
CURRENT STATUS OF SCIENTIFIC RESEARCH AT UNIVERSITIES IN VIETNAM

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Abstract

Scientific research is essential for the development of human knowledge. It is even more critical when carried out in institutions of higher education where research and training responsibilities are resources for society. However, Vietnam universities mainly focus on teaching activities, not on scientific research activities, which leads to the effectiveness of scientific research activities of universities in Vietnam is still not high enough. Therefore, this paper focuses on analyzing the current status of scientific research activities, barriers to scientific research activities of universities in Vietnam. The author proposes some solutions to improve the efficiency of scientific research activities at universities in Vietnam.

Keywords: education institutions, Lecturers, Scientific research, Vietnam

1. Introduction

Higher education includes the teaching, research, and social service activities of higher education institutions. Higher education plays a significant role in the national economy, as an economic sector, and to educate and train human resources for the rest of the economy (Ilhan OZTURK, 2001). The world is starting to enter the fourth industrial revolution, a new manufacturing revolution associated with unprecedented breakthroughs in technology related to virtual intelligence, the digital era, and the explosive development of interdisciplinary, multidisciplinary, and transdisciplinary technology. This new manufacturing revolution is predicted to dramatically impact every country, government, business, and people around the globe and fundamentally change the way we live, work, and produce. This new era of investment, productivity, and rising living standards is driven by human creativity and will have profound implications for the world's political, social, and economic systems. Although it has only just begun, Industry 4.0 has put all countries and fields in general and Vietnam in particular in front of many great opportunities and challenges. In the perspective of Industry 4.0, the computerization of social and production processes leads to significant changes in the structure of the workforce. Cyber-physical systems will greatly support simple jobs or demanding higher-order thinking activities; this leads to the requirement to adjust the human resource training structure, and at the same time increases the risk of job loss, unemployment; many industries face tremendous challenges due to fierce competition.

Over the past years, Vietnam's higher education has made positive changes, making an essential contribution to human resource training, socio-economic development, and training hundreds of thousands of bachelors, masters, and doctors each year. In order to improve the quality of training, over the years, the education sector has directed higher education institutions to innovate training content, curricula actively, and teaching methods in the direction of a competency approach, enhancing skills in application and practice (Figures and Event Review,

2019). Training institutions associate training with the labor market, proactively grasp the needs of enterprises, or develop training programs with the participation of enterprises to ensure clear output standards (Pham Viet Phuong, 2020). In particular, over the past years, higher education institutions have implemented advanced and high-quality programs transferred from developed countries to gradually improve the quality of human resource training for socio-economic development and international integration. The quality assurance conditions, especially the teaching staff, have gradually improved in quantity and quality. Along with training, the scientific research activity of universities also achieved many positive results. Much higher education institutions have promoted scientific research activities for research-oriented development and support for start-ups to improve training quality in meeting the practical needs of the labor market.

2. Current status of scientific research at Vietnam universities

While internationally, scientific research achievements are the leading criterion to evaluate universities, but universities have long paid little attention to scientific research in Vietnam. Only in recent years, due to the need for international integration, the perception of this issue has changed more or less. After the statistical information clearly shows the heavy lagging behind Vietnamese universities compared to the universities of Thailand, Malaysia, and Singapore, Vietnam has just begun to set the task of scientific research for universities. Recently, Although the importance of scientific research has been recognized in universities, there are differences of opinion hindering scientific research activities. According to statistics of the National Bureau of Science and Technology Information - Ministry of Science and Technology on the results of the scientific research and technology development survey in 2018 using two types of indicators: according to (i) the actual number of headcount, and (ii) the number of people converted to full-time equivalent (FTE), the research situation is as follows:

*Table 1: R&D personnel by activity area and job function
(Unit: person)*

Activity area	Total	Job function		
		Research staff	Technical staff	Support staff
R&D personnel	172,683	136,070	11,066	25,547
R&D organization	34,197	26,681	2,406	5,110
S&T service organization	3,229	2,331	442	456
Administrative agencies, non-business units	20,584	14,949	3,148	2,487
Enterprise	26,192	23,014	2,089	1,089

Source: National Bureau of Science and Technology Information(2018)

Table 1 shows that the number of staff engaged in scientific research and technology development at higher and colleges institutions is 51.24% of the total number of human resources for scientific research and technology development, accounting for more than half of the research staff. This affirmed that the participation in scientific research and the quality of

scientific research works of the officials and lecturers of educational institutions play a decisive role in achieving the science, technology, and innovation strategy goals. The task of scientific and technological research activities is to be associated with the development of entire industries and key industries; promote the development of intelligent manufacturing, digital transformation according to the trend of the fourth industrial revolution. Science and Technology (S&T) tasks and projects have been effectively implemented in the enterprise-centered orientation. Scientific research activities are expanded to enhance the provision of S&T services and technology transfer. Scientific research is quickly applied to production and business activities, helping enterprises innovate technology and improve productivity, product quality, and competitiveness. This makes an essential contribution to the exercise of autonomy, developing the economy, creating resources for research institutes to continue developing S&T potentials, and strengthening facilities. At the same time, it ensures maintaining and improving the life and income for officials, employees, and employees.

*Table 2: R&D personnel by activity area and job function (calculated by FTE)
(Unit: person)*

Activity area	Total	Job function		
		Research staff	Technical staff	Support staff
R&D personnel	84,733	66,953	6,763	11,017
R&D organization	34,132	26,378	2,816	4,938
Higher and colleges education institutions	22,101	17,257	745	4,099
S&T service organization	2,613	1,846	414	353
Administrative agencies, non-business units	7,553	5,362	1,326	865
Enterprise	18,334	16,110	1,462	762

Source: National Bureau of Science and Technology Information (2018)

Table 2 shows that the number of cadres of scientific research and technology development of higher education institutions according to the FTE criterion reached 24.98% of the total number of the scientific research staff of the educational institutions and reached 26.1% of the total number of researchers. Lecturers of educational institutions must participate in the two tasks of teaching and scientific research simultaneously, and lecturers are the most important and valuable learning resources for students. Lecturers need to have adequate knowledge and understanding of the subject they are teaching, have the necessary skills and teaching experience to effectively convey and exchange that knowledge to students in the teaching environment, and being able to get student feedback on their teaching is very important in determining the quality of teaching. The current faculty participation in scientific research is mainly aimed at improving the quality of teaching, so according to the FTE criterion, the rate of science research lecturers reached 24.98% is a reasonable rate, in line with the requirements of goals of the Ministry of Education and Training, and the Ministry of Science and Technology.

*Table 3: Research staff by level and area of activity
(Unit: person)*

Activity area	Total	By professional level			
		Doctorate	Master	University	Colleges
R&D personnel	136,070	15,874	55,890	57,022	7,284
R&D organization	26,681	4,029	9,261	12,694	697
Higher and colleges education institutions	69,095	10,619	40,011	17,624	841
Higher and colleges education institutions (%)	100	15	58	26	1
S&T service organization	2,331	122	607	1,509	93
Administrative agencies, non-business units	14,949	865	4,718	8,069	1,297
Enterprise	23,014	239	1,293	17,126	4,356

Source: National Bureau of Science and Technology Information (2018)

*Table 4: Research staff by level and area of activity (calculated by FTE)
(Unit: person)*

Activity area	Total	By professional level			
		Doctorate	Master	University	Colleges
R&D personnel	66,953	7,093	23,031	32,338	4,491
R&D organization	26,378	3,890	9,210	12,588	690
Higher and colleges education institutions	17,257	2,633	10,738	3,676	210
Higher and colleges education institutions (%)	100	15	58	26	1
S&T service organization	1,846	94	482	1,197	73
Administrative agencies, non-business units	5,362	308	1,696	2,889	469
Enterprise	16,110	168	905	11,988	3,049

Source: National Bureau of Science and Technology Information (2018)

Tables 3&4 show that, according to FTE criteria, the number of scientific research staff in educational institutions accounts for 25.77% of the total number of researchers. Ranking second in terms of the number of staff participating in R&D. The number of lecturers participating in full-time scientific research reflects the interest of the university's management board and lecturers in carrying out scientific research; reflect the policy and organizational measures to maintain the scientific research culture of universities.

Regarding the structure of staff involved in R&D at educational institutions, the staff who are most involved in scientific research and technology development are concentrated in the group with a master's degree with the rate of 58%. Officials and lecturers in educational institutions are now mainly at the master's level. In order to be eligible to upgrade their degree to a doctorate, the lecturers and staff must have scientific research works. Therefore, although they participate in scientific research, the motivation for the group of staff of scientific research educational institutions is mainly to serve the needs of learning to improve professional qualifications; lack of motivation comes from the passion for scientific research. The commercialization of the approved scientific research works is also not high, so scientific research has not promoted its role. The university staff and lecturers are people with extensive scientific knowledge; due to the characteristics of their work, they often approach research activities, they have a very close relationship with scientists, so if they are adequately encouraged to have a passion for scientific research, they will make an outstanding contribution to the knowledge economy. In order to ensure that scientific research increases the number of researchers, the number of scientific research works, and the quality of scientific research works, the motivation of researchers plays a decisive role in the situation of scientific research.

*Table 5: Research staff by research field, implementation area
(Unit: person)*

Research field	Total	Implementation area				
		Scientific research organization	University	Administrative agencies, non-business units	S&T service organization	Enterprise
<i>Research staff</i>	<i>136,070</i>	<i>26,681</i>	<i>69,095</i>	<i>14,949</i>	<i>2,331</i>	<i>23,014</i>
1.1. Natural Sciences	14,155	3,784	8,829	1,274	268	0
1.2. Engineering and Technology Science	46,685	8,993	18,283	1,971	619	16,819
1.3. Medical Science	15,894	1,873	7,374	6,284	363	0
1.4. Agricultural Science	13,860	5,503	5,154	2,127	857	219
1.5. Social Science	36,785	5,545	22,363	2,767	218	5,892
Social Science (%)	100	15	61	8	1	16
1.6. Humanities	8,691	983	7,092	526	6	84

Source: National Bureau of Science and Technology Information (2018)

Table 6: Research staff by research field, implementation area (calculated by FTE)
(Unit: person)

Research field	Total	Implementation area				
		Scientific research organization	University	Administrative agencies, non-business units	S&T service organization	Enterprise
Research staff	66,953	26,378	17,257	5,362	1,846	16,110
1.1. Natural Sciences	6,573	3,707	2,207	449	210	0
1.2. Engineering and Technology Science	26,216	8,882	4,371	701	489	11,773
1.3. Medical Science	6,496	1,890	2,031	2,282	293	0
1.4. Agricultural Science	8,303	5,429	1,289	755	676	154
1.5. Social Science	16,369	5,498	5,586	988	173	4,124
Social Science (%)	100	34	34	6	1	25
1.6. Humanities	2,996	972	1,773	187	5	59

Source: National Bureau of Science and Technology Information (2018)

In the direction and orientation of the Party's 10-year socio-economic development strategy in the period of 2021-2030, two issues of particular concern are "strongly developing science, technology, and innovation to create a breakthrough to improve productivity, quality, efficiency and competitiveness of the economy," and "development of science and technology is the key driving force of the rapid and sustainable development process". The strategy also mentions the specific requirements for scientific fields, thereby promoting the strong development of the social sciences and humanities to have a scientific basis best to serve the cause of innovation and socio-economic development. Simultaneously, arousing creativity, raising responsibility, and respecting differences in social sciences and humanities; closely associate social sciences and humanities with natural sciences and technology to implement the country's socio-economic development tasks. In the current national context, the Party attaches great importance to the transfer and application of scientific and technological advances to economic, cultural, social, human, defense, and vital security development. Therefore, social science research plays a significant role in implementing the Party's 10-year socio-economic development strategy. Table 5 shows that the number of R&D staff in the field of social sciences is 27.03% of the total number of R&D staff, which the number of social science researchers from universities accounts for 60.8%. Table 6 shows that, according to the FTE indicator, the number of social science

researchers in universities accounts for 34% of the total number of researchers in this field. Thus, scientific research activities of universities in social science research play a decisive role in the implementation of directions and orientations for socio-economic development. Lecturers are directly involved in human resource training for the country and play a role in determining qualified human resources with high digital technology content, flexibility, and being mentally resilient. Management agencies in science and technology, universities in economics need to pay attention and create more conditions for the university's faculty and staff to participate in scientific research to work together-performance of the Party's socio-economic development strategy.

*Table 7: R&D expenditure by region of implementation and source of funding
(Unit: million Vnd)*

Implementation area	Total	Funding source					
		State budget		University	Enterprise	Other	Foreign
		Central budget	Local budget				
R&D organization	4,819,911	3,071,224	380,397	123,200	425,884	703,183	116,023
Higher and colleges education institutions	1,403,315	793,860	231,619	204,143	27,634	66,203	79,856
Higher and colleges education institutions (%)	100	57	17	15	2	5	6
S&T service organization	663,178	194,094	315,629	31,946	11,184	18,496	91,829
Administrative agencies, non-business units	221,294	72,204	103,725	10,563	12,427	16,958	5,417
Enterprise	19,260,884	1,384,581	553,833	0	16,430,438	0	892,032
Total	26,368,582	5,515,963	1,585,203	369,852	16,907,567	804,840	1,185,157

Source: National Bureau of Science and Technology Information (2018)

Table 8: R&D expenditure by research sector and implementation region
(Unit: million vnd)

Research field	Total	Implementation area				
		S&D organization	University	S&T service organization	Administrative agencies, non-business units	Enterprise
Natural Sciences	1,197,781	878,878	262,475	51,265	5,163	0
Engineering and Technology Science	19,268,291	1,872,866	521,407	180,887	142,641	16,550,490
Medical Science	509,270	228,784	127,507	147,093	5,886	0
Agricultural Science	1,745,889	1,154,064	173,507	141,764	49,806	226,748
Social Science	3,471,341	594,339	249,684	127,028	16,745	2,483,545
Social Science (%)	100	17	7	4	0	72
Humanities	176,011	90,980	68,735	15,141	1,053	102
Total	26,368,583	4,819,911	1,403,315	663,178	221,294	19,260,885

Source: National Bureau of Science and Technology Information (2018)

Table 7 shows that R&D expenditure by sector of implementation and funding source for the universities are 1,413,315 million VND, equivalent to 5.32% of total expenditure. In the structure of spending on R&D of universities, funding from universities is 14.55%, the rate of expenditure on R&D is too low compared to the ratio of R&D staff of universities (25.77%). In addition, social science research expenditure only accounts for 13.16% of total R&D spending by research field and implementation area, and this figure represents an irrationality in the spending structure because the number of researchers in the social sciences accounted for 27.03% of the total number of researchers (Table 8). The proportion of spending on social science research in the universities accounts for 7.2%, and universities receive a minimal amount of funding in the total expenditure for social science research. The inadequacy of funding for scientific research activities has made it difficult for many lecturers, especially young lecturers, to carry out scientific research. They have to spend time doing other things to supplement their limited income from lecturers' salaries, the pressure of studying for a degree, so without the attraction of funding for research work, it will be impossible for the goal of scientific research of lecturers of higher education institutions in general, higher education institutions in the field of economics in particular. Management agencies in science and technology need to have a reasonable allocation of funds for scientific research, improve administrative processes and procedures for funding scientific research staff, have attractive remuneration and be more worthy for staff, lecturers, people doing R&D work.

3. Barriers to scientific research activities in Vietnamese universities

The biggest obstacles to scientific research at universities (and research institutes) are the lack of academic freedom (especially in the social sciences) and the pressure to earn extra income outside of salary that does not allow the scientists to think serious scientific research. Many scientists are inherently capable and enthusiastic, but because of the needs of life, they have to bid farewell to science, teach a lot of extra hours, do all kinds of things that are not forte, sometimes even against their conscience, to earn money for their livelihood. Although managers and leaders have identified scientific education as the top national policy for decades, they are still irresponsible before the situation that teachers and scientists cannot afford to live on a meager salary. Several policies have been implemented to increase teachers' income. Still, they do not fundamentally solve the problem, bringing the risk of disorder and injustice in an educational environment in need of order and fairness. Failing to resolve the issue of lecturers' salary/income correctly will significantly impact achieving world-class in the next few decades. Until now, scientific research activities at our country's universities have always been evaluated at a low level in terms of works of international stature as well as effectiveness. Scientific research activities at many universities in different fields (public and private) lack vitality, lack vitality, and are not commensurate with the name and activities of the university. Most university lecturers only know how to carry out teaching tasks, while scientific research is strange, out of reach, and beyond their capabilities. The average number of articles published in domestic and international specialized journals for each lecturer is still deficient. Many university lecturers have doctorate degrees or have been teaching for a long time. Still, they hardly have much commensurate research or have not done any scientific research work. Scientific research activities of university lecturers in Vietnam are still weak; there are several fundamental reasons as follows:

Firstly, in a long time, due to the limitation in the number of university lecturers compared to the demand for university training, the university training management mechanism has distorted the function of the lecturers, that is a management mechanism to create lecturers, not truly university lecturers. Teaching is associated with scientific research, and scientific research is associated with an application serving for teaching is just a slogan but cannot become an actual activity at universities. Until now, this situation has been aggravated when several universities were born on the background of a serious shortage of lecturers.

Second, although in the past time, higher education management agencies, as well as universities, have paid more attention and emphasis on scientific research, in general, it is still heavily formal, not practical quality lacks depth and race for achievements. Therefore, scientific research activities have been abused to achieve titles that are sometimes only nominal or achieve achievements with the governing body and try to use up all the allocated funds, regardless of the results achieved. This has caused the investment funds for scientific research to be misused and wasted, which significantly harms the trust of enthusiastic and capable scientific research of university lecturers.

Third, the task of scientific research is the central task of the lecturer, but how should the lecturer not perform or be incapable of doing it? Although all universities have developed regulations to

evaluate the performance of lecturers, almost none of them can implement the evaluation regulations because the number of people who do not participate in research is too large, accounting for the majority of university faculty; This leads to dependence, laziness, and disregard for scientific research activities of some lecturers in universities.

Fourth, scientific research is a difficult job, requiring thinking and creativity ability, so there must be a process of training and gradual upgrading to achieve recognized results from low to high levels slowly. Therefore, tutoring, orienting, helping, and motivating lecturers, especially young lecturers in scientific research, is necessary and cannot be neglected. However, the leading research force is too thin, and long-term lecturers are not all capable of doing scientific research. Universities lack capable and enthusiastic lecturers in scientific research to be powerful locomotives to develop their scientific research activities.

Fifth, university lecturers focus on teaching tasks rather than scientific research activities. This is a fact that occurs in all universities in the country because only teaching can supplement the meager salary. If the issue of adequate salaries for lecturers cannot be solved, it is difficult to create peace of mind for lecturers, even those with scientific research ability, to carry out the scientific research tasks that we set out (Ngo Thi Thu Hong, Pham Thi Lan Anh, 2019).

Scientific research is the duty of the faculty, but ensuring their home life is a burden that the lecturer has to deal with daily. Therefore, focusing only on teaching and increasing the number of teaching hours is becoming a great challenge for the current task of scientific research and improving the quality of university teaching.

4. Conclusion

Scientific research activities in universities are not only considered as one of the essential factors in improving the quality of training, creating human resources to meet the increasing development needs of society but also to create new knowledge, new products, improve technological processes, improve productivity and quality of products for the development of the country. However, scientific research activities at Vietnamese universities have not been invested, focused, and not practical. Therefore, to promote scientific research activities of universities in Vietnam, the author proposes the following managerial implications for universities: (1) Increasing awareness of scientific research for university faculty members; (2) Building a culture of scientific research; (3) Reforming payment procedures and processes; (4) Fostering and developing the personal lecturers capacity; (5) Improving the regime for scientific research lecturers; (6) Creating a favorable environment for scientific research.

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