SEMINAR-WORKSHOP ON SCIENCE,
TECHNOLOGY AND INNOVATION INDICATORS:
TRENDS AND CHALLENGES
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ANALYZE THE SYSTEM OF STATISTIC INDICATORS IN THE DOMAIN OF SCIENCE AND INNOVATION IN REPUBLIC MOLDOVA

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Analysis of existing statistics in science and innovation in Moldova

At present, in the framework of National Bureau of Statistic, the information regarding science is obtained thought the following statistics wordings:

- STATISTIC REPORT "Researching-development activity"
- STATISTIC REPORT "Doctoral and post-doctoral activities"
- STATISTIC REPORT "Implementation, utilization of inventions and proposal of rationalization"
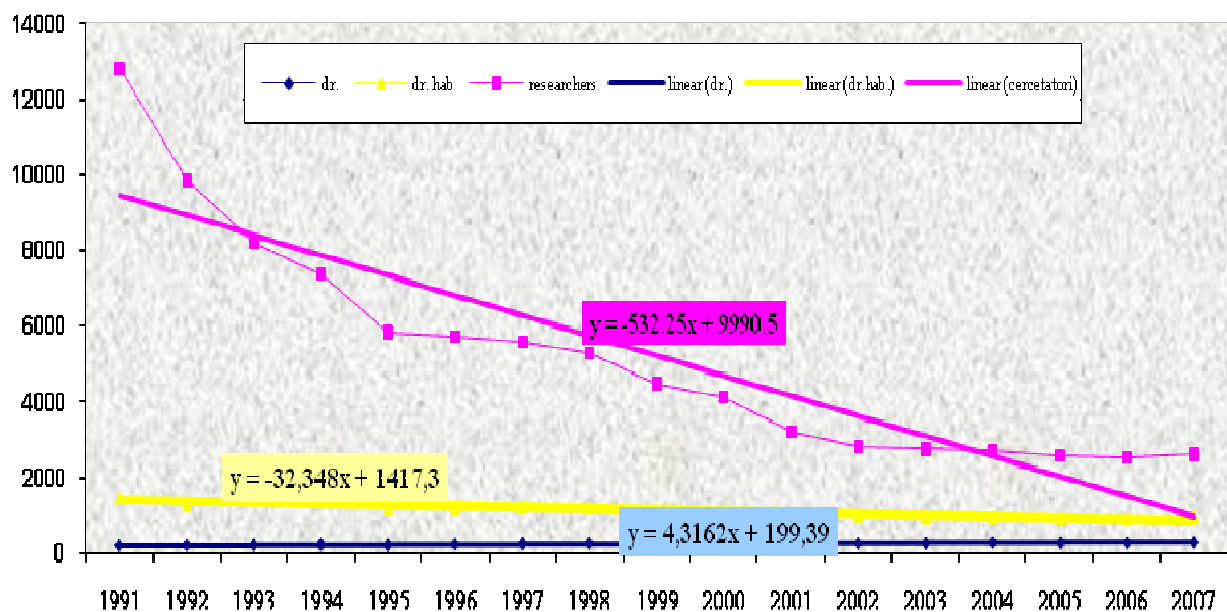
1. STATISTIC REPORT
"RESEARCHING-DEVELOPMENT ACTIVITY"

Researching-development activity is measured though the indicators of resources: personnel and expenses and results indicator – published works.

⋆ **INPUT INDICATORS:**

Personnel

○ The measurement of the dates regarding personnel: effective number of persons at the end of the year. The personnel from the researching-development activity (without pluralists) is qualified by occupations (researchers, technicians, auxiliary personnel and other categories), by the qualification and instruction level, on age groups

○ <u>Since 2008 separately no records of</u> the number of didactical - scientific workers.

○ The researches are grouped by sexes and scientific domains.

Chart legend: dr. — dr.hab — researchers — linear(dr.) — linear(dr.hab.) — linear(cercetatori)

$y = -532.25x + 9990.5$

$y = -32,348x + 1417,3$

$y = 4,3162x + 199,39$

(x-axis: 1991, 1992, 1993, 1994, 1995, 1996, 1997, 1998, 1999, 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007)

Researching-development expenses

- Expenses RD (expenses from the interior of unit) are classified by destination (current and capital expenses), by scientific domains and by source of financing (budget sources, own, economical agents, the sources of the high education units, from abroad, the sources of non-commercial private sector and other sources).
- Current expenses RD include: personnel expenses, material expenses and others, capital expenses – those for purchasing pot of lands, constructions, technologies and others.
- Current expenses RD are divided on kinds of research and scientific domains.

OUTPUT INDICATORS
- ***Published works*** (the works published by the personnel from the researching-development activity)

- Higt importance to these classifications:"Product Groups
- (ISIC/NACE)" and "Socio-economic Objectives (NABS).

Table 1. Expences for research and development in some countries.

Countries	Expenses for R & D, milion.USD	Share from GDP, %
1. Poland	2424,3	0,57
1. Ukraine	1241,65	0,87
1. Romania	914,2	0,54
1. Belarus	439,17	0,97
1. Republic of Slovenia	387,5	0,46
1. Kazahstan	220,19	0,21
1. Bulgaria	202,1	0,48
1. Azerbaidjan	59,488	0,18
1. Republic of Moldova	**24,2**	**0,55**
1. Armenia	19,33	0,21
1. Kyrgystan	9,5	0,25

Sursa: BERD;
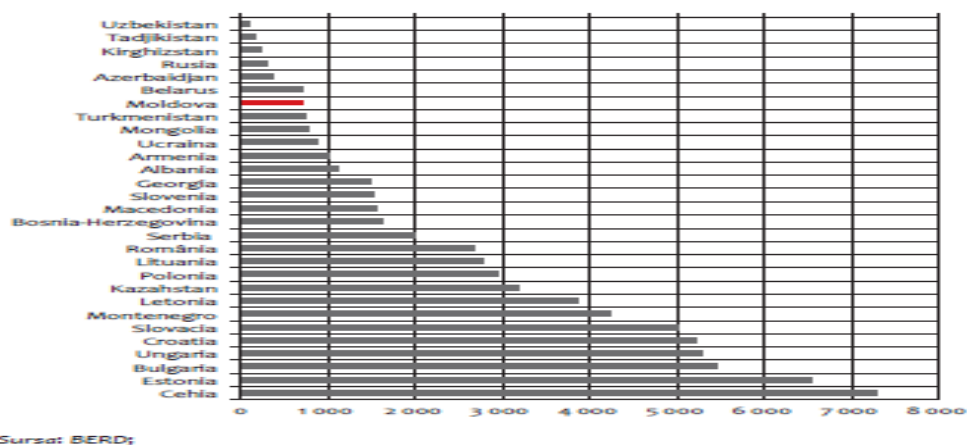
- **2. STATISTIC REPORT "DOCTORAL AND POST-DOCTORAL ACTIVITIES"**
- The main indicators of doctoral activity: the number of PhD students accepted, the number of PhD students at the end of the year, the number of graduates, the number of graduates with the uphold thesis (in the term limits), number of PhD students left by the ending of PhD program, PhD students from other countries (by specifying the country).
- The PhD students are distributed by the financing source (PhD students with budgetary financing and on the base of contract by paying the taxes, tuition), by the science domains and the forms of instruction (with full presence or reduce presence), by age groups and gender.
- The information about the PhD students from abroad (by specifying the country) embrace: number of admitted PhD students, number of graduates and number of PhD students at the end of the year.
- The main indicators of the postdoctoral activity: number of postgraduate PhDs accepted, number of postgraduate PhDs at the end of the year, number of graduates, number of graduates by upholding the thesis, number of postgraduate PhDs left by the ending of the year, number of postgraduate PhDs from abroad (by specifying the country). Postgraduate PhDs are distributed by the science domains and gender. Information regarding the post postgraduate PhDs from abroad (by specifying the country) embrace: number of postgraduate PhDs accepted (admitted), number of graduates and number of postgraduate PhDs at the end of the year.

- 3. STATISTIC REPORT "IMPLEMENTATION, UTILIZATION OF INVENTIONS AND PROPOSAL OF RATIONALIZATION"

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    - The main indicators which characterize the researching-development activity concern about the objects of industrial property – inventions, utility models, sorts of plants and elaboration of rationalization proposals, and also proposals of its implementation and use are:
    - numbers of authors that wrote demands of invention protection (information presented by AGEPI);
    - contracts of rights transferring (information presented by AGEPI);
    - Inventions that are utilized, including those implemented in first year;
    - proposal of rationalization probated and utilized.

- In general, **the only institution able to measure innovation** (as understood by EUROSTAT and OECD according to the Oslo Manual and related publications defining the scope of innovations and methodologies to be used) **is the NBS**.

- This is also its social responsibility, but all attempts to create a country of innovation statistics come from the president of the ASM, and not from the **NBS**. The access of Academy of Science to the business sector is limited, and its capacity to conduct large-scale data collection and processing about this sector is in all probability insufficient. Theoretically, the whole statistical exercise of innovation measurement can be transmitted to AS but **the final responsibility for the results and datasets analyses will rely with the NBS anyway,** as will the international comparability of results.

CONCLUSIONS

- The statistics that exist in Moldova in the domain of science are very fragmentized, thus it is obvious that exist a real necessity to create an informational system in this field. Such a system have to be viable and comparable, it have to base on relevant statistics indicators both for reflecting the situation at the national level and for existent possibility to perform comparison on international level.

- At the moment in Republic of Moldova the official statistic regarding innovation is missing. Also it is missing the concept and strategy concerning innovational policy.

- Lack of experts in the mentioned domains.

RECOMMENDATIONS

- For a functional system that have to base on principles of continuity promptness and connection with the international standards it is necessary the existence of juridical foundation which will coordinate the relation between different ministries and responsible institutions;
- For a better presentation of indicators in domain of science, innovation and technological transfer it is necessary to use a unique methodology (base on the principle of OECD, EUROSTAT, UNESCO);
- Improvement of the indicators system that is connected with science according to EU requirements;
- Elaborating the concept and strategy regarding innovational policy in Republic of Moldova
- Elaborating the special inquiry that will be used in innovation activity of enterprises and will allow implementing the new proposed indicators. Also to apply a soft to process the dates;
- To identify the optimal modality of gathering dates from administrative and statistical sources, avoiding the doubling;
- Testing the process of dates collecting;
- Improvement of the specialist in the respective domain.

Thank you!