
MODELING OF THE ORGANIZATIONAL AND EXPERT ACTIVITIES OF THE SCIENTISTS AT THE INSTITUTE OF MATHEMATICS AND INFORMATICS, BULGARIAN ACADEMY OF SCIENCES, IN 2005-2010

J. Tabov, S. Hristova

Abstract. In September 2010 attestation of the scientists at the Institute of Mathematics and Informatics of the Bulgarian Academy of Sciences (IMI-BAS) was held. The data in the attestation forms give us the opportunity of doing evaluations and analyses of different aspects of the scientific activities in IMI and on the basis of these to do forecasts and recommendations for the future development of the Institute. It was already made for the research activity – the analysis of the results and forecasts about it is the subject of the paper [Tabov, Sotirova and Hristova, 2012]. The subjects of the present paper are the organizational and expert activities in IMI. Our research rebuts a logical expectation – that the amount (more exactly, the average amount) of the expert activity of the scientists in IMI increases in the course of time and with the accumulation of experience; at the same time our research generally confirms an analogical expectation about the organizational activity.

Keywords: *research policy, science, attestation, BAN, IMI.*

1 Evaluation, attestation and administration of the scientific activity

If such attestation is held periodically, it could be used for researching of the alterations in the creative activity and other activities of the scientists during different periods. Similarly, their scientific-organizational, learning-educational and other activities could be monitored. The conclusions from these researches could be helpful and should be taken into account when someone makes administrative decisions.

The attestation in IMI in 2010 was part of a general to BAS procedure undertaken within the framework of the efforts to reform the Bulgarian Academy of Sciences and its units. The indicators for evaluation in the attestation forms and given points were and still are subjects of discussions and criticism, often reasonable. But, on one hand, the evaluation and attestation are significant for the administrative solutions and could serve as a reference point and self-control of the scientists, and this makes them necessary elements of the modern organization of the scientific units and institutions. On the other hand, development of appropriate criteria and scales for evaluation is not trivial and should be based on some experience; that is why the attestation in IMI in 2010 is the first step in the right direction.

Many colleagues think that not only the BAS, but the whole field of science and higher education in Bulgaria should be fully reformed. Independently of those if these reforms will be undertaken in each institution separately or they will be general, we believe that they should be preceded by careful evaluations of the scientific manifestation of the researchers and units. What is more, procedures for attestation and evaluation should be carried out periodically.

Holding of a large-scale attestation of the scientists at BAS is a positive thing. Unfortunately, the universities in Bulgaria, which for the present neglect the control of the quality of the education and science, did not follow the example of BAS.

That is why the scientific community should put a lot of effort for the gradual establishment of adequate evaluations of the professional abilities and manifestation of the scientists, which to stimulate their creative

attitude and, at the same time, to help the governing bodies of the scientific units and institutions with taking the right administrative decisions.

The analysis of the results of attestation, which we will show below, is also connected with an extremely important for IMI problem: "aging" of the scientists in the institute. The average age of the researchers is constantly growing and the young scientists are rare.

2 Presentation of the results of attestation

The staff with scientific functions filled in special attestation forms with a description of their activities in the period 2005-2010 and data about the results of them. The number of scientists filled in attestation forms is 133.

The indicators for evaluation were grouped into several sections:

- I. Research activity.
- II. Applied research activity.
- III. Learning-educational activity.
- IV. Scientific-organizational activity.
- V. Expert activity.

The analysis of the results from research activity, the construction of a special model and relevant forecasts and recommendations are objects of a specific paper [Tabov, Sotirova and Hristova, 2012]. Here we use the same methodology to analyze the results of scientific-organizational and expert activities in IMI for the mentioned period.

Fig.1. shows the distribution of researchers filled in the attestation forms, by age. Fig.2. shows the distribution of total sum of points given to the scientists, by age.

The next graph – in Fig.3 – shows the average sum of points got by a scientist born in the respective year.

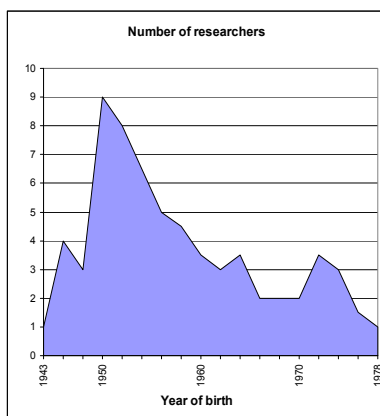


Figure 1. The distribution of scientists by age. The abscissae are the years of birth, starting from 1943

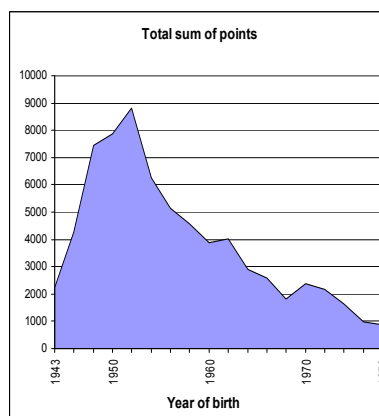


Figure 2. The distribution of points by age of the scientists

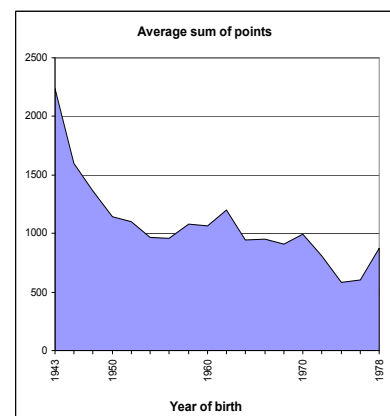


Figure 3. The average sum of points, by age of the scientists

The evaluations of the activities in IV and V sections of the attestation ("IV. Scientific-organizational activity" and "V. Expert activity") are of special interest to us. The next two graphs (in Fig.4 and Fig.5) are analogous respectively to the graphs in Fig.2 and Fig.3 but they are based on the evaluations for IV section only. Fig.6 and Fig.7 show the evaluations of the activities in V section.

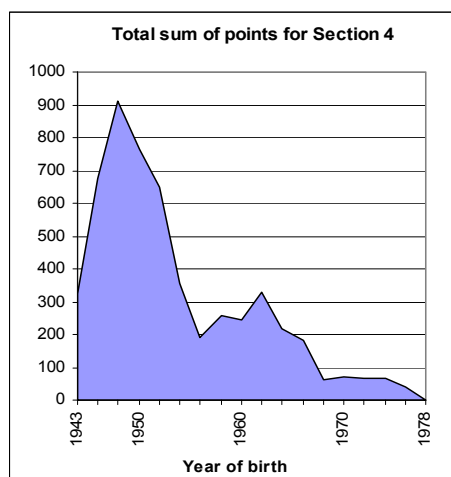


Figure 4. The distribution of points for Section IV by age of the scientists.

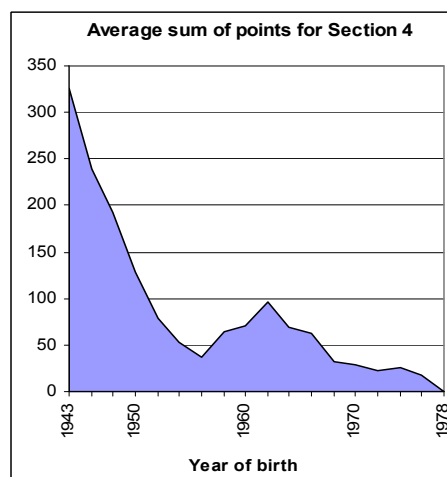


Figure 5. The average sum of points for Section IV, by age of the scientists.

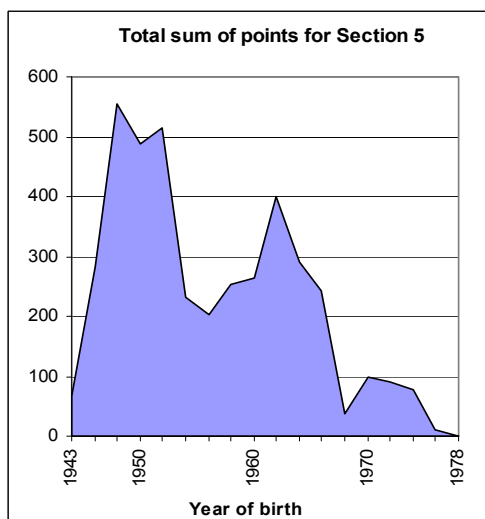


Figure 6. The distribution of points for Section V by age of the scientists.

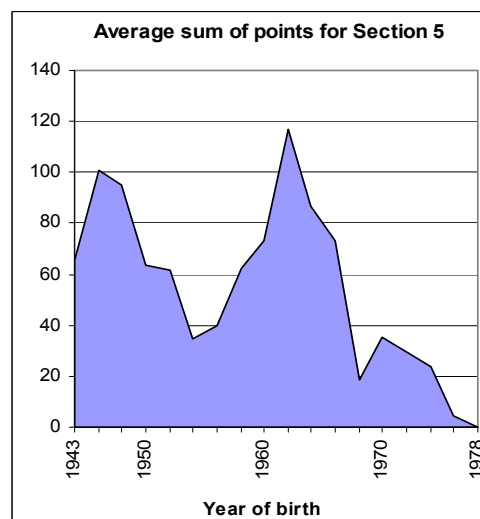


Figure 7. The average sum of points for Section V, by age of the scientists.

3 Analysis of the results

We can analyze the above shown results if we know the purpose and some details of attestation.

In fact, it gives a numerical evaluation of the activities of scientists, scientific bodies and organizations during the period 2005-2010. But subject of this paper are mainly some specific aspects and results from these activities.

To illustrate the process of attestation we will mention some of the rules for evaluation of the activities in IV and V sections of the attestation form – Scientific-organizational and scientific-administrative activities, and Expert activity. In each section are separated several subsections:

IV. Scientific-organizational and scientific-administrative activities

4.1. Participation in administrative bodies of BAS

4.2. Participation in administrative bodies of Specialized Scientific Units in BAS

4.3. Participation in organizational and program committees of international and national scientific forums

4.4. Participation in scientific, expert councils, commissions, etc. in the field of science and higher education in Bulgaria and abroad

4.5. Participation in administrative bodies of scientific institutions, organizations and universities in Bulgaria and abroad

4.6. Participation in editorial boards and councils of national, foreign and international scientific journals

4.7. Prizes

V. Expert activities carried out as a scientist at the Bulgarian Academy of Sciences

5.1. Participation in state and governmental bodies

5.2. Participation in national and international councils, commissions and other public bodies and organizations

5.3. Expert, consulting and other activities to help institutions and administrative bodies

5.4. Public reviewer's activity

5.5. Anonymous reviewer's activity

In the subsections are counted the activities for which points are awarded. For example, we have the following activities in subsection 4.2.:

4.2.1. Director, deputy director, scientific secretary, chairman of the General Assembly, chairman of the Scientific Council

4.2.2. Deputy chair, secretary of the Scientific Council

4.2.3. Member of the Scientific Council

4.2.4. Member of a commission or other structure with expert functions in Specialized Scientific Units (certifying commission, etc.)

4.2.5. Head of Section (laboratory, sector)

4.2.6. Scientific Secretary of Section at the Institute of Mathematics and Informatics, BAS

The points, fixed for these activities, are:

4.2.1. 25 points per year

4.2.2. 10 points per year

4.2.3. 8 points per year

4.2.4. 3 points per year

4.2.5. 6 points per year

4.2.6. 5 points per year

The activities in the other subsections are evaluated in a similar way.

Let us look at the graphs shown in figures above and see what follows from them.

Fig.1 shows that the group of scientists which are 56-62 years old (born in 1948-1954) is numerous (51 people); one can say that it is the core of the Institute. Together with the elder colleagues (born before 1948 – 17 in number) these scientists (over 55 years old in 2010) are 67 in number, i.e. they represent more than half of the scientific potential of the Institute.

Or, in other words, at this rate of development of IMI, in 2014 the half of its scientists will be over 60 years old.

In our opinion, the average age of the scientists in a research institute as IMI should be around 48-50 years and the number of scientists that are 25-40 years old should be not less than that of scientists over 55 years old. From this perspective, the age distribution of the scientists in IMI is unfavourable and this fact marks a tendency to its deterioration in the future ([Tabov, Sotirova and Hristova, 2012]).

The negative predictions for the future are enhanced by Fig.2 and Fig.3. They show that the scientists over 55 years old give a large contribution (82526 points) to the total volume of scientific events in IMI (143655 points).

If we imaginatively move the left end of the graph in Fig.2 to the right till 1955 we will see that a large amount of scientific activities will be left out of IMI results ([Tabov, Sotirova and Hristova, 2012]).

Fig.4 and Fig.5 show that the group of scientists over 60 years old is the most engaged of all groups in scientific-organizational and administrative activities: their average sum of points is greater than 100. To a certain extent unexpected is the sudden decrease in the same activities of the scientists which are 52-58 years old (i.e. born between 1952 and 1958).

Fig.6 and Fig.7 show that the group of scientists between 44 and 52 years old and the group of scientists over 60 years old are the most engaged of all groups in expert activity (i.e. the average sum of points is bigger than 60). Here we see the same sudden decrease (as in Fig.4 and Fig.5) in the expert activity of the scientists between 52 and 58 years old (i.e. born between 1952 and 1958). This poses an interesting problem. Of course, we can suppose that this decrease is determined from the fact that the scientists direct their efforts to doctor degrees and dissertations but we need additional researches to understand the reasons for this.

Bibliography

[Tabov, Sotirova and Hristova, 2012] Tabov, J., Sotirova, K. and Hristova, S. Researchers in IMI-BAS 2010 – Attestation Analysis – Results and Recommendations. BJSEP 2012, Number 2, Volume 6.

Authors' Information



Jordan Tabov – professor; Institute of Mathematics and Informatics of the Bulgarian Academy of Sciences, block 8, Acad. G. Bonchev Street, 1113, Sofia, Bulgaria; e-mail: tabov@math.bas.bg

Major Fields of Scientific Research: Applications of Mathematics and Informatics in the Humanities, Didactics of Mathematics and Informatics



Svilena Hristova – research assistant; Institute of Mathematics and Informatics of the Bulgarian Academy of Sciences, block 8, Acad. G. Bonchev Street, 1113, Sofia, Bulgaria; e-mail: svilenajh@abv.bg

Major Fields of Scientific Research: Applications of Mathematics and Informatics in the Humanities