaluation to develop independent process of external assessment appropriate to the context of each country, as well as complaint with international practice.

On the basis of available documents, we commented that:

- The evaluation of research in universities in some European countries were divided into 2 types: Type 1 (represented by United Kingdom, the Netherlands and Denmark) - The evaluation was organized with clear rules, in a systematic and comprehensive manner, at national level and it covers all subjects of specialization. Universities were subject to the evaluation otherwise to be taken off the list of institutions entitled with public funding. Faculties and departments of universities are divided into appropriate disciplines, each discipline has a specialized expert group set up to peer review of such researches in the discipline. After the evaluation, the expert group will make recommendations on research activities and from there universities are ranked; Type 2 (represented by Germany and Austria) - In these countries there was no comprehensive evaluation system at national level, the evaluation of research activities was carried out individually and independently by each specialization, without reference measure of raking universities. Method and evaluation criteria were established specifically for each case of review. Evaluation of research in universities in this group of countries had adopted a diversified and case-by-case approach;
- For Asia - Pacific countries: We can learn a lot experiences from recent development in evaluation of research in universities. In Australia and Hong Kong for example, there had been evaluation of research activities at national level and the two countries both used the evaluation results in allocation of financial resources for research activities. Hong Kong currently applies evaluation procedures of the United Kingdom. In 2000, New Zealand tested this procedure to allocate 20% of funding of key research projects based on the assessment of experts, and the remainder was allocated according to heads of student, it was expected that if this modality was appropriate, the proportion of allocation in accordant to research evaluation will increase up to 80% as recommended by evaluation experts. So far, New Zealand has yet to apply this modality of assessment in systematic way at national level.

Below, we will analyze the evaluation system of research in universities of several representative countries (Netherlands, UK and Australia). These countries traditionally performed the evaluation of research in universities in a systematic way, at national level.

2.1. Netherlands

In the Netherlands, the evaluation system of universities was formed in 1988 and started to conduct evaluation of research activities in 1993. Recently, in 2003 and 2009, the three organizations including: The Union of Dutch Universities (VSNU), the Royal Netherlands Academy of Arts

and Sciences (KNAW) and the Netherlands Scientific Research Organization (NWO) set up the standard assessment procedures for public organizations (in which mainly were universities) *(Vereniging van Universiteiten Koninklijke et al, 2003)*. Accordingly, public funded research organizations implement a self-evaluation, mid-term internal evaluation once for every 3 years and shall be subject to external evaluation once for every 6 years. This evaluation system aims at enhancing the quality of research through the evaluation of the quality and relevance of research, improving management and identification of research direction, and demonstrating the accountability of research organizations to higher levels of management, funding agencies, government and society. External evaluation was conducted by the International Approving Committee. The evaluation system aimed at 3 objectives relating to research and research management, as follows:

- Improved the quality of research through the evaluation up to international standards in respect of quality and conformity;
- Improved the research management and identification of direction for research;
- Ensured the accountability of research institutions to the management, funding agencies, government and the society in general.

This evaluation has been identified as having the following effects:

- Strengthening the cooperation between researchers as the evaluation aimed at research programs (not at the researchers involved);
- Increasing the rate of published papers, particularly in international journals of high reputation;
- More empowerment for university managers. Evaluation provides a basis of reliable information for managers to use as a quality control tool;
- Increased the importance of research policy;
- Improved the reputation for objects with good evaluation results. Raising the prestige of researchers in best evaluated organizations;
- The publicly made available evaluation report is also a means to exclude weak/ineligible groups from further application for funding.

However, implementation of evaluation of research in universities may also have negative effects, such as it may affect the link between teaching and research as the evaluation mainly focused on the research management.

The smallest unit subject to evaluation could be a faculty/institute under universities or a research programme. The Netherlands divided evaluation into 34 major subjects need to be assessed. In the Netherlands Evaluation Board there was only the chairman who was Dutch, the rest were foreign experts. Chairman of the Board is selected by consensus of the key members of the research institution. Quality of research in the Netherlands is ranked by 5 levels from low to high: 1 (very poor), 2 (poor), 3 (medium), 4 (good) and 5 (excellent). The evaluation report of the Evaluation Board will be analyzed specifically by each specialized subject.

The evaluation of research in universities in the Netherlands was not only based on quality criteria, but also on further 03 criteria including research performance, conformity and development capability, namely:

- Quality of research assessment focuses only on academic, scientific perspectives. For example, how the novelty and innovative ideas of university should be assessed; which indicators to measure the quality of publications produced from the research results...;
- Evaluation of research performance is a comparison between the inputs and the outputs of research;
- Assessment of the relevance, appropriateness of the research having two implications: first, the research of university must be relevant, comparable with research in other universities; second, the research must be of high applicability in society and feasible in the process of technology utilization;
- Assessment of the development possibility is the evaluation capability to understand of the mission, functions and duties of each faculty/institute under the university, consider the strategic research objectives and the tools used to measure the results compared with intended research objectives. Moreover, this assessment also requires the units conducting research must develop criteria framework as a measure clearly the perception of the research objectives of the unit itself.

2.2. England

England introduced the system of research output evaluation (RAE) in the mid-1980s. At beginning, the RAE encountered a few obstacles. More likely because the first approach to this kind of evaluation with a view to promoting improved quality of research was not as successful as expected. But now, although there has not been much achievement compared to many other countries, the UK is still ranked as the nation producing many academic results (research in universities) of high quality, such as indicated in the synthesis of Aled 2005 *(Aled ab Iorwerth, 2005)* in 2003:

- UK ranked 13th among 17 countries in spending on R&D;
- Contribution of UK to doctoral training of UK was similar to other countries;
- Contributions of UK to scientific publications in the world ranked No. 2 and then No. 3, in 2005, runner after Japan;
- The number of citations (results of academic research) of the UK, was ranked No 2nd in the world, accounting for about 11% of the global citations;
- UK ranked No. 2 in the world in almost all subject areas except mathematics (3rd) and Physics Science and Technology (4th);
- The contribution of the UK in the number of citations worldwide was on the rise except social and technical sciences;
- R&D in commercial sector was considered as not comparable in international arena, except for pharmaceutical industry.

There could be doubts whether RAE had missed multidisciplinary research or not. This was an important question when the number of multi-disciplinary research is increasingly growing. The Executive Council of RAE worried a lot about this problem such as: while multidisciplinary projects are indeed important (this type of research accounted for 80% of the total research effort), some others argued that RAE might impede the development of this type of research, but there was no evidence to support this argument. However, since 2001, researchers on evaluation methodology have changed the approach, the structure of evaluation team that is capable to cover wider field of research. The use of competent experts with deep, broad understanding, in evaluation of multidisciplinary research can reduce bias compared with evaluation by experts with narrow knowledge on the subject.

The impact of assessment in the RAE system has created a major change in the research management structure to promote research of higher priority; developing internal evaluation process; Selective distribution of resources for research; making senior managers be more responsible to control and manage the performance. Another impact of RAE is the higher pressure placed on the shoulders of researchers of high personal and academic with more papers published in high quality magazines. Besides, if they were underestimated, they would have to try to publish more, no matter where. As a result, the academic block spend more time for improving research outputs in both quantity and quality terms.

Aled ab Iorwerth (2005) cited the views of some other authors[3], where they analyzed, assessed the research output of university faculties and confirmed that for those being highly ranked, it was because their researchers had significantly higher number of published papers in quality journals, namely in the period of 1992-1996, higher than in 1980-1989. After evaluation, almost the amount published by researchers increased.

The RAE evaluation conducted in 2001 found that the quality of research was significantly increased (self-assessment). 40% of faculty in universities was evaluated in two prestigious rankings. A committee of the House of Representatives was in charge of the external evaluation of the results to see if they were realistic and they came up with following basic conclusions: (1) There was a "distraction" in order to elevate the ranking, namely the were administrative expenses not in line with research objectives, these and "lobby" expenses for academists so that the faculty obtained high rankings; (2) However, in reality the RAE had brought a credible improvement in the quality of research, achieved benefits mainly through research management in order to improve the quality and move towards research of excellent areas. That committee also concluded that it was necessary to provide additional resources to support the improvement of research in universities.

There are many different opinions about the UK's RAE system, but it seemed there was a large consensus that the RAE had positive effect to improve research outputs. This benefit may cost some certain price: the direct cost for evaluation was not so heavy, approximately 1% of the total research budget; however, the cost in terms of time of academicians was replaced for the administrative cost of RAE to achieve higher purpose.

Thus, the evaluation of research activities in universities in the UK only concerned with a single aspect of quality. Evaluation criteria for quality of research focused on the novelty and innovation in research, considering the quality of publications were important indicators of research results. Each unit shall be subject to evaluation had to report on the four groups of information: Human resources for research, the output of research, general description of the research organization and other relevant data. Ranking of the quality of research in UK universities was divided into seven levels from low to high, including: 1, 2, 3b, 3a, 4, 5, 5*. Complete documentation of evaluation results included specific evaluation report of each faculty/institute of the university will be publized after the evaluation completed.

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[3] Citation of analysis by William J. Moore, Robert J. Newman, Peter J. Sloane and Jeremy D. Steely. (2002) *Productivity Effects of research Assessment Exercises.* Department of Economics, Louisiana State University Working Papers 2002-15

In the history of RAE evaluation it recorded a continuous decrease in number of subjects to be evaluated from 72 in 1989 down to 68 in 2001 and still in reduction tendency in next years. Too large quantity of to be evaluated subjects also caused many problems related to the assignment in evaluation. The Evaluation board for each specialized subject consisted of about 9 to 18 experts from various research institutes, regions and universities in the UK. Sometimes a large council was divided into smaller panel.

2.3. Australia

According to the compilation of the European Council *(European commission, 2010)*, Australia introduced a system for evaluation of research results (ERA) - especially in the universities - in the early 1990s. Initially, the assessment based simply on statistics of publications to be used as a unique index and was analyzed by quantitative library reference method. For example, the evaluation of results in 2003 said: contribution of Australia works published in major global journals had increased from 2.2% to 2.8% in the decade of 1990[4]. However, the use of this simple counting method ignored the quality aspect, so the development of an evaluation method through citation index was inevitable.

Australian research system is assessed on a regular basis. Learning experience of England - assessment methods had the same approached as RAE - Australia has used peer-review to replace some measurement indicators of quantitative library reference. Universities were also agreed to a list of more indicators to provide information for research management to observe more clearly the management within universities, as well as to provide better evidence to report to outside audience. Thanks to this improvement, grants by the government for research is more likely channeled to universities and higher quality research is certainly obtained. Furthermore, research centers of excellence in universities are more likely to be known, with more financial support for research.

ERA combined using the method of library reference quantitative indicators and the use of experienced internationally recognized experts in evaluation. The specific criteria and indicators for each specialized subject were classified into the following categories:

- *Evaluation of research activities and research intensity*: The indicators include: income from research, doctoral training and total output of research, namely: assessing the number of publications within the period

[4] Document No. 7 in the list of references showed outcome of evaluations published in 2003: See data on the number of publications and resources spent by universities at: http://www.dest.gov.au/highered/ki_reforms/allocations_2003.xls

of 6 years; income from research; and the completion of doctoral thesis defense;

- *Assessment on the quality of research*: The indicators include analysis of publications and the other research outputs used for ranking, analysis of citation index and statistical analysis of the percentage of related places. Currently, there are 4 layers of ranking magazine index which compile 17,000 journals rated for 100 specializations;
- *Evaluation of applied research and transfer of research results*: The indicators are defined at the level of specific subject. Australian just only piloted the application of ERA for evaluation in late 2008, only applied to the natural and technology sciences with a view for advisory and testing purposes.

In summary, the announcement of results of the evaluation of research in universities of some countries as mentioned in this article was focused on outputs evaluation, where mainly concentrated on ranking, quantitative and qualitatively, articles published in international specialized magazines.

3. Advantages and challenges of the evaluation of research in universities

Studying experience of evaluation of research in universities from various countries, it was easily noticed that thanks to increasing awareness of the role of evaluation of research in universities, the conduction of such a research evaluation received the following advantages:

- More and more countries issuing official regulations/guidelines on methods and criteria and a clear mechanism/procedures for the realization of evaluation;
- Funding for the valuation is made available in parallel with funding allocated for research;
- Increased awareness of the parties involved in evaluation process make it favorable for the organization and coordination among the parties in evaluation process;
- The development of information technology, increasingly developed quantitative of bibliographic databases, evaluation criteria of countries is under construction in the direction of matching international standards also creates more favorable conditions for evaluators in their comparison and verification of information.

Besides the advantages as mentioned above, even in developed countries in the world there still faced many difficulties in evaluation of research activities. Specifically:

- In terms of research, university is a very diverse organization. Research content varies from university to university, depending on the nature of training disciplines of specific university (some focus more on research than the others); the nature of their research activity (basic research, technology/ applied research); their linkage with applying units using their research results (other research institutes, universities, small enterprises and large enterprises); geographic scope of area of research partners; and the beneficiaries of their research results (local, regional, national, international). Therefore, the evaluation method must be an approach compatible with that diversity - It is fairly a complex context. To overcome this challenge, the European Union has parallelly conducted study to classify higher education institutions in Europe and develop a data collection system of the operation and effectiveness of higher education establishments in Europe (in respect of education, research and innovation);
- The difference between specialized research fields sterms from the history of their formation and research methodology. This difference leads to distinctive forms of result expression and means of transmission of such results of research, it may affect the data for quantitative and qualitative assessment. Depending on university, field of research or policy environment there may be some data formats are more important than others. For example, while natural and life sciences have means to transmit their research results, i.e the peer-reviewed journals, while research outputs of technical sciences are primarily exposed in conference proceedings, although they are also posted in magazines/journals and have prototype designs produced. Researchers in social sciences and humanities have various types of exposed outputs, either in publications as an important source, or in exhibition of their artworks or in communicating products. Even with the same type of priority outputs there are still differences, for example, the paper having the same type of output but published in a specialized magazine in the list of journals the US Institute for Scientific Information under the Thomson Reuters system, the influence index- IF- of the paper is very different in the field of mathematics, the IF of the paper reaches 1.0 is considered high while published in the journal of biochemistry field its IF 1.0 is considered low. In the field of social sciences and humanities, journals tend to have IF lower than 1.0. There have been a lot of controversy about the ranking practice of journals, whether or not it is

reflected and/or confirmed the academic orthodoxy of a scientific area. The main challenge of using bibliographic data is different disciplines generate different outputs of research that cannot be easily recognized. Books, book chapters and conference reports are of much reference and it is not easy to compile or have equivalent exchange;

- Another difficulty in assessing the quality of research, i.e there must be international articles of higher quality than domestic publications? Reality shows that some research questions to address universal phenomenon, some others have research content relating to geographic aspects. The study on history of ethnography, literature, sociology, pedagogy or languages with content research closely related only to the region or locality where the study was conducted, in this context, it may not be published internationally, but cannot considered as no quality. Inevitably the scope of study has influences on international publication. This can affect the research subjects that only relate to national context, eg research on the Portuguese history, literature, language, law, these subjects have not received fair treatment and equality in the appraisal compared to specialized global research issues;
- Validity of research results is also different for different subjects: in some fast-growing areas, the study conducted 3-4 years ago tends to become obsolete/outdated and no longer be cited. Other areas, the research result may be completed and documented five, ten, hundred years ago or even longer but still are relevant, valuable for use and citation. For example: In the natural and life sciences, the period of time for citation is often of 5-10 years, while in social sciences and humanities this period of 10 years is sometimes considered too short;
- Lack of consensus on some concepts, methods of conversion, incomplete database also are the difficulties in evaluation of research.

4. Suggestions for the evaluation of research in universities in Vietnam

In recent years, the importance of research conducted in universities has been confirmed by the promulgation of a series of relevant legal documents. In Decision No 65/2007/QD-BGDDT on 01/11/2007 of the Minister of Education and Training issuing the evaluation standards for quality assessment of the university education where there is a standard for evaluating scientific research, technology application, development and transfer in universities. The Law on Science and Technology 2013 stipulated that university education establishments is a kind of science and technology institution and must be assessed to serve the State S&T management. To implement the Law, Minister of Science and Technology

signed its decision to issue Circular No. 38/2014/TT-BKHCN dated 16th December 2014, providing regulations on evaluation of S&T organizations. The Circular prescribed criteria, indicators and methods of evaluation of R&D organizations, including those being under universities. These new documents relating to evaluation of R&D organizations is the first step to create a legal corridor for assessment activities developed to serve better the management of science and technology. However, to conduct effectively the evaluation of research in universities in our country's current conditions, it is recommended the following:

- It needs to expand promotional activities to disseminate the role evaluation of science and technology in general, and of R&D organizations, in particular including the evaluation of research in universities in order to enhance the understanding and culture about evaluation in the science and technology community. That would have a great significance to strengthen effective cooperation of partners in the evaluation process;
- In view of science and technology management, evaluation of R&D institutions in general, and evaluation of research in universities, in particular should be carried out in the whole country. In immediate future, it should develop a roadmap of periodic evaluation of all R&D organizations, including periodic evaluation of research activities of all universities. Initially assessment may only be conducted on pilot basis of some key subjects and representative areas of Vietnam, namely natural and technological sciences, medical-pharmacy science social sciences and humanities, agriculture sciences. After the pilot implementation assessment it will be adjusted and expanded accordingly to meet the management requirements;
- The evaluation of research in universities should be conducted for an individual specialized subject group with high level of development and relatively close in academic nature (the grouping can be tailored from the existing specialized training subjects which have been registered by the university), then prepare one compiled report of comprehensive overall evaluation for the university as a whole or for a group of universities;
- Each specialized subject/group shall have a separate Panel/Council of Experts, which consists of highly qualified experts with deep, extensive local and overseas knowledge on the subject;
- It is noted that evaluation criteria of the quality of research should be in accordance with international standards. The introduction of citation index of articles into the system of evaluation at this moment is

necessary as this is a significant indicator to tell the quality of the research, however, this requires a fully update database system with published works with data citation and analysis skills especially in retrieving bibliographic directory.

5. Conclusion

The evaluation of research activities in universities was implemented by many countries for many years ago. The frame of evaluation methodology is essentially the same, however, when applied to evaluate a specific R&D organization or group of R&D organizations, whether in or outside the university, it should be concretized in the evaluation form to suit specific conditions. The main aspects of an evaluation model are: characteristics of the organization; characteristic of subject to be evaluated; objective(s) of evaluation; expectations of managers, policy makers.

Previously, in our country the evaluation of research activities in universities just stopped at the level of assessment and acceptance of each separate R&D task (topics, projects). The evaluation of research was within the scope of university/faculty (if any) and largely of administrative nature reflected in the closing ceremony. Therefore, the evaluation results were difficult to use as the input for further management and allocation of resources (investment, human resources, coordination) and the evaluation did not serve as a useful tool for research management in universities. Evaluation of research in universities is considered as an issue that the Ministry of Science and Technology needs to implement to provide the basis for policy formulation, suitable to promote research in universities making contribution to the development of S&T sector.

By means of document analysis, the authors of this article presented an extensive experience of the Netherlands, the UK, Denmark and Australia - four of the countries have established a comprehensive system, at national level, for evaluation of research in universities. The main analyzed contents include: timing and purpose of evaluation; major evaluation methods; and basic criteria. From their analysis, the authors found a number of advantages when conducting evaluation of research and evaluation of R&D organizations, in general and evaluation of research activities in the universities, in particular, e.g: when having clear legal corridor and high understanding about culture of evaluation, the coordination between the parties in the evaluation process becomes more smooth; strong development of information technology is an important tool to support the development, verification of data for easier assessment. However, even for a number of countries having completed the evaluation system, the evaluation of research in universities is still a challenge, because of the

diversified nature operation of universities (dual functions of training and research; different content of study, different nature of outputs due to different nature of professions, different customers of their research). This study made recommendations on some measures and notes when preparing, implementing an evaluation suitable to practical present conditions of our country, for better science and technology management, namely the need of enhanced promotion of cultural understanding on the role of evaluation among S&T community; the early development of a roadmap for periodical evaluation of all R&D organizations (both in and outside universities); it should have reasonable clustering of R&D organizations and find appropriate team of experts for evaluation; and taking account of quality indicators evaluation pursuant to international standards./.

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