SOME THEORETICAL ISSUES ABOUT QUALITY ASSURANCE OF SCIENTIFIC RESEARCH ACTIVITIES AT UNIVERSITIES

Một số vấn đề lý luận về bảo đảm chất lượng hoạt động nghiên cứu khoa học ở trường Đại học

Nguyễn Hữu Gọn[(1)*], Phạm Minh Giản[(1)]

[(1)]Trường Đại học Đồng Tháp

ABSTRACT

Ensuring quality in universities serves not only the goal of education quality assessment but also as a foundational factor for sustaining, improving, and enhancing sustainable education quality, capable of adapting, integrating, and competing with the region and the world for each university. Ensuring the quality of scientific research activities is one of the two fundamental tasks to enhance the quality of higher education. This paper explores some theoretical issues about quality assurance of scientific research activities at universities, which is crucial for further research to contribute to improving the quality of education and training at higher education institutions.

Keywords: Quality Assurance, Quality of Scientific Research, Scientific Research

TÓM TẮT

Bảo đảm chất lượng ở trường đại học không chỉ phục vụ mục tiêu kiểm định chất lượng giáo dục mà còn là yếu tố nền tảng giúp duy trì, cải tiến và nâng cao chất lượng đào tạo bền vững, có khả năng thích nghi, hội nhập và cạnh tranh với khu vực và thế giới của mỗi cơ sở giáo dục đại học. Trong đó, bảo đảm chất lượng hoạt động nghiên cứu khoa học là một trong hai nhiệm vụ cơ bản để nâng cao chất lượng giáo dục đại học. Bài báo nghiên cứu một số vấn đề lý luận về bảo đảm chất lượng hoạt động nghiên cứu khoa học ở trường đại học là cơ sở lý luận quan trọng cho các nghiên cứu tiếp theo để góp phần nâng cao chất lượng giáo dục và đào tạo của các cở sở giáo dục đại học.

Từ khóa: Bảo đảm chất lượng, Chất lượng nghiên cứu khoa học, Nghiên cứu khoa học

1. Introduction

Amidst the strong trends of development and integration to secure substantial funding, attract leading scientists to work, and draw a large number of students, universities are engaged in a race for prestige and higher rankings. There is a broad consensus that universities have three main roles: first, ensuring excellence in quality assurance (QA) in education;

second, advancing the development of scientific and technical knowledge through scientific research (SR); and third, transferring scientific and technological knowledge from academia to production organizations, businesses, and society. To emphasize the role of SR in universities, Levin et al. (2006) assessed university prestige based on the research aspect, while Hobbs (1997) noted that most world-class

---

[*]Corresponding author: nhgon@dthu.edu.vn

universities excel in research.

Article 28 of the Higher Education Law stipulates the tasks and powers of universities, in which the second task is: Implementing activities in education, science, and technology (S&T), ensuring the quality of higher education. Accordingly, universities bear the responsibility of ensuring the QA of education and SR activities. According to education managers, QA in SR activities is affirmed as both a measure to improve the quality of higher education and a response to the requirements of Resolution No. 29-NQ/TW on fundamental and comprehensive reform of education and training. This aims to meet the demands of industrialization and modernization in a socialist-oriented market economy and international integration. In this context, SR activities in universities must serve as a driving force for development, meet the quality assessment standards for universities, gain recognition from national and international accreditation organizations, and fulfill the criteria of international university ranking systems (Central Executive Committee, 2013).

With the above significance, the article systematizes the theoretical framework for QA in SR activities at universities, including the following contents: Basic concepts of QA in SR activities at universities; an overview of research on QA in SR activities at universities; and several theoretical perspectives on QA in SR activities at universities.

2. Research Content

2.1. The Concept of Quality Assurance in Scientific Research Activities at Universities

Quality Assurance: Quality is described as a combination of various attributes, Quality is excellence, Quality is perfection,

Quality is fitness for purpose, Quality is value for money, Quality is transform ation, Quality is also evaluated through "Input," "Output," "Added Value," "Academic Value," "Distinct Organizational Culture," and "Audit" (Harvey & Green, 1993). In our view, quality is the transformation of "input" and "output" to meet predefined standards; QA is a method to prevent errors or defects in production and minimize issues when delivering products or services to customers. According to ISO 9000, QA is a part of quality management, focusing on providing confidence that quality requirements will be met. QA encompasses all planned and systematic activities implemented within the quality system, which are demonstrated as necessary to ensure adequate confidence that an entity will fully satisfy quality requirements. QA includes both internal and external quality assurance. Preventing defects in QA differs from detecting and eliminating defects in quality control. QA is a process that takes place before and during the execution of procedures. QA carries out management functions through procedures and processes, preventing errors with systems for detection and correction. Effective QA requires coordination between managers and executors, as well as collaboration between higher and lower levels of authority.

Scientific Research: "SR is the process of theoretical investigation or practical exploration of a specific issue, conducted according to all principles of evidence" (Nguyen & Pham, 2013, p. 13). SR is a deliberate and systematic activity aimed at achieving an objective understanding of objects, phenomena, and the laws of nature, society, and thought (Tran, 2014). According to the Law on Science and

Technology: "SR is the activity of discovering and understanding phenomena, objects, and the laws of nature, society, and thought, as well as creating solutions for practical application" (National Assembly of Vietnam, 2022, p. 1). In our view, SR is the process of identifying and effectively resolving emerging contradictions in practice through a logical and lawful sequence, achieving the highest efficiency. SR includes basic research and applied research.

Quality of SR: From the above concepts, we can define the quality of SR as the outcome of the management entity's efforts, influencing the entire SR process. To evaluate the quality of SR, both input and output factors must be assessed. If the inputs share the same conditions regarding resources and environmental circumstances, and the management entity's interventions result in high SR outcomes, the quality of management is considered high. Conversely, if SR outcomes are low, the quality of management is considered low.

Quality Assurance in SR Activities: QA in SR activities at universities refers to alignment with the university's SR objectives, as expressed in its mission and vision. It also ensures compliance with the quality assessment standards for SR activities set by national and international quality frameworks, as well as global university ranking systems. QA in SR activities at universities is a standardized management approach aimed at maintaining and advancing the quality of SR activities in a stable and sustainable manner. It involves three simultaneous and continuous activities: establishing SR objectives and quality standards, assessing the current state against these standards, and improving practices based on the standards.

2.2. Some Research Works on Quality Assurance in Scientific Research Activities at Universities

Some countries such as the Netherlands, Sweden, Germany, the United States, China, South Korea, and Japan are establishing evaluation systems to ensure the QA of SR and using evaluation methods for quality management of SR projects. These evaluation methods have been developed based on a culture of assessment and a certain management framework for S&T, with common global standards for S&T (Tran, 2002).

To evaluate the quality and QA of research projects in different fields and disciplines, the process can be divided into six stages: (1) Proposing programs and projects; (2) Monitoring and tracking the progress of the projects; (3) Sharing early results with colleagues; (4) Officially publishing research findings; (5) Sharing data; (6) Peer review and post-publication evaluation (Gray, 2010).

In Norway, in the evaluation of research in general and educational research in particular, the Evaluation Council uses quality as a quantitative parameter for assessment. The Council confirms that some forms of research are considered more valuable than others. A closer look reveals that the Evaluation Council actually uses two criteria: originality and creativity. Originality and creativity are considered applicable to all aspects and stages of the research process; this involves questions of usefulness and relevance (Strand & Kvernbekk, 2009).

Hoang (2009) conducted a dissertation on Research Management in Universities of Education. The author provided an

overview of the Total Quality Management model and the key aspects of applying this model to reform research management in universities of education. The author introduced criteria and evaluation tools for assessing research activities, research outcomes, and research management, as well as the research management process and research topics of faculty members. The author evaluated the current state of research outcomes and management in several universities and pedagogical departments during the period from 2003 to 2006. The author developed a system of criteria and standards for assessing the quality of research management and the capability of faculty members to conduct research topics in universities and pedagogical departments. The author proposed a process for Total Quality Management of research topics.

Le (2010) conducted a dissertation on the Research Management Model in Multidisciplinary Universities. The author contributed to the development of theoretical issues related to SR and SR management in higher education institutions, applying these theories to the model of multidisciplinary universities. The author analyzed the current state of SR activities in Vietnamese universities and assessed the current model and process of SR management in multidisciplinary universities. The author proposed a SR management model in multidisciplinary universities based on the Total Quality Management approach and provided feasible solutions for implementing the model, with a focus on the quality and effectiveness of SR, in line with the context and conditions of higher education.

Nguyen et al. (2015) argue that QA in

education should focus on the following four characteristics: (1) QA through a set of standards established by experts; (2) QA is introduced as a set of requirements or expectations that the school must strive to achieve; (3) QA standards are assessed through criteria and indicators; (4) QA standards may allow the development of different approaches depending on each institution.

Huynh (2022) conducted a dissertation on Research Management in Universities using the PDCA model. The author studied the theory and practice of managing SR activities in universities. Based on this, the author contributed to systematizing the fundamental viewpoints on education management, research management in universities, and the PDCA model in SR management. The author proposed applying the PDCA model in managing SR activities and suggested management measures for SR activities in universities according to the PDCA model.

To ensure QA in higher education, the Ministry of Education and Training has established regulations for the accreditation of higher education institutions under Circular No. 12/2017/TT-BGDĐT, which includes 25 standards and 111 criteria. The set of standards for evaluating the quality of educational institutions (EEIs) is developed based on the Japanese quality award model, which follows the four stages of Plan-Do-Check-Act (PDCA). The purpose of using the set of standards for evaluating the quality of EEIs is as follows: (1) EEIs use the standards to self-assess all activities to continuously improve educational quality and hold themselves accountable to stakeholders regarding the current state of education quality and the institution's

operational effectiveness; (2) Educational quality accreditation organizations use the standards to evaluate and recognize or deny the institution's compliance with quality education standards; (3) Other organizations or individuals can use the standards to assess, evaluate, and engage in social criticism of the EEIs they are interested in (Ministry of Education and Training, 2017).

Research works have deeply analyzed both theoretical and practical issues regarding the importance of SR activities, and SR's role in enhancing the overall quality of education and training in universities, with an objective, scientific approach and honest evaluations. Many research works are in-depth, with significant theoretical and practical value, offering useful information and reliable data. However, there has been no research work that addresses the issue of QA in SR activities at universities in a relatively comprehensive and specific manner.

2.3. Theories on Quality Assurance of Scientific Research Activities in Universities

2.3.1. Objectives of Quality Assurance in Scientific Research Activities in Universities

The objective of QA in scientific research activities at universities is to create favorable conditions for the continuous improvement and development of research activities or processes and research outcomes of faculty members. This is achieved by attracting and harmonizing the efforts of all stakeholders both within and outside the university system, to not only fully utilize their capabilities and enthusiasm but also engage them in the continuous improvement of QA in scientific research activities at the university. According to the author, QA in scientific research activities has several objectives, as follows:

- Support for reform and innovation: The QA system helps define the expectations of the university and the community regarding the research outcomes of the university. More specifically, what is expected of the university, or what is hoped for in the development of faculty members' research activities. This serves as a motivation for universities to implement reforms and innovations.

- Provide a foundation for future planning: Based on the QA system, universities gain a clearer understanding of their current status, enabling them to develop strategies and plans to improve the development of research activities for their faculty members.

- Enhance the flexibility of the education system: Each national standard and the process of applying QA standards will contribute to strengthening the country's capacity to build comparative research databases across the entire education system, as well as the ability to transfer technology for the benefit of the community.

- Help managers use the results of QA in scientific research activities to make more accurate decisions: Managers, researchers, and users of research results can make appropriate and accurate decisions based on the outcomes of research activities.

2.3.2. Principles of Quality Assurance in Scientific Research Activities in Universities

Quality assurance of scientific research activities in universities requires clear and specific principles to ensure that the QA process is carried out correctly, accurately, and effectively. According to

the author, there are several principles of QA in scientific research activities, as follows:

(1) Popularity and transparency: The mission and purpose of QA in scientific research activities of the university are clearly communicated to all members of the institution.

(2) Develop a specific plan: The QA plan for scientific research activities must be carefully thought out, clear, and communicated to all members of the institution.

(3) Promote autonomy and accountability: All members of the institution must clearly understand their responsibilities in QA for scientific research activities and voluntarily carry out their duties.

(4) Harness collective strength: QA of scientific research activities is clearly defined and documented in the institution's records. The collective strength of all members of the institution is mobilized, with smooth coordination across processes and departments.

(5) There should be a quality management system: A monitoring and inspection system is necessary to ensure that all tasks are carried out according to plan; when issues arise, they should be addressed following the established procedures.

2.3.3. Methods of Quality Assurance for Scientific Research Activities in Universities

a. Quality Control

It is the process of controlling and evaluating the quality of a product or service to ensure that it meets the predefined quality requirements and standards.

Thus, inspection is merely the evaluation of research results, a way of addressing what has already been done.

Quality control only categorizes research projects as either successful or unsuccessful, without improving the quality of the research work itself.

b. Total Quality Control

According to Feigenbaum (1991), Total Quality Control is an effective system for integrating the quality development, quality maintenance, and quality improvement efforts of various groups within an organization so that marketing, engineering, production, and service activities can be conducted most cost-effectively, enabling complete customer satisfaction.

Thus, Total Quality Control is a management system aimed at mobilizing collaborative efforts among different departments within an organization in processes related to quality enhancement, from generating research ideas to successfully implementing research projects. This approach aligns with economic, socio-political, legal, policy, and international integration conditions to best serve the community.

c. Total Quality Management

Total Quality Management is a method of managing an organization and overseeing the entire research process to fully meet the needs of society at every stage, both internally and externally.

The key feature of Total Quality Management compared to previous quality management approaches is that it provides a comprehensive system for managing and improving all aspects related to research quality while mobilizing human resources to achieve the organization's common goals.

2.3.4. Quality Assurance Process for Scientific Research Activities at Universities

To ensure the quality of SR activities at universities, the author proposes the following process:

- Step 1: Input Management of scientific research Activities

+ Research Idea: The idea comes from various sources, primarily through practical needs, reviewing previous research papers, attending conferences, workshops, etc. It is necessary to transform the idea into a research proposal, convert data into information, and turn information into knowledge.

+ Mechanisms and Policies: These are the ways in which the government influences various areas of social life to achieve predefined goals. Mechanisms and policies regulate relationships that are less stable, flexible, and adaptable. They have a quick, timely, strong, and comprehensive impact on the perceptions, attitudes, and behaviors of the affected entities. According to the Dictionary of Economic Terms, the financial mechanism refers to the set of measures and organizational forms of managing the process of creating, distributing, and utilizing financial resources within the national economy. The financial mechanism must align with and adapt to the economic management mechanisms of each stage of societal development. The financial mechanism for scientific research activities is the set of measures and organizational methods for managing the process of creating, distributing, and utilizing financial resources for research activities.

+ Human Resources: In practice, the project leader must always consider the professional structure and capabilities of the team members carrying out the research tasks, as well as assess the ability to assign roles to each person within the team. This allows for proactive organization from the beginning of the research process, with positions such as project leader, secretary, researcher, and project accountant.

+ Information Resources: Raw information (archived materials, statistical data, and results collected from previous research), information on research methods, data processing methods, and information about resources for scientific research activities.

+ Physical Resources: These are raw materials, equipment, and materials commonly used in research fields such as natural sciences, engineering, health sciences, agricultural sciences, etc. This includes chemicals, experimental animals and plants, ultrapure materials, rare metals, and more. Equipment is used in almost every scientific field, including specialized and unique devices for research.

+ Financial Resources: Various financial resources can be mobilized to conduct scientific research, such as government budgets, grants from domestic and international organizations, and internal resources like available facilities, machinery, and equipment of the institution.

- Step 2: Management of the Scientific Research Process

+ Work Environment: This refers to the physical and mental conditions surrounding the activities of an employee. The work environment includes both physical and mental conditions, such as: workspace, office design for research, research equipment, social interactions at the workplace, organizational culture, and the attitude and work spirit within the organization.

+ Implementing the Research Idea:

This is the fundamental task that enables researchers to develop an effective research project. One can visualize an implementation roadmap as follows:

(1) Choosing the Research Topic: This is one of the first steps in implementing a research project. For researchers, the topic is often chosen based on practical management issues or the real needs of society, with accumulated experience and knowledge placed in the context of professional requirements.

(2) Developing a Research Plan: Once the basic, clear research ideas are formed, the next step is to create a plan for executing the main tasks, in order to manage time effectively and control the progress of the research in a scientific manner. The research plan serves as a guiding framework, being flexible and easily adjustable according to real conditions. The time required for each phase of the project depends on the researcher's circumstances and the deadlines set by management requirements.

(3) Identifying the Problem and Formulating Hypotheses: The research problem is an urgent issue that the researcher needs to address. To identify the research problem, the researcher must ask whether the problem is relevant for the individual, for others, or for society. Formulating a research hypothesis involves accurately identifying the type of research (basic research, applied research, or development research). To formulate a research hypothesis, the researcher needs to use logical thinking or personal reasoning to make informed judgments.

(4) Data Collection and Information Processing: Data collection is a crucial task in scientific research. The purpose of collecting data is to provide a scientific theoretical basis or evidence to support hypotheses or address the research problems. Information processing involves analyzing both primary and secondary data collected for specific purposes. To effectively serve the research objectives and assess the issues, filtering, analyzing, processing information, and selecting the most relevant data are important tasks in research.

(5) Writing the Research Report: This is a scientific document that presents the research findings systematically. The report should highlight the following key issues: an overview of the research problem, the theoretical foundation, and the research methods. The report should also include new proposals, creative applications of the content, and the results of the research.

+ Organizing Research Implementation: This refers to the organization of scientific research activities within an institution according to a process to ensure quality assurance.

+ Support and Coordination in Research

- Step 3: Output Management of scientific research

+ Scientific Products: Research topics, papers, scientific reports.

+ Technological Products: Methods, technological equipment, technological processes, production lines.

+ Scientific Information: Data, statistics, and information generated during scientific research and innovation activities.

3. Conclusion

Ensuring the quality of SR plays a crucial and significant role in QA of higher education, contributing to the successful implementation of Resolution No. 29-NQ/TW on fundamental and comprehensive

innovation in education and training. This meets the demands of industrialization and modernization in the context of a socialist-oriented market economy and international integration. The article provides a basic concept of ensuring the quality of SR activities at universities; a review of studies on QA of SR at universities; and some theories regarding QA of SR activities at universities, such as objectives, principles, methods, and processes. These serve as a foundation for proposing solutions to manage the QA of SR activities, which form the basis of quality management at universities aimed at meeting the evaluation standards for university quality and gaining recognition from national and international accreditation organizations.

REFERENCES

Central executive committee (2013). *Resolution No: 29-NQ/TW, November 4, 2013 on fundamental and comprehensive innovation of education and training, meeting the needs of industrialization and modernization in the context of a socially oriented market economy internationalism and integration.*

Feigenbaum, A. V. (1991). *Total Quality Control.* McGraw-Hill, 863p. https://www.google.com.vn/books/edition/Total_Quality_Control/B9FTAAAAMAA J?hl=en&gbpv=0&bsq=inauthor:%22Armand%20Vallin%20Feigenbaum%22

Gray, C. (2010). *Quality assurance and assessment of scholarly research.* Research Information Network, 23.

Harvey, L., Green, D. (1993). Defining quality. *Assessment & Evaluation in Higher Education, 18*(1), 9-34. https://doi.org/10.1080/0260293930180102

Hobbs A. (1997). *World class universities and multi-cultural.* World Class Universities.

Hoang, T. N. H. (2009). *Managing scientific research at Pedagogical universities.* Hanoi: Vietnam national Institute of Educational Sciences.

Huynh, N. T. (2022). *Manage scientific research activities at universities according to the PDCA model.* University of Education - Vietnam National University, Hanoi.

Levin, H. M., Jeong, D. W., & Ou, D. (2006). *What is a world class university.* Conference of the Comparative and International Education Society, Hawaii. https://www.fed.cuhk.edu.hk/~dongshu/2006_Levin_Jeong_Ou.pdf

Le, Y. D. (2010). *Model for managing scientific research activities in multi-disciplinary and multi-field universities.* University of Education - Vietnam National University, Hanoi.

Ministry of education and training (2017). *Circular No: 12/2017/TT-BGDDT dated May 19, 2017 promulgating Regulations on quality accreditation of higher education institutions.*

Nguyen, Đ. C., Tran, X. B., & Tran, T. T. P. (2015). *Quality management in education.* Hanoi: Vietnam Education Publishing House.

Nguyen, V. Đ. (editor), Pham, M. H. (2013). *Curriculum on scientific research methods for educational management.* Hanoi: Education Publishing House. https://thuvien.dthu.edu.vn/pages/opac/wpid-detailbib-id-30668.html

National Assembly of Vietnam (2018). Law on Higher Education. No: 42/VBHN-VPQH, December 10, 2018.

National Assembly of Vietnam (2019). *Education Law*. No: 43/2019/QH14, June 14, 2019.

National Assembly of Vietnam (2022). *Law on Science and Technology.* No: 13/VBHN-VPQH, July 8, 2022.

Strand, T., Kvernbekk, T. (2009). *Assessing the quality of educational research: The case of Norway. In Assessing the quality of educational research in higher education*, Brill Sense, 261-277. https://doi.org/10.1163/9789087907082_015

Tran, C. Đ. (2002). *Methodology for evaluating R&D organizations*. Scientific report of the topic, Institute for Science and Technology Strategy and Policy Research, Ministry of Science and Technology.

Tran, K. Đ. (2014). *Education and human resource development in the 21st century.* Hanoi: Education Publishing House. https://elib.hcmussh.edu.vn/handle/HCMUSSH/137822