

## STATISTICS EDUCATION AT RUSSIAN AGRARIAN UNIVERSITIES: PROBLEMS AND PROSPECTS

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*We analyze Federal State Educational Standards and curricula of experts' training for agrarian sphere of Russian economy from the point of view of statistical disciplines' teaching. Problems are revealed and some ways of their decision which will promote improvement of quality of experts' training are offered.*

### INTRODUCTION

Profile universities are engaged in training of experts for different branches of economy in Russia. Thus the training of experts for agriculture and concerned branches lies in the sphere of agrarian universities' activity. Now there are 59 such universities in Russia. The main specialties and directions of training in the universities can be divided into several categories: economic (agro-economists, agro-managers, etc.), biotechnological (agronomics, ecology, nature conservation, cattle breeding, veterinary medicine, food stuffs processing), technical (engineering experts in the field of power supply, technical maintenance of agrarian manufacture).

We'll consider two first basic categories of the specialties.

Training of students within the framework of each specialty is regulated by the Federal State Educational Standards (FSES) which are the complex of requirements, obligatory for realization of the basic educational programs by educational high institutions having the state accreditation. The standards are confirmed not less than once in ten years. On the basis of Educational Standards the basic educational programs for specialties are developed.

The basic educational program for specialty training is formed of federal component disciplines (which are obligatory for execution), national and regional (institution) component disciplines and disciplines at student's choice.

We analyzed FSES on biotechnological and economic categories of specialties, regarding disciplines of natural and scientific cycle to which Statistics concerns.

At training of biotechnological specialties in the list of federal component disciplines, Statistics is taught within the framework of mathematics guideline generally for 360 - 600 hours. Only the elements of theory of probability and statistics such as: probability theory, stochastic process, statistical estimation and test of hypotheses, statistical methods of experimental data processing are taught. Some universities enter additional courses "Bases of scientific research" in the list of national and regional (institution) component disciplines which teach the elements of applied statistical methods of the analysis in agronomics, ecology, etc. However these courses, as a rule, have a small number of class hours and are disciplines at student's choice.

A little bit different matters stand with a teaching of statistics for economic specialties. In the list of federal component disciplines statistics is taught within the framework of mathematics guide line, but with a large number of class hours. Besides additionally the elements of statistics are taught at the course of "Econometrics" (120 hours). Also the independent discipline "Statistics" (150 hours) is provided, which studies the general theory of statistics. In the list of national and regional (institution) component disciplines universities enter additional courses. Thus, the total hour amount of statistics is more, though it is obvious not enough for training of the expert-economist.

Thus, the evident warp towards the mathematical statistics is obvious. Applied statistics and mathematical statistics are two different scientific disciplines. Distinction between them is also revealed at their teaching. Mathematical statistics courses basically consist of theorems proving, as well as corresponding textbooks. For experts who work in the field of agriculture and adjoining industries the necessary practical tool is methodology of data analysis and calculations algorithms. That means everything that is a subject of applied statistics. Mathematical statistics is only mathematical base to applied statistics.

## PROBLEM AND DISCUSSION

Training of experts for any branch of economy is inseparably linked with condition of this branch and with those requirements which it presents to the expert. Decades earlier the state aspired to show successes and achievements with the help of statistics, ignoring and “masking” difficulties and defects. On the one hand, social and economic changes in Russia appreciably influence an information need in the experts owning modern methods of information analysis. On the other hand, globalization of economy and internationalization of education show new requirements to statistics as to the universal information language, allowing communicating for experts of different countries and different fields of activity: politics, economy, science. Therefore the role of statistic education grows all over the world. Knowledge of statistics, skill to create, read and analyze the information, apply statistical methods in any field of activity now became the priority indicators of higher education quality.

Now Russia has started working out the standards of new generation. In the frame of these standards the leading requirement to results of new programs` development is not only knowledge but also competence (ability to apply knowledge, proficiency and personal qualities for successful activity at the certain area) in professional, social and personal activity. It causes the discussion among universities` experts concerning the requirements to educational programs` designing which are capable to generate necessary competence for the experts. We single out three groups of persons—the basic participants of this process. The experts directly taking part in formation of standards, approximate plans and recommendations to them are related to the first group. These are the state and public associations in high educational training system of the Russian Federation—educational and methodical associations (EMA). Their primary goals are working out of the state educational standards projects, approximate curricula and educational and methodical conferences organized by the experts of various specialties for the purpose of educational process perfection. The teachers of high schools directly realizing educational process are related to the second group. And, at last, the third group is beneficiaries - employers and experts.

Process of designing and realization of educational programs has strictly regulated hierarchical structure which schematically looks as follows: on the basis of Federal State educational standards educational and methodical associations design approximate curricula for specialties and disciplines. These curricula are realized in high schools. Besides teachers have some opportunity to offer their personal elective courses. Existing problems of training and teaching programs for these or those courses (including statistics) are discussed at the sessions of EMA specialties and at various educational and methodical conferences resulted at published recommendations.

We analyzed materials of selected EMA sessions and educational and methodical conferences of agrarian specialties and interviewed the experts—EMA members which make approximately 30 % of all agrarian specialties. The questions concerned teaching perfection of applied methods of data and information gathering and analysis are discussed in individual cases and aren't system-based. Thus, it does not promote increasing in quantity of statistical courses even within the frames of existing standards. The teachers of high schools strictly regulated by standards and recommended curricula do not have an opportunity to change the existing situation essentially. They can only show their personal initiative and offer the special elective courses of applied statistics. Such courses are realized by single universities and their percent makes 1-3 % to the general number of courses at universities.

We had made selective interview of the representatives of the third group - beneficiaries: employers and experts (graduates finished high schools 2-5 years ago) about application of data gathering and analysis methods, modern software in their direct activity and work of their employees, and also about use of these methods by experts—graduates of high schools. 87% respondents pointed the necessity of application of data gathering and analysis methods for their direct activity. Only 3% of them pointed their sufficient skills in this sphere, and all the rest—the necessity of additional training or already passed courses of additional training.

Thus, the existing education system does not take sufficiently into account the requirements of the future experts in use of mathematical and statistical methods of data gathering and processing, and use of corresponding software.

Change to new educational standards (standards of new generation), assuming competency-based approach, brings the employers to the forefront in formation of requirements to the experts, and consequently, to the programs. The analysis of experts' opinions concerning the modern agrarian experts' competences allows drawing a conclusion on the following problems of statistical training facing to agrarian universities. First of all it is *insufficient number of statistical courses in programs and class hours in them*.

The next problems are problems of quality. It is insufficient just to increase quantity of hours, it is necessary to guarantee the appropriate quality of training. Therefore the problems of statistical education quality are:

- Out-of-date curriculums and methods of statistics teaching;
- Insufficient supplying with educational, methodical and information materials;
- Insufficient teachers training;
- Weak communication of applied disciplines and statistical researches.

## PROSPECTS

The analyzed problems in statistical training, modern social and economic realities, new requirements showed to experts of agrarian sphere allow drawing conclusions on necessity of taking additional measures for change of the situation. And these measures should be accepted both at the state level and at a university level.

Russia has entered Bologna process – the process of rapprochement and harmonization of European educational systems for the purpose of creation of united European area of higher education. It means extended opportunities for internationalization of education.

The standards stipulated in frameworks of Bologna agreements should be coordinated with national educational standards. Now in Russia the development of new educational standards is started. In this connection adjusting of statistics educational standards for modern requirements of experts' training becomes the main problem. For this purpose it is necessary to initiate wide discussion and development of offers on standard didactic units within the framework of profile educational and methodical associations on specialties.

Besides, new standards assume better freedom for universities in designing of specialties' educational programs. It will enable universities to choose their own ways of development and improvement of experts' training quality proceeding from modern requirements to their competences. For this purpose it is necessary for universities:

- To provide improvement of professional skill of teachers of statistics in leading foreign universities;
- To organize work on perfection of statistics curriculums in according to modern requirements;
- To organize work on attraction of leading foreign experts to improvement of teachers' professional skill and preparation of curriculums;
- To take measure for providing of libraries with methodical and reference books on statistics;
- To provide the use of modern packages of applied programs, access to official, departmental and alternative bases of statistical data;
- To promote creation of professional unions (associations, consortia) of teachers of statistics which become a platform for meaningful dialogue between experts, exchange of experience and introduction of innovations into education.

## CONCLUSION

Thus, statistical training and the modern requirements showed to competences of expert of agrarian sphere considerably differ. Only additional, coordinated efforts of agrarian universities will allow them liquidating this gap. Work in this direction is already started by a number of Russian agrarian universities, and the Saratov state agrarian university is among them. We hope our activity will promote the prompt decision of problems of statistical training in Russia.

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