

SOME SOLUTIONS FOR HUMAN RESOURCE DEVELOPMENT IN SCIENCE AND TECHNOLOGY IN VIETNAM TODAY

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Abstract:

Development of human resources in S&T management and in scientific research is an integral part of human resource development for science and technology (S&T) activities. From the limitation and inadequacy of the current S&T management mechanism, this paper proposes four most important solutions for developing human resources in S&T, in a basic and systematic manner, for the development of S&T of Vietnam.

Keywords: *Human resources; Science management; Scientific research.*

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1. Introduction

Confronting the present trend of international integration, among those factors determining the development of every nation, i.e, rich natural resources, qualified human resources and developed S&T, the institutional and human resources development increasingly become a decisive factor. For Vietnam, in order to develop, the inevitable path to follow is to renovate its growth model, restructure its economy towards improved quality, efficiency and competitiveness. Therefore, Vietnam can only choose and rely on S&T whereby human resources development in S&T plays a decisive role.

This paper approached the issue from various limitations and inadequacies of the current S&T management mechanism, and on that basis, proposed some solutions for development of human resources in S&T activities - the most significant and critical factor, it is critical to the development of the S&T of Vietnam.

Some limitations and inadequacies of the current S&T management mechanism have been mentioned in many published studies, namely: Insufficient, weak, inadequate material-technical infrastructure for research and development, investment in equipment without proper training on operational skills for making full use of modern equipment purchased; Lack of a master plan of developing S&T organizations by industry, sector,

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geography, it led to dispersed, overlapping and spread investment of resources; Lack of strategic planning for training and retraining of S&T manpower appropriate to each stage of development of the country and international integration; Limited coordination, coherence between training and scientific research; Weak coordination, collaboration in scientific research between research institutions as well as between individuals working in scientific research; Unattractive incentive policy including inappropriate salary income for people working in scientific research leading to lack of long-term commitment, low dedication to innovative research career. In addition, the S&T management mechanism has been running on administrative trend, scientific management agencies do the work of scientists. In the process of implementing S&T tasks, management agencies involved had overlapping functions with more and more cumbersome administrative procedures set out.

2. Some solutions to develop human resources in science and technology activities of Vietnam today

The issue of developing human resources, in a reasonable way, for research and development and S&T management corresponding to the requirement of industrialization and modernization of the country always requires a system of comprehensive and synchronous solutions, from the policy making stage to the practical implementation stage with mechanisms consistent with the policies promulgated.

2.1. Raising awareness of stakeholders involved in the development of human resources in science and technology

a) Objective of the solution

The development of human resources in general, and human resources in R&D and S&T management, in particular can only be done through unified general views of principle, from the determination of basic objectives to making a system of specific policies needed to promote the synergy of the whole society and the stakeholders engaged in the development of human resources. Thus, the objective of the solution of raising awareness of the stakeholders involved in the development of human resources in S&T is as follows:

First, to overcome the situation where there exists consistency between the Party's resolutions, directives concerning S&T human resources development and their proper implementation in practice. Resolutions, directives may encounter drawbacks but they have not been thoroughly considered and adjusted, leading to difficulties in enforcement, even non-applicable status.

Practice shows that although the view and directive of the Party was correct, the organization and enforcement of such policies depends much on

thinking, perception and ability of leadership of different ministry, sector, local and grassroots levels. It is therefore a requirement and necessary task to raise awareness and undertake thorough implementation of the Party's views and policies on S&T human resources development.

Second, making the principles unified and specified in strategic development plans at national, ministerial, local levels regarding S&T human resources development in order for unified implementation from central to grassroots levels, ensuring thorough absorption of the views and policies issued by the Party. Some basic principles need to be specified are: (1) views and orientations on developing human resources for R&D activities and for S&T management; (2) guidelines for organization and implementation in respect of human resource development for R&D activities and for S&T management; (3) strategy for implementing the steps in human resource development for R&D activities and for S&T management; (4) plan and itinerary for elaborating policies in human resource development for R&D activities and for S&T management (namely, training policy, challenge and practical training, motivation policy, etc.).

b) Content of the solution

It should promote all forms of communication, education, training and refreshment with a view to raising awareness of the Party and government at all levels, as well as the whole society, for the implementation of the Party's directives and policies and the legal documents of the State with regard to human resources development for R&D activities and for S&T management, specifically:

First, it is necessary to have enough understanding to identify: (1) *who are researchers*: it should be persons with scientific spirit, willing to sacrifice their own desires to challenge difficulties in scientific works; persons who work for non-economic purposes, dedicated to generate scientific results for the sake of people and the mankind; persons having cooperation spirit in scientific research; (2) *what is scientific research*: it is the innovative, high-risk work; it needs large investments; product of scientific research is the outcome to bring about socio-economic benefits which have much higher value compared to the cost spent for research; (3) *who are science management personnel*: it should be qualified persons who understand the characteristics of the objects under management, i.e, researchers working in each sector; who can appreciate the value of science, are capable of integration, cooperation and getting opinions from people working in scientific research; (4) *science management*: is a scientific activity, so it should be treated as a science; scientific management should be carried out in the spirit of democracy, objectivity, creativity; scientific management is the action undertaken in pursuant to the law, not dominated or imposed by political power of privilege nature.

Second, the view of the Party in respect of the position and role of S&T personnel must be thoroughly grasp and well aware of to achieve the objective of industrialization, modernization of the country and its development during the international integration period. Regarding the role of S&T for socio-economic development of the country, it was indicated by the Party: “Investment for S&T human resource is the investment for sustainable development, directly raising the level of knowledge and power of the nation” [1]. Law on S&T 2013 indicated that the State shall perform policies to ensure that S&T development be the first national policy.

Regarding the role of S&T manpower, Resolution No. 27-NQ/TW dated 06th August 2008 adopted at the seventh Conference of the Party Central Committee, X-th term, emphasised: *“The Vietnamese intellectual cadre is the creative labor force of particular importance in the process of promoting industrialization, modernization and international integration of the country, towards building a knowledge economy in Vietnam, developing a Vietnam advanced culture with strong ethnic identity. Building a strong intellectual cadre shall directly raise the level of intelligence, strength of the country, improve the Party’s leadership and the quality of the political system performance. Investment in intellectual manpower is the investment for sustainable development”*. On the other hand, the resolution also pointed out the responsibility of respective stakeholders in the S&T human resources development in Vietnam presently: *“The development of the intellectual personnel is a common responsibility of the whole society, the whole political system in which the Party and the State play a decisive role. Intellectuals have the honor and duty before the country and the nation, and should constantly strive to improve their political, ethical, professional capacity in order to make largest contribution to the development of the country and the national defense”*.

Third, each stakeholder involved in the development of S&T human resources, in their practical activities, should also clearly define their responsibilities. This is expressed in the following:

- Each stakeholder involved in the development of S&T human resources should be aware of, clearly define their responsibilities, and consider the development of human resources for R&D and for S&T management as an important work, an political strategic task which requires close leadership and direction of the party, unified management of the state at different levels;
- We should also be well aware that the focus on the development of S&T human resources is placed on the development of policies relating to detection, education, training, use of and incentives given to S&T workforce, creating an enabling environment for them to promote their creativity, dedication and intellectual energy for the development of the

country. This is an indispensable subject of the organization and management of human resources in S&T;

- We also need to have specific and practical actions to raise awareness of the S&T manpower with respect to the implementation of the Party directives and policies and the provisions of the State concerning development of human resources in S&T. This will help us to overcome the problem whereby promulgated policies are not properly implemented in practice.

On the other hand, the S&T workforce itself also needs to understand and define their position and role in the industrialization and modernization process, to raise awareness by themselves of duty to serve the country and people, tie up their scientific career with the S&T development of the country; overcome shortcomings such as acquisitive title, power, profit and lack of cooperation.

2.2. Develop and improve the capacity of personnel working in R&D and S&T management to meet the requirement of industrialization and modernization of the country

a) Objective of the solution

First, there should be a thorough implementation of the Party directive considering "development and application of S&T is the first national policy" and its viewpoint that "investment in S&T human resource is the investment for sustainable development". Therefore, human resources in S&T should be taken into account at the national policy level and the objectives set out should be for action.

Second, due to limited qualification and capacity of the present S&T manpower which is still far from the requirement set forth by the industrialization and modernization process, the objectives of this solution towards developing human resources in S&T activities are: (1) S&T personnel shall have the spirit of cooperation; (2) be fully capable of performing national important and large scale S&T tasks assigned; (3) shorten the present gap between generations of S&T personnel.

b) Content of the solutions

First, build up and improve the capacity of personnel working in R&D and in S&T management through training and refreshment activities. Talking about current status of capacity of S&T manpower of our country today, the report submitted to the 6th Conference of the Central Committee, term XI confirmed: "*The gap between generations in research institutes, universities continues to widen, the number of qualified S&T personnel leading large S&T tasks decreased. No serious consideration has been taken in the development and implementation of sector/local plans for S&T*

human resource development” or ‘the spirit of cooperation and teamwork skill of S&T personnel is not high, it is hard for the formation of strong interdisciplinary research teams. Lack of cooperation between scientists leading research teams, as a result, it made the content of S&T tasks dispersed, without coordination between different research groups to perform important and larger scale S&T tasks” [3, pp.20-21]. In the near future, training activities for personnel working in S&T should be conducted in direction of:

First of all, it should reform the mechanism of postgraduate training towards clear definition of functions and their implementation between the State and higher, postgraduate education establishments, between training and retraining with the evaluation and degree recognition of the persons trained. Higher, postgraduate education establishments perform the function of training and retraining while the State delegates authority for them to proactively make self-decision (on learning content, curriculum, criteria for selecting subject matters, etc.), for postgraduate training and retraining programs, on forming independent evaluation organizations and unified implementation of the evaluation and diploma awarding functions, recognition of master/doctorate degrees in the whole country associated with each field of science. In this regard, the State must prescribe orientations and general principles for such kind of training; prescribe specific evaluation criteria in quantitative and clear manner. The State shall conduct inspection and monitoring over the evaluation and the award of degrees to ensure the quality of the training outputs; diversification of the training modality of S&T human resources; focus should be placed on strong research group training modality, in which there is close linkage between training and scientific research and link with businesses.

The State should early promulgate related policies to link training tasks with scientific research tasks; issue provisions regarding the share of at least 10% of the total funding allocated for performing national, ministerial, provincial level S&T tasks, for postgraduate training under the form of paying research salary for trained person and became as member of the research group.

The Ministry of Education and Training in collaboration with the Ministry of Science and Technology (MOST) and line ministries concerned shall organize graduate and post-graduate training for those who work in scientific management; provide training and retraining for personnel working in scientific research to ensure appropriate capacity structure (at high, medium and low level) associated with the structure of the sector and region. Focus should be put in training of highly qualified manpower in the key S&T areas of high priority.

MOST shall be the host institutions to coordinate with related agencies and

organizations to send capable, good conduct, promising managers and scientific research staff for training abroad focusing on the subjects that the country is in urgent need. This type of training will help scientific managers and scientific research staff to gain knowledge of advanced management and research methods from developed countries.

It shall promote the socialization in training to make full use of the potential of social stakeholders in human resource development in scientific management and R&D activities. In this respect, the State encourages and creates favorable conditions for organizations and individuals who wish to involve in funding for training and retraining of talented S&T personnel; priority is given to attract, train S&T manpower for the region with difficult and particularly difficult socio-economic conditions. This modality of training will mobilize the potential of stakeholders in society including businesses, NGOs, better-off individuals to participate in training activities for S&T personnel.

Second, there should be diversified forms to practice, challenge, create conditions for those involved in science management and research through practical activities.

It should consider the challenge, practice provided in training for scientific management and scientific research staff is a regular, continuous task to improve the implementation capacity of personnel of concern in solving practical problems of scientific management and scientific research work. It should develop mechanisms and policies to provide challenge to personnel receiving training in scientific management and scientific research by assigning them with specific tasks together with favorable conditions for implementation. It is considered as requirement for the management and use of S&T human resources in our country today.

Annually, the agency in charge of management and use of human resources in scientific management and scientific research also needs to organize review activities to assess the performance of personnel who have realized the scientific management and research tasks assigned for staff challenge as well as assess the capacity of people working in scientific management and scientific research.

The State should take compulsory and flexible measures for implementation of the policy regarding rotating and transfer of personnel working in scientific management and scientific research, in a reasonable manner and in accordance with the capability and aspiration of the person concerned, to ensure a stable and sustainable development of scientific management and scientific research organizations.

Third, there should have the management of scientific workers reformed to motivate those involved in scientific management and scientific research.

The scientific management reform is one of the important elements creating motivation and creativity of people working in science. In this respect, we should create a healthy research environment through scientific management work: it needs to remove the regime of task assignment, assignment based on seniority, use of personnel for all lifetime long; it should base on the job description required to identify objectives, content and the results of work to set up criteria for recruitment, appointment, assignment and evaluation of the performance; based on the requirement of the work to select and use appropriate persons, promote and appoint the leader of the scientific management unit or the scientific research institution. This is the outcome of the result based selection process of implementation of the assigned task given during the training and testing exercise.

2.3. Innovation of management mechanism towards creating enabling environment for human resources development in scientific research activities

a) Objective of the solution

First, innovation of management mechanism has been general policy of the Party and the State in recent years to promote the delegation of more authority and implementation of mechanism of giving autonomy for S&T institutions in order for maximum mobilization of resources for research, simultaneously, freeing creative capacity of research personnel in S&T organizations.

Secondly, scientific research is a particular kind of labor. It can only develop in specific social conditions in which working environment and management is extremely important. Due to limitations and shortcomings in present operation of S&T, it is indispensable to create an environment for the establishment of a synchronal and organized system of S&T as well as the implementation of simplified administrative procedures in scientific management to improve the efficiency in scientific research activities.

b) Content of the solution

First, to conduct reform of organization and operation in public S&T institutions.

The government Decree No. 115/2005/ND-CP promulgated in September 2005 regarding the implementation of autonomy and self-responsibility in public S&T organizations. There are some inadequacies when putting this Decree into implementation, namely: "The transformation of public S&T organizations to the mechanism of autonomy, self-responsibility" is still slow, the efficiency of their operation after transformation is not high. *The main cause was the psychological inertia of dependence on the state subsidies; lack of strong leadership of the host ministry and agency;*

perception of scientific workers, including leaders of public S&T organizations about mechanism of autonomy, self-responsibility is limited; lack of specific guidelines of the ministries concerned of the mechanism in terms of reallocation of assets, land, loan borrow for production - business, transfer of ownership of R&D results" [3, pp. 23-24].

In that context, it is necessary to continue to implement the policy of reformed mechanism and operation in public S&T institutions towards delegating autonomy to them in three aspects, as follows: Autonomy in performing S&T tasks; autonomy in the organization, management and use of personnel; autonomy in the use of funds and material infrastructure provided by the State budget and generated by the S&T organization itself. If it is well implemented, *"It will really be an important breakthrough step in the management of S&T, contributing to maximizing the research capacity and creativity of organizations and individuals in carrying out S&T tasks as well as gradually overcome the shortcomings inherent in the current bureaucratic, cumbersome, multi-layer management system, which has created major obstacles to the development of S&T"* [4].

Second, innovation in the way of identification S&T tasks and assignment of tasks for implementation.

The Law on Science and Technology was launched in 2000, since then the management of science in our country has experienced many changes, accordingly, the methods of identification and assignment of S&T tasks is now formed in the direction of promoting higher role of institutions and individuals and the community in the development of S&T. This is a correct policy in line with the practical process of socio-economic development. However, after a long time using the method of research project identification based on proposals submitted by S&T institutions/individuals or by order of the Party, State and ministries, localities associated with method of selection, direct assignment of institution/individual to perform the selected S&T tasks, there has revealed some limitations, namely:

- Before the scientific research task is approved, most of the ideas proposed by research institutions has been adjusted in the opinion of an Advisory Council for research task identification and the scientific management agencies concerned;
- Subsequently is the selection of organizations and individuals with the best scientific capacity to perform S&T tasks. Thus, organizations and individuals are to perform the tasks which may not necessarily come from the research ideas of themselves. Accordingly, organizations and individuals who have proposed the research idea may not necessarily organizations and individuals who perform the approved research tasks.

With our present research environment, there is inevitably a tendency to conduct research in a passive way (waiting for the research tasks assigned by management agency, not from the practice of scientific work of researchers). It is hard for researchers to proactively implement their research ideas, partly because of limited resources, partly because their research ideas were legalized for implementation by other organizations and individuals (due to the nature of competition in the selection of research tasks). It could be confirmed that the standard deviation in research was going on in scientific research activities in our country. The basic function of researchers is to develop scientific ideas, including those which have been administratively used by the imposition of science management agencies; organizations and individuals to perform research tasks are usually not proactively prepared with all the necessary conditions to carry out scientific research tasks assigned.

The consequence of the method of defining research tasks and selection or direct assignment of implementing institution of approved research tasks does not only limit the autonomy in research, but also produce negative impacts or impede the creativity of personnel working in scientific research. Researchers cannot be devoted to his research career because they must spend a lot of time and unnecessary effort for settlement of administrative procedures imposed by financial management agencies concerned and due to weak capacity of management agencies. Therefore, the State should change the method of defining research tasks and method of selection, direct assignment of research institutions to perform scientific research, in the following direction: Scientific management agency shall perform the function of giving orientation for research and make it publicize in connection with each research program/project; Organizations and individuals doing scientific research with initiative shall determine by themselves the research task according to their research capacity. The decision to award selected tasks would be based on practical significance and potential application of the expected results, the appropriateness and relevance of the proposal expressed in the outline prepared and the research orientation announced by the scientific management agency. Then, this agency with the assistance of its scientific advisory board shall consider different aspects of the application, namely the expected research results; implementation capacity of the research group, etc. to select and approve the implementing entity of research tasks.

The change of the selection method of organizations and individuals to perform research tasks using the State budget from limited competition between organizations and individuals having best implementation capacity of an open, "no competition" nature is the outstanding point of the new selection method. The advantage is the method of identification in the research tasks linked with the selection of the implementing agent: (1) no

limitation to individuals to participate in scientific research; (2) facilitating people doing research work with conditions to create under their maximum scientific capacity and qualifications; (3) researchers do not fear that their research ideas be stolen; (4) creating a healthy environment for scientific research development, overcoming the situation where research workers become employed by some individuals who are not suitable for scientific research, not leading scientists, but lead the research project; (5) helping the simplification of administrative procedures in scientific management in all stages related to the scientific advisory board (namely, tasks identification, implementation agent selection and financial appraisal, etc.) thus can shorten the time to review and approve the research project.

Third, it should promote the planning of network of S&T organizations associated with the strategy for human resources development in scientific research activities.

The issue of building a suitable network of S&T institutions is an important factor in promoting the role of S&T human resources. To make this possible, the State should issue a strategy for human resources development in scientific research activities; integrate this strategy with the planning of R&D system clustered by specific sector, region in order to concretize the views and directives of human resources development in scientific research for each period. The motto of human resources development in scientific research for the time being is rejuvenated and practical. Rejuvenation and practical is to help Vietnam have a team of young researchers with high creativity, working for practical development of the country. The viewpoints of human resources development in scientific research activities are: to aim at the objective of industrialization and modernization for the development of the country; to look out to the world for better integration with the S&T movement and development of the world; S&T of Vietnam to catch-up and reach in the near future, tentatively by 2030, a high ranking in the region and an average ranking in the world. The strategy of human resource development in scientific research should have a roadmap to follow and complete a capacity structure with a logic human resources composition in scientific research, and consistent with the planning of a R&D system classified by industry/sector and by region.

In order to have a good planning of the network of S&T organizations, the State should proceed to establish a system of uniform regulations necessary for monitoring and evaluating the performance of individual researcher by their contribution and their dedication to the development of science and technology. To avoid brain drain, the State should have appropriate mechanisms of consulting and introducing researchers to be used with reasonable assignment commensurate with their talent, capacity and advantage of their expertise in their S&T organization; create diversified research trends, support the development of intensive research groups for

each different trend and school; emphasis should be placed on the development of specialized research groups in which there is strong cohesion, unity towards the creativity in new fields and topics of study.

2.4. Development of human resources in scientific management in association with the development of science and technology

a) Objective of the solution

First, strengthen the capacity of personnel involved in S&T management to implement the function of state administrative management and the function of providing orientation for scientific research activities.

Second, building up a cadre of personnel with sufficient qualification and good conduct to perform the function of scientific management, this cadre should have knowledge and broad understanding of different fields of science, and the spirit for the country construction and development.

b) Content of the solution

First, we need to review and revise policies towards the reform of organization and personnel in scientific management in the following direction:

To enhance training and refreshment, building a cadre of scientific management personnel capable of meeting the requirement of industrialization and modernization. The plan of human resources development for scientific management must be done based on the real development of S&T. It should create conditions for staff to be equipped with depth knowledge not only in management but also in the field of science under their management. By this way, they can acquire appropriate management practice and do not interfere in scientific activities.

To develop a master plan of establishing a system of scientific management agents by sector and by region; determine the structure of scientific managers linked with the plan of building the system of scientific management agents by area, sector, and region; and create competency standards of each job description corresponding to each position.

To facilitate scientific managers to perform their work, we also need to conduct study to establish a system of standards on supervision and independent evaluation of people working in scientific management and scientific research activities. It should be done on a regular or ad-hoc basis, the review and evaluation of the capacity of scientific management personnel for the purpose of prepare plan of training, rotation, use of people towards improved efficiency in the use of human resources in scientific management at ministries, sectors and localities and regions in the country as a whole.

Second, to form a cadre of personnel working in scientific management capable and qualified enough to become scientific managers.

Scientific management is also understood as a scientific activity. It requires the people working in scientific management be capable of working in the field of state management in general and in S&T management, in particular. They are willing with passionate spirit to dedicate for the job of state management; they are also person who commit themselves to and are responsible for the development of S&T of the country. Therefore, it could not select those who have no talent, lack of passion, willingness to work in the career of scientific management in state scientific management agencies.

Scientific management requires not only the spirit of passion, love towards state management career, but also the practical experience and knowledge of scientific research activity. Criteria for evaluation and selection of personnel to work in scientific management, first of all, the candidate must be capable of performing scientific research tasks certified by specific scientific works published.

Scientific management is considered as a scientific activity, it requires stakeholders involved in the development of human resources for scientific management must have an appropriate plan of action, starting from the planning stage to working out implementation methods and monitoring and evaluation. Therefore, attention should be paid, in a reasonable way, to the stage of selection of personnel, task assignment so that it is appropriate to their expertise and capacity for them to perform the management job well and devoted themselves to each task assigned.

In order to have a workforce doing good job in scientific management, we also need to pay attention to the needs, aspirations, psychological mood, willingness of their own. It is very necessary to do this because it helps them to focus more on the work, not to be distracted by pursuing their acquisition of basic living and working needs, thus improve the quality of scientific management tasks assigned.

3. Conclusions

From some limitations and inadequacies of the current S&T management mechanism producing negative impacts on the development of human resources in the system of scientific management and scientific research institutions, this paper presented four solutions in human resources development, out of which there were two solutions relating to reform of mechanism: (1) reform of postgraduate training towards identification and implementation of the following functions: training must be independent to assessment and awarding diploma, and also independent to inspection of the state; develop and diversify modality of training, whereby special

attention should be given to the training of strong research groups, linkage of training with scientific research and with businesses. For post-graduate training, it should extend the autonomy of training institutions at all stages, build relationship between training institutions and learners under the demand-supply principle of market while ensuring the quality of training by controlling the current evaluation and diploma awarding process at education establishments; (2) Reform of mechanism in scientific management towards eliminating cumbersome administrative activities, not under the function of scientific management agencies, eliminating mechanism of S&T management by five-year plan and by fiscal year. It was supportive to the views of continued implementation of mechanisms issued under Decree No. 115/2005/ND-CP in respect of expanded autonomy and self-determination of public R&D organizations and individuals working in research, proposed wage mechanism for scientific research personnel in direction of linking the remuneration with specific S&T tasks.

The two other remaining solutions, i.e solution in respect of raising awareness of the actors involved in the development of human resources for scientific management and for R&D, the characteristics, role of S&T human resources; and solutions regarding the content, methods of human resources management in scientific management and in scientific research activities, the responsibilities of each stakeholder in human resource development in scientific management and for R&D activities./.

REFERENCES

1. Resolution No. 20-NQ/TW dated 01st November 2012 of the Party's Central Committee, term XI on S&T development for the industrialization and modernization in the condition of socialist oriented market economy and international integration.
2. Resolution No. 46/NQ-CP of the Government dated 29th March 2013 issuing the Action Program to implement the above Resolution No 20-NQ/TW.
3. Government's Party Committee. *S&T development for the industrialization and modernization in the condition of Socialist-oriented market economy and international integration*. Report submitted to the Meeting of Party's Central Committee, term XI, held in Hanoi on 18th September 2012.
4. Dao Tien Khoa. (2012) *Limitations, weaknesses and causes, problems of the current S&T need to be settled - the mechanism of autonomy and self-responsibility of S&T organization (Some thoughts of Decree No.115/2005/ND-CP)*. Thematic research under the report for the Meeting of Party's Central Committee, term XI, held in Hanoi on 18th September 2012.
5. Nguyen Thanh Trung. (2015) *Development of Vietnamese manpower in scientific management and scientific research for the development of S&T in the period of accelerated industrialization and modernization of the country*. PhD Thesis.