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Monitoring a University's Educational and Scientific Activities: Unifying the Monitoring Processes with European International Standards

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According to modern views on education systems management, an effectiveness of the latter is inconceivable without constant monitoring (based on specific criteria) of scientific and educational activities. This study is based on an analysis of international practice of evaluating university's activities. The study presents the basic approaches and principles of unifying the monitoring indicators of a university's scientific and educational activities with international (European) standards. Based on the principles of a systematic approach, the authors propose criteria for evaluating a university's scientific and educational activity in three areas: provision, efficiency, and effectiveness of a higher educational institution. Indicators of these areas can become the core of creating effective and consistent (with the requirements of world standards) tools for measuring the quality of both scientific and educational university's activities.

Key words: *Higher education, criteria and indicators for assessing university's activities, international university ratings, international indicators of education.*

Introduction

The effectiveness of the education system, especially of higher education, is one of the important aspects of a country's socio-economic development. A country's status depends on the level of realization of its educational potential, the main indicator of which is the high level of scientific and educational activities of the university. The university's presence in world rankings and its strong position at the level of leading world universities are considered as a sign of the competitiveness of a country's higher education and an indicator of the effectiveness of ongoing reforms and timely innovations (Dearden et al., 2019).

In modern state policy in the field of higher education, two directions can be distinguished: the internationalization of Russian universities, and the achievement by Russian universities of high positions. An indicator of the latter is the presence of Russian universities in the listings of world rating agencies. The decree of the President of Russia V.V. Putin No. 599 dated May 7, 2012, set a task to ensure that by 2020, at least five Russian universities would be present in the top-hundred world's leading universities.

To achieve high positions, it is necessary to constantly monitor the quality of scientific and educational activities in universities (Johnson & Ruggiero, 2014; Mayston, 2014; Johnes, 2015; Elshanskiy, 2017; Novgorodov, 2018). To obtain quality indicators and facilitate their fixation, the Government of the Russian Federation created Federal Universities (FU) and National Research Universities (NRU), which were given certain advantages. According to the concepts, the main expected results from the creation of FUs and NRUs are:

- Increasing the level of international recognition of Russian science and education;
- Solving the problem of access to quality education in remote areas of the country;
- Integrating regional higher education systems.

The chosen course is aimed at achieving internationally-recognized and high-quality higher education and national security in this area (Makhiyanova, 2018; Tikhonova, 2018).
However, the majority of Russian universities falling into world rankings do not belong either to FU or to NRU. Moreover, the share of FU and NRU (that hold high positions in the ratings) has been declining in recent years.

The Times Higher Education BRICS & Emerging Economies Rankings, among the best universities in Russia includes mainly the following:

- Lomonosov Moscow State University;
- St. Petersburg State University;
- National Research Nuclear University MEPhI (Moscow Engineering Physics Institute);

- Novosibirsk State University;
- Moscow Institute of Physics and Technology;
- Ufa State Aviation Technical University;
- Bauman Moscow State Technical University, etc.

Not a single FU has taken a position in the Top 100 Universities, which suggests that the system of internal Russian assessment of universities is at a variance with those accepted in the world.

In the QS World University Rankings, there are such Russian universities as:

- Lomonosov Moscow State University;
- St. Petersburg State University;
- Novosibirsk State University;
- National Research Tomsk State University;
- Kazan Federal University;
- Moscow State Institute of International Relations;
- Higher School of Economics – National Research University;
- Ural Federal University named after the First President of Russia B. N. Yeltsin;
- Bauman Moscow State Technical University;
- Peoples' Friendship University of Russia, etc.

However, firstly, most of these universities do not even make it to the Top 400, and secondly, there are almost no FU or NRU among them.

After analyzing the research on dissertations in many Russian universities, it was announced that the existing system of awarding academic degrees does not ensure the proper quality of dissertations (Soldatova & Pogorelov, 2018; Kuklin, 2019). This led to the formation of public opinion about the extremely low level of scientific work in almost all Russian universities. Later, it was concluded that there are too many graduate students. Moreover, the number of graduate students relative to full-time students is one of the criteria established by the Ministry of Education and Science of the Russian Federation for assessing the activities of a university under its state accreditation. Since a number of leading Russian universities have been mentioned in media scandals, it is highly likely that these events will be assessed by the international academic community as the inability of Russian universities to maintain their reputation even at an internal level. In addition, a significant part of the enterprises in the industry have been identified as not meeting the quality requirements. All this leads to a deterioration in the reputation of all educational institutions (Fursov, 2016).

Currently, the ratio of teachers to students is the only indicator of the QS World University Rankings. According to this, Russian universities have a high score, getting into the Top 100 or Top 200, especially Lomonosov Moscow State University, St. Petersburg State University and Bauman Moscow State Technical University. However, with a slight increase in the number of students per teacher, the rating of Russian universities for this indicator will begin to decline sharply. In addition, an increase in the number of students per teacher means an increase in teacher's workload. Consequently, teachers interested in scientific activity will not have enough time to study science. As a result, the publication activity of teachers and the citation index will inevitably decrease, and the scientific activity itself will lose its attractiveness. This will lead to a loss in the quality of scientific activity of universities.

To increase the publication activity, the Ministry of Education and Science of the Russian Federation has obliged the teaching staff of universities to publish their articles in journals that are registered in the RSCI database (Russian Science Citation Index). However, according to the order of the Government of the Russian Federation, universities should be assessed by the level of publication activity within the framework of the Web of Science. Additionally, there is also an effective contract system that provides for publication in Scopus and is aimed at motivating individual employees (Popov, 2019). Since these are two different indexes, teachers will be interested in publishing in journals that do not matter for the ranking of universities conducted by the Ministry of Education and Science. This is especially noticeable in the humanities, for which the Scopus and Web of Science indexes differ quite significantly.

Other problems that determine the low publication activity in journals that are indexed by Scopus and the Web of Science include insufficient English language proficiency, limited financial resources, and often a lack of understanding of which journals and edited collections it is necessary to publish with (Kuleshova & Podvoyskiy, 2018). Some performance indicators of universities are in conflict with each other. For example, the academic reputation score of St. Petersburg State University is 2 times higher than that of Bauman Moscow State Technical University. While the rating of St. Petersburg State University among employers, on the contrary, is 2 times lower than that of Bauman Moscow State Technical University. At the same time, in its recommendations, the Ministry of Education and Science of the Russian Federation pays considerable attention to the two least significant indicators of the QS World University Rankings:

- The share of foreign teachers;
- The share of foreign students in a university.

The combined significance of these indicators is only 10%. At the same time, the compilers of the rating note a certain ambiguity of these indicators due to the following. Namely,

universities in countries with a significant population, as a rule, are focused primarily on the domestic market, which does not reduce the quality of research projects and education in these universities (Romashkova et al., 2018).

Thus, the topic of this article is very relevant since the urgent need of the Russian higher education system is to constantly conduct monitoring of universities activities. Namely, the monitoring that will allow formulating clear, adequate realities, criteria (that meet international standards) and indicators for assessing the quality of work.

Based on the above, the goal of this work is to study international practice of universities scientific and educational activities and develop criteria and indicators for monitoring universities activities for the internationalization of education. To begin with, it is necessary to determine a set of indicators for monitoring universities activities. Such indicators that will meet international standards, for which it is necessary to solve the following tasks:

1) Analyzing international (primarily European) standards for assessing the scientific and educational activities of universities.
2) Identifying the basic conceptual approaches and principles that underlie the leading international rating systems that carry out international monitoring of universities.
3) Establishing a system of criteria and indicators for monitoring the performance of universities used by leading academic rating systems.
4) Summarizing foreign experience and highlighting the evaluation criteria that might be used in Russian practice.
5) Proposing criteria for evaluating the scientific activities of a Moscow university taking into account the requirements of international rating agencies.

Methods and Materials

The study uses analysis, synthesis, qualitative and diachronic methods. The study also uses the following documents:

- The Concept of creating and state support for the development of federal universities;
- The Concept of creating a network of national research universities;
- The Federal Law on Education;
- The National Security Strategy of the Russian Federation until 2020;
- The Times Higher Education BRICS & Emerging Economies Rankings;
- QS World University Rankings.

The authors have also worked with models of educational indicators of UNESCO, the European Union and the Organization for Economic Cooperation and Development.

The authors have analyzed international standards for assessing the scientific and educational activities of universities. It turned out that in many countries, educational indicators and statistics largely duplicate each other. The authors have also used the document “Standards and Guidelines for Quality Assurance in the European Higher Education Area”, developed by the European Association for Quality Assurance in Higher Education (ENQA).

Results and Discussion

For the modern educational system, the following aspects are of relevance:

- Effective monitoring;
- Scientifically based criteria and quality indicators of the activities of higher educational institutions.

Such criteria and indicators should be unified with foreign standards and protocols. Thus, Russian universities will be able to claim their rightful place in the international ranking.

In foreign practice, key requirements for educational indicators have been formulated (Flegg et al., 2004; Eff et al., 2012; Thieme et al., 2012)ю Thus, such indicators must be quantitative and give a complete and clear idea of an educational system's functioning. In addition, educational indicators are designed to be a diagnostic and analysis tool, based on which management decisions are made (Duh et al., 2014; Grosskopf et al., 2014; Kopnov et al., 2018).

To get a holistic, complete picture of the quality of education at any of its levels, one needs to consider (in a complex) the information of individual indicators. That is, a verified, logically constructed system of monitoring indicators is needed. Even even though prominent foreign scientists have repeatedly emphasized that not a single conceptual model of indicators can cover absolutely all aspects of educational activity diagnostics.

The most famous and authoritative models of educational indicators include models of UNESCO, the European Union and the Organization for Economic Cooperation and Development. UNESCO's approach to monitoring educational services is based on the following axiom. Namely, access to high-quality basic education is an inalienable right of everyone. This thesis has been proclaimed in the Education for All forums and is documented in the Jomtien World Declaration on Education for All and the Framework for Action to Meet Basic Learning Needs (1990), as well as in the Dakar Declaration (2000). Analytical information on access to quality education in various countries is published in annual Global Education Monitoring Reports prepared by the UNESCO Institute for Statistics. After analyzing these reports, it has been found that the main indicators of functioning and

development trends of national educational systems are structured by levels - preschool, primary, secondary, and higher education.

Specialists of the European Union (EU) are also working on creating an optimal concept of indicators for monitoring the quality of education. In which the following components are leading: contextual information, the educational process, educational achievements and resource contribution to education (Agasisti, 2013). The EU statistical compendiums contain information on the many components of the educational process and the conditions in which it takes place. The indicators in the EU model are structured both by educational level (pre-school, secondary, higher education) and subject areas:

- Teaching foreign languages;
- The use of information and communication technologies, etc.

These indicators for diagnosing the level of education quality are used, in particular, in the annual Key Data on Education in Europe compendiums that have been published since 1994. These compendiums are developed by the European Commission jointly with the Education Information Network in Europe (Eurydice) and the Statistical Office of the European Union (Eurostat). The compendiums inform about the state of the educational systems of the EU member states and the directions for their further development.

The most universal model was developed by the Organization for Economic Cooperation and Development (OECD). The first edition of the OECD collection, "Education at Glance 1992", was built taking into account conceptual and pragmatic aspects:

- Some indicators reflected the logical connections between different parts of the educational system;
- Others were politically oriented.

In total, the document contained 38 indicators grouped in three sections:

- Contextual information;
- Resource contribution to education;
- Indicators of educational process results.

An analysis of the latest editions of Education at Glance shows that their provisions are significantly improved and contain more detailed indicators, although in general the system is based on the previous conceptual basis.

An analysis of the document "Standards and Guidelines for Quality Assurance in the European Higher Education Area" showed that it is mainly based on a number of basic principles. First of all, they assume that universities are primarily responsible for the quality of their educational services and research projects, as well as how this quality is ensured. The quality of educational services and higher educational standards should comply with the legally protected interests of society. It is indicated that it is necessary to develop and improve the quality of educational and scientific programs in the interests of students and other beneficiaries of higher education throughout the European area.

In addition to the principles of ensuring the quality of higher education, the "Standards and Recommendations" of ENQA contain also general criteria for the procedure and methods for effective monitoring of the quality of educational services. For example, it is stated that monitoring should be consistent with declared goals and objectives (compliance criteria). Quality control should help to identify the real state of affairs in order to prepare adequate and acceptable measures to improve the situation based on the available resources (feasibility criterion). At the same time, results of monitoring at various levels (starting from a separate educational institution) should be quickly communicated to target groups (stakeholders) and the public. Hence, a plan to improve the quality of education and scientific work of universities can be promptly developed (utility criterion).

ENQA brings together independent agencies that oversee the quality assurance of higher education and develop recommendations to improve it. Such agencies operating throughout the EU must comply with all the requirements of the legislation of the country in which they operate. These agencies should also have the legal status of state institutions and be officially recognized by the competent authorities. ENQA has put forward a number of requirements for monitoring agencies. For example, they should regularly monitor educational activities' quality both at the level of the university as a whole and at the level of its individual educational and scientific programs. The agency should have clearly defined goals and objectives for its activities, set out in a policy statement addressed to the public. The agency needs sufficient and balanced resources in order to carry out assessment. It should also be independent and fully responsible for its actions. Conclusions and recommendations of the agency should not be affected by universities and educational authorities. Organizations that check the quality of education in universities are obliged to use indicators, criteria and assessment procedures that are predetermined and available to the general public and have procedures for mutual reporting.

The last requirement is the obligatory mutual verification of all processes and actions of independent agencies (at least once every five years for each) - which is the most important condition for maintaining the autonomy of ENQA members. The independent status of agencies, their compliance with European standards and the Guidelines for Quality Assurance

(ESG) allow them to be included in the European Quality Assurance Register for Higher Education (EQAR). The latter was established in 2008 in order to provide society with clear and reliable information about the work of agencies.

Concerning the criteria for the unification of Russian and international indicators for assessing the quality of university activities, it is advisable to emphasize the following. The positive experience of Western countries in the field of youth education should be taken into account. In European countries, much attention is paid to internal quality assessment of higher education systems. ENQA has developed a list of indicators according to which its analysis is carried out. Russian experts should pay attention to this list. The main indicators are:

- The ratio between teaching and research work at the university;
- A strategy for compliance with quality standards;
- Organization of a system for quality support and development;
- Responsibility of departments, faculties, other structural units and specific officials for quality assurance;
- Work to attract students to quality assurance;
- Means and methods of policy implementation, its monitoring and review.

Then, ENQA points to the quality of the teaching staff of the university and identifies the following criteria:

- The qualifications of teachers that correspond to the level of the university;
- The high professional level of performance;
- Scientific work.

The important indicators are recognized:

- The quality of student training;
- Regular monitoring;
- Periodic review of curricula and diplomas;
- Compliance of resources with the programs;
- The quality of university's information systems.

Particular attention is paid to such a criterion as the speed of collection, analysis and use of information on:

- Key performance indicators of the institution;
- Available educational and scientific resources and their cost;

- Effectiveness of teachers' work;
- Features of a student body;
- Achievements of students and indicators of their performance;
- Possibilities of graduates to get a job and the results of employment;
- Students' satisfaction with scientific projects and curricula.

An equally significant indicator is the publicity of information concerning:

- Results of a university's activities;
- Curricula;
- Qualifications of the faculty members;
- Internal monitoring of educational activities' quality.

Thus, according to European standards, the independence criterion and the transparency criterion are the main criteria for the quality of higher education.

The analysis of foreign documentation shows that the objectivity is one of the main aspects of monitoring the quality of university's activities. That is, the monitoring should be as far as possible detached from subjective assessments. It should take into account all the results (positive and negative) under equal conditions for all participants in the research and education process. The validity of monitoring implies the full compliance of the proposed control tasks with the content of the material being studied, as well as the clarity of the evaluation criteria and the reliability of the measuring tools. The monitoring results should not be influenced by persons who apply control tools; such results should be confirmed by repeated revisions (De Witte & Lopez-Torres, 2015).
Monitoring the quality of education should take into account the psychological and pedagogical features of the monitoring objects:

- Level of education;
- Professionalism;
- Individual characteristics;
- The conditions of monitoring, etc.

The above requires differentiation of control and diagnostic materials.

The quality of work of universities should be evaluated systematically, which involves the stages and types of monitoring in a certain sequence and with the necessary and sufficient regularity. Finally, the monitoring should be humane, creating an atmosphere of goodwill, trust, respect and a positive emotional climate.

These requirements for monitoring a university's activities allow one to highlight the criteria of consistency and accuracy for determining the quality of a university's work. For monitoring quality of university's scientific activities, a complex rating scale is not required. The authors believe that it is sufficient to use five categories when describing the quality: high, optimal, sufficient, critical, and low. The results of monitoring should not be used for any repressive measures. Since the meaning of monitoring is in prompting the leadership and the teaching staff of universities to change their attitude to their professional activities and take appropriate steps to correct them.

General conclusions from the initial stage of the authors' work are presented in a separate scientific article (Ananishnev et al., 2016).

In Table 1, the authors identify a number of basic criteria for monitoring the effectiveness of university's activities.

Table 1: Criteria for assessing the effectiveness of university's educational and scientific activities.

Title of criterion	Scope of operation
Complexity criterion	The criterion indicators cover the quality of all the components of university's scientific and educational activities: - educational environment; - pedagogical skills and qualifications of teachers; - organizational and managerial competence of employees; - educational process; - research activities of both teachers and students; - educational system functioning.
Systemic criterion	This aspect reflects the scientific and educational activities of the university as a systemic process.
Independence criterion	It is understood that the monitoring results and conclusions are not influenced and adjusted by the educational institution's management, educational authorities and political forces.
Feasibility criterion	The recommendations and proposals made during or after the monitoring should comply with the requirements of feasibility.
Utility criterion	This aspect is aimed at satisfying information requests of monitoring objects about the real state of affairs and about the possibilities, options and methods for improvement.
Compliance criterion	The indicator ensures the legality, ethics of monitoring procedures, non-violation of interests of both those who conduct monitoring and those who are subjected to it.

Accuracy criterion	This indicator is necessary to guarantee clear, complete and fair monitoring results.
Transparency criterion	The basis of this indicator is the requirement of impartiality and openness of the monitoring, as well as the availability of information to the stakeholders about the procedure and the rules for its implementation and the results obtained.

It is important to emphasize that when forming the criteria and indicators for monitoring the university's scientific activity, one should be guided by the principles of a systematic approach, distributing indicators among three conditional groups:

- Criteria and indicators of provision;
- Efficiency criteria;
- Criteria of effectiveness of higher education system's functioning.

This approach will allow one to analyze university's educational and scientific work. Namely, the process, management system and results of such work.

Conclusions

In the process of creating an effective monitoring system for Russian universities, an important aspect is the objectivity of indicators. In this article, the authors have analyzed foreign approaches to quality assessment of higher education. The main approaches for assessing university's scientific activities are identified, based on which, the monitoring of the scientific and educational work of Moscow universities might be carried out.

Besides, the authors have also identified a number of criteria and indicators for effective monitoring of university's work quality. The proposed approach will help to analyze university's work in a qualitative and comprehensive manner, considering the process of university's work, university's management system and final results.

These indicators might be the basis for the creation of tools for measuring the quality of a university's scientific and educational activities. These tools will be effective and consistent with the requirements of world standards.

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