VIETNAM UNIVERSITIES: STRENGTHENING RESEARCH AND INNOVATION

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Abstract:

In the actual context of the world's economy, the explosion of inter-discipline sectors as well as the essential diversity of higher education show more the important role of fundamental research to development of science, technology and innovation (STI) as a move to build the knowledge based economy for every nation.

As for purpose to assess capacities to meet this role of higher education in Vietnam, this paper provides an analysis of the roles of universities in strengthening fundamental research of our country.

Keywords: *Scientific research; Higher education.*

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1. Introduction on higher education in Vietnam

Up to the end of 1980s, the higher education system of Vietnam was designed in the way to follow the Soviet model. According to this model, the system of research institutes remains separated from research activities conducted in universities and colleges.

By 1985, the VI-th Party Congress decided to shift from centrally controlled economy to market driven economy on basis of the "Doi Moi" policy. With this "Doi Moi" policy, the higher education system of Vietnam gained an important turn to shift from the Soviet model which is the training to meet State driven orders to the new model which is the training to meet demands of a multi-sectorial economy. In this new approach, higher education institutions of Vietnam get more diversified and gain better developments.

According to Law on Higher Education promulgated by 2012, higher education institutions are divided into 4 types, namely: (i) Colleges; (ii) Universities and academies; (iii) National and regional universities; and (iv) Research institutes providing the doctor grade training.

By 2015, the higher education system of Vietnam has 436 training institutions (219 universities and 217 colleges) where the universities have 1,824,328 students and the colleges have 539,614 students. The staff of doctor grade lecturers makes 15.9% in universities and 2.25% in colleges. The system has 348 public training institutions (159 universities and 189 colleges) which are subsidized by State budgets (provided through hosting organizations). The remaining 88 training institutions (60 universities and 28 colleges) are non-public.

Training institutions are under management of hosting ministries or city/province People's Committees, except the two National Universities of Hanoi and Hochiminh City which are under directly the Government's management. In terms of training activities, all the training institutions are to comply with State management rules and, in terms of staff and finance management, they are under control of hosting ministries and city/province People's Committees.

Science and Technology (S&T) Development Strategies for 2011-2020 periods indicated the global objectives for integrated development of social sciences and humanities, natural sciences and technics to turn S&T to real driving forces for changes and to meet basic needs of a modern technological nation. By 2020, Vietnam is expected to have the scale of S&T sectors to come close to the level of ASEAN nations and the world.

In this context, the pressures from competition for development of new technologies and the growth of demands from communities and enterprises for training of qualified human resources for socio-economic development force higher education institutions to look for new ways to meet these needs. In this optics, higher education institutions have to pay attentions to investments for fundamental science researches for two target groups, namely: (i) Enhancing the qualification and grade of lecturers to make more values for training institutions; and (ii) Providing more knowledge to students to make them ready for next development.

2. Universities, research and innovation

Research can be defined as discoveries, feedbacks and creativity made on basis of application of scientific research methods to consider problems of reality for purpose to get well defined and objective results and to extend knowledge to settle theoretical and practical problems. They may be academic nature works built from concrete sectors to settle socio-economic problems *(Harmon, G. 2005).*

Nations have a larger trend to acknowledge the importance of higher education in training high skilled workforces for development of

knowledge based economy. According to *Neave (2020)*, "Knowledge is always forces and also keys for innovation. The access to it as well its role in innovative initiatives define the position of each nation in the world as well as of each individual in the society. The passive absorption of knowledge, however, kicks off creativity and knowledge expansion from the social space and then brings them into production environment. The shift of the stand of mindset and the re-interpretation of knowledge in these conditions make raise the very basic questions about universities in the both fields of academic freedom and knowledge ownership".

Therefore, universities are considered as the key in the system of innovation and creativity. They play the role of machine tools to produce technological procedures, to train future researchers and to create and propagate knowledge to students. Research activities can lead to improvement of teaching and learning practice. As rules, universities in the world require their lecturers to participate in research activities *(Harmon, K.2005)*.

Also, *V. Lynn Meek and Dianne Davies (2009)* have the vision that, during the last two or three decades and almost everywhere, universities and the higher education system experienced a very hard growing-up process because of, *from one side,* considerably increasing costs for popularization of higher education and, *from another side*, the governments in numerous countries are not sufficiently capable or, even, do not wish anymore to subsidize the higher education. These authors cited *Johnstone and Marcucci (2007)* to provide an illustration for this view, namely: "The divergence of costs and the availability of incomes, in their turn, are functions to three main factors: (i) Very fast increasing unit costs (training costs per student); (ii) Fast increasing rate of university enrolment (high rate of popularization of higher education as result of convergence of two factors: highly increasing population and higher rate of university students at age of university enrolment); and (iii) dependence on shorted sources of financial supports from the Government. The impacts from these factors vary from country to country, but the common observations of almost all the countries, particularly low and middle income ones, are the hard situations of individual universities and of the whole the higher education system".

In context of lowering financial sources, highly increasing costs of higher education and fast increasing enrolment of higher education, *Johnstone and Marcucci (2007)* shows that research tasks of university labelled institutions turn down to secondary priorities and even get distorted because of highly increasing student/lecturer rate. Also, lecturing staffs are required to spend more time on teaching duties and/or they have needs to look for

other sources of incomes which always lead to lower quality of the both teaching and research activities.

Therefore, research activities can be seen only in a few universities or well conducted mainly in universities and research institutes in industrialized countries *(Herbst, 2007)* or in enterprises and private institutions *(Vincent & Lancrin, 2006)*. Then, the role of research activities in existing universities is found in center of attentions of many nations because the research activities are defined not only as mission based duties of universities but also exhibit the dominating position in economic and cultural aspects, academic and scientific fields, well supported sectors of application oriented researches and knowledge enriching fundamental researches *(V. Lynn Meek, Dianne Davies, 2009)*.

This problem can be solved by efforts to train consecutive generations of scientific researchers in universities as well as the universities are defined as institutions to conduct many fundamental researches. Therefore, implementing the solutions for financial problems, universities target not only their teaching and training missions but also have to arrange financial sources for research activities, particularly fundamental science researches which face high risks by their nature.

In such a context, the higher education operates in a global competitive environment since it gives contributions to the development of knowledge based economy. *V. Lynn Meek and Dianne Davies (2009)* demonstrated that the higher education market has a two level structure: the first, higher, level includes worldwide research universities and the second, lower, level has a position related to export of education where its development mode is the wide extending capitalism. And, this worldwide market is governed by indicators for comparison of their activity results or positions in ranking systems such as SJTU or THES. However, Vietnam universities are not listed in these ranking systems and this fact shows that Vietnam universities still have limited research capacities in their contributions to development of knowledge based economy in Vietnam as well as are not ready to enter the worldwide competitive market of higher education.

As a more objective view for indirect assessment for the matter in relation to measurement of values of knowledge, the statistic figures of Institute for Scientific Information (ISI) show an increase of international scientific publications of Vietnam from 908 by 2008 to 1,776 by 2013. But these figures of Vietnam are lower than the ones of Singapore, Thailand and Malaysia. This demonstrates limited research capacities of Vietnam universities and research institutes which lead finally to a lower rate of

propagation of knowledge to students, in comparison to other countries in the region.

Another aspect of evaluation is related to the indicator of creative capacity which emphasizes the role of national technological creative activities. These capacities are the key to improve the national competitiveness. In the Bloomberg ranking for 2015, Vietnam is not seen among the top 50 creative nations of the world. In the Global Competition Report for 2015-2016, Vietnam is ranked 56-th in the total of listed 144 countries *(VEF, 2015)*. Also, other rankings related to STI capacities demonstrate the low position of Vietnam, namely: the 81st rank for innovation capacities, the 95th rank for scientific research quality, the 57th rank for R&D expenditures, the 92nd rank for R&D cooperation between enterprises and universities, and the 91st rank for S&T development level. These indicators show well the weak capacities for discovery and invention of Vietnam (being rated per person). Then, the problem is that the State needs to have policies for promotion of fundamental researches with priorities provided not only to research institutes but also to universities.

The higher education of Vietnam is ranked 95th among the total of 140 countries and remains behind other countries in the region such as Singapore, Malaysia and Thailand. The above noted rankings show that the most actual attentions should be focused on the clear orientation of training objectives, openness of quality and reputation of universities for large public in general and for learners in particular. Education and training institutions should make self-critic assessments to have a clearer vision to their own position and then to set their plans for the regional level in close future.

On basis of the above noted statistic figures, we should emphasize the role of research activities in universities, independently from their positions in higher education markets, also particularly important for developing countries who need to build up research capacities to enhance their competing capacities in the world's markets. Then, the market relations based on knowledge derived products will get impact from multiple factors and social organizations which turn universities to face many competitors not only in research activities but even in their traditional sectors of education and training. Therefore, universities should enhance resources for research activities not only from public budgets but from mobilization of innovative links for technology transfer. The partnership between universities, from one side, and clients, beneficiaries and stakeholders, from another side, bring in more benefits and potentials for the two sides in extending the scope and enhancing the quality of education activities.

3. Challenges in scientific research activities by universities in Vietnam

Resolution No. 29-NQ/TW by the 8th Conference of the Party Central Committee, Session XI on global and basic changes of education and training sector indicated that "the quality and effectiveness of education and training activities remain lower that the required level. The education and training system lacks the inter-connectivity between grades and between education forms. It also experiences misbalances in operations (more attentions for theoretical studies and less attentions for practical activities) and does not develop close links of training activities with scientific research, production, business activities and demands of workforce market".

The Party Resolution also indicated the tasks and solutions for innovation of higher education, namely: "Consolidating capacities and enhancing quality and effectiveness of scientific research activities and technology transfer by higher education institutions; Binding closely training and research activities, training institutions and enterprises; Providing investment priorities for development of fundamental sciences, spearhead sectors, key important laboratories, specific laboratories, high tech centers, modern pilot production facilities within certain higher education institutions".

However, the enhancement of quality and effectiveness of science-technology research and application in the higher education system is facing many challenges, namely:

3.1. The system of research institutes and the higher education system remain separate and independent. Research activities in research institutes almost have no links with higher education institutions

Nguyen Xuan Thu (1997) indicated that, for improvement of team work skills in research and teaching activities and in enterprises, Vietnam needs supports from external research institutes and individuals. Actually, Vietnam, having about 300 research institutes and 100 universities without producing any international level research projects and making contributions to socio-economic development, needs to review the efficiency of the system. Teaching and research activities need to be coupled to offer services for industries and production. "The emergence of research institutes with universities and colleges should be a more effective way to upgrade quality of teaching and research activities and the actions of realization should not be late".

The higher education in Vietnam followed the Soviet model (as mentioned above) then the teaching and research activities are divided into different

functions. Research projects were usually conducted mainly in research institutes but not universities *(World Bank, 2008)*. Universities have the central focus on teaching activities. According to World Bank Report (2008), the fact the lecturers do not participate in research activities comes from assessment based on the number of works published by lecturers in scientific magazines. This report also makes know that majority of the scientific works made by staffs from public institutions are published usually in local magazines but not in international magazines accompanied with reviewing staffs. The report, in connection to the role of research activities to technological innovation in Vietnam, indicated also that actually a major part of researchers is in research institutes but not in universities.

China and some other countries in the region followed the trends of integration of teaching and research activities in universities in order to enhance the quality of teaching activities as well as the national competitiveness *(World Bank, 2008)*. This fact shows that Vietnam needs to enhance research capacities in the higher education system to support a faster socio-economic development in its objectives to become a modern industrial country.

3.2. Quality of research works

In every university, the main key to promote STI development is the quality of its staff of lecturers-researchers. In order to get a higher quality of research works, higher education institutions need to make investments for their lecturers. This staff is an important source to promote the development of training institutions, and, for this purpose, it is needed to enhance research capacities of their lecturers.

Actually, research capacities of lecturers remain limited yet. Many lecturers do not make research works at regional and international levels. According to statistic data provided by Thomson Reuter on ISI publications the research works published by lecturers of Vietnam come mainly from some leading universities in Vietnam, namely Hanoi National University, Hochiminh City National University, Can Tho University, Hanoi University of Mining-Geology, Hanoi Medical University and etc. The rate, however, of lecturers making international publications remains very minor to the total number of doctor-grade lecturers in these universities.

These findings remain in conformity to shortages in STI activities in the higher education sector, as noted in Resolution No. 14/2005/NQ-CP by the Government for global and basic changes in the higher education sector, namely: (i) STI activities do not catch up with the development of other

sectors; (ii) Low rate of application of results of research projects for socio-economic development; (iii) Minor rate of university lecturers involved in S&T research projects.

These conclusions get supported by numerous objective as well as subjective reasons where the main reasons are indicated as follows:

- The working time of lecturers as governed by Circular No. 47/2014/TT-BGDDT by Ministry of Education and Training on 31st December 2014 does not fit the balance between teaching and research duties for lecturing positions in higher education institutions. Lecturers having different assignments and functions get the same volume of teaching hours. This rule leads to low motivations of lecturers to carry out research works;
- Lecturers face difficulties when applying for research projects. Actually, Vietnam still lacks clearly defined and effective mechanisms for distribution of financial sources for and evaluation of effectiveness of research projects. This leads to a paradox that many support-worthy research projects remain without financial sources and, inversely, financially supported research projects turn unfeasible *(Nguyen Van Tuan, 2013)*. Then only a few lecturers get successful to apply for good quality research projects. And, inversely, many of them do not pay serious attentions to research works in universities and consider them as formal activities;
- Doctor-grade training works which are actually conducted in universities do not have mechanisms to require researchers-students to participate in research projects led by their supervisors. Many research topics of researchers-students have no links to research projects led by lecturers in universities. This situation does not fit the world's doctor-grade training practice. The new knowledge created by doctor-grade theses get difficultly acknowledged and then disseminated within communities.

3.3. Lack of links between enterprises and universities

Resolution No. 14/2005/NQ-CP by the Government on global and basic changes in the higher education sector indicated also another shortage, namely "the limited role of supports for application of research results and the lack of links between universities and enterprises".

Talking about the role of universities in the National Innovation System (NIS), *Xue (2006)* provided a view: "Though there is a possible consensus of views on the role of dissemination of knowledge through teaching and related activities, there exist numerous conflicting views on the role of

universities in creating knowledge, even a lower consensus of views for their links with enterprises and commercial markets". However, many countries hold policies to maintain and consolidate a research and innovation system based on creation of knowledge and technologies which are known as discoveries and inventions. Research is a type of intellectual labor to search new knowledge. It is a process to create knowledge values. The most successful factor for scientific research is the quality and appropriate approach to needs of the society, enterprises, and sustainable economic development *(Ho, 2007)*. When talking about the appropriate approach to needs of the society, *Ho* assesses that it is measured by the necessity to meet needs of business community, economic growth or social challenges. Results of scientific research activities may be created knowledge, technologies or solutions.

The Triple Helix model deals with three-partite links between universities, enterprises and the State where the orientations to quality and appropriate approach are the main factors to define the values of research results. The sustainability of science is defined by capacities of these results to exist and to develop. This sustainability is achieved when these results or innovative initiatives get used effectively or bring benefits. According to that, universities need to regulate their links with enterprises and the Government needs to province supports through linking policies for sustainable development of science. This type of three-partite relations, in this environment, also help universities improve support sources for their research activities and successful management, and scientific research activities get useful for the Government, enterprises and universities, and therefore, in final accounts, for the whole society.

When assessing the Triple Helix model in the actual context of scientific research activities in universities, we do not see the existence of this three-partite relations and their effectiveness, if they exist. The main concerns of universities are focused on their teaching duties and activities and, then, their scientific research results do not yet meet needs expectations of enterprises for their investment and use. These gaps would hinder the development of scientific research activities in universities.

4. Proposals

As measures for development of Vietnam to become a modern industrial nation according to the Resolution by the Party Central Committee Conference, Session XII, the enhancement of research capacities in higher education institutions plays important roles to produce quality human resources as well as to disseminate knowledge. For this purpose, Vietnam needs to have visions, strategies, policies, programs, regulations and

financial resources to keep pace with economic development in context of increasing global integration. The main attentions should be focused on the following considerations.

4.1. Building up tools and models of supports for research activities by universities, and policies to link universities with enterprises

The State needs to have concrete policies of investment for fundamental researches while calls investments from enterprises for application researches through State-supported mechanisms and policies. Also, enterprises get encouraged to implement applications of research results generated from research activities by universities. This mechanism between universities and enterprises should be regulated harmonically through policy tools which target to help universities get high incomes by conducting scientific research activities and providing technology transfer.

The distribution of research finances is based on visions of mid-term and long-term strategies for socio-economic development of the country. In this approach, tools and modes of financial supports for research activities as well as evaluation criteria should secure the background of effectiveness, equality and consistency for all the higher education institutions.

4.2. Improvement of quality of research activities

A system of criteria to evaluate quality of university lecturers should be set up on basis of international publication they produce. Then, the quality of higher education institutions is evaluated on the total number of produced international publications which would be indicators for evaluation of granted State budgets.

It is necessary to enhance research capacities of university lecturers on basis of international standards and to attract overseas scientists to participate in research projects in universities. The latter is also to target to enhance the quality of local lecturers.

A system to govern norms and conditions for research activities should be set up to motivate lecturers to carry out research projects. The number of research works and international publications made by lecturers should be considered as criteria for their carrier promotion.

A modification should be made for the doctor-grade training procedure including the incentive promotion of international publications by students-researchers. This new measure would help to rate research results of

completed theses on basis of regional and international standards and norms.

5. Conclusions

Strategies for Sustainable Development of Vietnam, 2011-2020 period, had been approved by Decision No. 432/QD-TTg by the Government on 12th April 2012 which indicated the concepts "S&T is the background and driving forces for sustainable development of the country. Modern, clean and environment friendly technologies should get priorities for large use in production sectors". This vision again emphasizes the role and necessity to enhance scientific research capacities of Vietnam higher education institutions because we can, only through this way, provide and update knowledge for students which can, after graduation, follow modern tendencies of the world's scientific researches

However, the above presented analysis of the roles and involvement of universities in scientific research activities help indicate barriers at the actual moment and the problems should be solved through strong policy tools to assist the faster and sustainable shift of Vietnam to knowledge based economy./.

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