Financing a research activity through national programs

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Abstract

The scientific research activity represents a major factor in the socio-economic development and an engine of the economic and social progress; science and technology are key components of modern life and they help countries achieve their economic and social goals, achieve sustainable development.

In scientific research we distinguish between fundamental research, applied research and research for development and innovation. Thus, if knowledge refers to rules and principles, we can consider it a result of basic research, expressed in publications. If knowledge refers to procedures or to the application of this knowledge in specific contexts, as a result of the basic research, then we can discuss about the applied scientific research, whose result appears in publications.

Key words: financing, research, development, national programs, innovation.

1. Introduction

The purpose of the research activity is to create knowledge, this knowledge being expressed, primarily, in publications. If the knowledge is in accordance with the legislation in order to appear in scientific publications which can be sustained by invention licences and prototypes, invention licensing and prototypes registration assure a commercial protection of the published knowledge. So, research - development produce knowledge expressed in publications,
sustained by invention licensing and prototypes registration, assuring also a commercial protection.

Innovation is the activity which leads to the creation, the assimilation and the development of research-development results in the socio-economic area. The transformation of knowledge in publications, of licensing and prototypes (research-development) in economic and social assimilated technologies and services (innovation), is not the main purpose of the scientific research, but it is related to the socio-economic field, and by that we mean transfer and knowledge distribution. Besides the classic instruments tied to the education, such as universities, specialized instruments were built to ease knowledge transfer from research-development to the socio-economic field. Among these instruments we can find: (1) spin-offs; (2) technological platforms; (3) specialized organisations, where researchers and businessmen work together. But, in this last case, the researcher’s activity is often accounted for an educational, economic activity, instead of a research activity. Therefore, the involvement of the researchers in the innovation activity doesn’t measure out as a scientific activity but as a socio-economic one, which gives them a profitable material gain. (Văcărel I et al., 2006)

The importance of the research activity occurs in a lot of official documents: thus, the scientific research activity represents the highest degree of human resources development, through both the constant learning/training they demand and the achieved results. But yet, although indispensable for development and for the resolution of society’s global problems, the scientific research was the first research generated in Romania, being considered a luxury in comparison with the crisis of the moment.

2. National financing programs for the research-development activity

The National Authority for Scientific Research (NASC), as a governmental organ, responsible for the elaboration and the harmonisation of national policies for research – development and innovation next with the European policies, wants to assure the connection between the objectives of the scientific community and of the business world from Romania, and the typical priorities concerning science and technology in the European Union, as well as the dynamics of their evolution.

The support for planning and implementing the RDI politics promoted by NASR in the after-adhesion period was given by:


The National Strategy’s main goal until 2013 is the recovery of the existent differences towards the European countries level, and the preparation of the RDI system in order to identify and consolidate, through international paths, partnership and competition, those areas in which Romania can excel.

The strategic objectives established by the National Strategy in 2007-2013 are:

1. The creation of knowledge, respectively obtaining high scientific and technological results, internationally competitive.
2. Increasing the competitiveness of Romanian economy, by innovation with impact on the economical operators’ level and knowledge transfer in the economic practice.
3. Increasing the quality of social life, by the development of solutions, including technological solutions which can generate direct benefits to the society.

The most important financial programs for research, completing the National Plan, are the nucleus Programs, the Sectorial Plans and the Fundamental Research Programs of the Romanian Academy.


The National Plan is the main instrument for the implementation of the National Strategy. This was ratified by Government Ordinance nr. 475/2007, legislative act which decides the rules and the implementing principles, the constituent programs, the investment model and the budget – 15 billion lei for 2007-2013, the monitoring procedure, as well as the evaluation and impact indicators.

The National Plan for Research, Development and Innovation for 2007-2013, called further on – the National Plan II – NP II, represents the main instrument used by the National Authority for Scientific Research (NASR) to implement the National Strategy for RDI.

In the creation of NP II, we were referred to the role of the national research development – innovation system, which is to develop science and technology in order to increase the economic competitiveness, the improvement of the social value and the growth of knowledge by turning to account and increasing the action environment.

NP II focuses on achieving all three strategic objectives of the national system RDI:

1. Creating knowledge, obtaining high scientific and technological results, globally competitive, in order to increase the international visibility of Romanian research and the following transfer of these results in the socio-economic practice.

2. Increasing competitiveness of the Romanian economy by innovation, with a high impact on the level of the economic agents and the knowledge transfer in the economic practice.

3. Increasing the social value, finding technical and scientific solutions which sustain social development and improve the human condition. The achievement of these three general objectives will be the result of a long term vision regarding the national system of RDI and its importance in the society.

In this way, the RDI system could become the engine of the development of the world of knowledge in Romania, being capable to sustain performance through innovation in every domain which contributes to the welfare of the citizens and also to achieve scientific excellence, internationally recognized.

To respond to this challenge, the RDI system will be defined by an approach, first of all to Romanian companies, then to the international scientific field, the society’s needs and the educational system.

General Principles in the foundation of NP II

In the creation of NP II we took into consideration the results received following the current state analysis of the national economy and of the research, development and innovation system, and the strategic objectives originated by the National Strategic Reference Framework for 2007-2013, by the international conditions, as well as by the perspective of Romania’s integration in the European Union. Also, we took into account the experience accumulated in the organisation and the progress of the RDI activity as a result of the course of the National Program of RDI in 1999-2006, of the Grant Program for scientific research in 1995-2006, of the
Excellence Research Program (CEE X) in 2005-2006, as well as the results obtained by widespread consulting of the national and international scientific community, realised in 2005-2006, as part of the first widespread national foresight exercise in science and technology.

NP II is based on the following principles:

I. The transformation of public expenses of RDI in investments for RDI, meaning:
   1. Correlating the objectives regarding the strategy-programs-instruments, including the level of the monitoring indicators 2007-2013, is pursued.
   2. Funding and refunding the resources of the program are realised as part of an investment model which demands an evaluation ex-before, monitoring, evaluation ex-after and rectifications during the progress of NP II. The application of the investment model falls within the competence of the NASR, and the specific methodologies are ratified by Decree of the President of NASR.
   3. In the evaluation of the management institutions which implement programs and projects, we will supervise professionalism and transparency as key elements for success.
   4. Simplifying the funding procedures and activity discount within the framework of the projects is pursued.
   5. The evaluation of the programs NP II is done every two years as part of the evaluation of the implementation. The evaluation of the NP II implementation is realised preferably internationally, the evaluation report being made public.
   6. The Grant Allocation by NP II is based on competition. The specific criteria for the projects evaluation is included in the information brochures of the programs and it’s ratified by Decree of the President of NASR.

II. The focus on the public investment in RDI, which presumes:
   7. Allocating public resources for RDI projects has the following destinations:
      - Domains which touch the boundary of knowledge, in which Romania has resources and results or which should support the priorities of the applied research;
      - RDI’s priorities, obtained following the national foresight exercise;
      - supporting the innovation.
   8. Sustaining the progress of the RDI system will be guaranteed by the investment in the human resources development, infrastructure of the research and the increase of the international widespread degree.

III. The Training of the Private Sector
   9. The economic sector will be permanently checked in order to determine its needs for development
   10. The public investment in RDI will stimulate the interest in RDI’s activity in the economic field, its partnerships with public entities, with consequences upon the growth of RDI’s private investment.
   11. The development of the infrastructure and services for technological transfer for a better use of RDI’s results in the economic field, with the protection of intellectual property.

IV. Wide access and proper evaluation
   12. The access to the funding via National Plan II will be made with discrimination, by competition.
   13. International researchers will have access to participate in national projects.
14. Innovative companies will have wide access for RDI project funding, especially the ones in collaboration with university and institutional research.
15. The procedures regarding competitions will be simplified.
16. The projects will be monitored continuously, and the final reports will be made public. The failures exceeding the risks accepted by the research contracts falls within the competence of the project team.

V. The regional aspects of NP II are additional to the instruments which use the structural funds for RDI.
17. The approach of the regional dimension of RDI objectives takes into account the complementarity with structural funds, focalising on the identification of RDI’s demands on a regional level, the stimulation of human resources development and capabilities of research on a regional level and the promotion of the collaboration on a regional level.

The Program Resurse Umane (Human Resources) has as a main objective increasing the number of the researchers and their professional performances, and as secondary objectives:
I. Increasing the number of PhD-students and post-PhD-researchers
II. Increasing the appeal of the research carrier, especially for eminent graduates
III. Attracting Romanian researchers which have high performances abroad
IV. Creating centres of excellence around scientific reputed personalities and internationally recognized
V. Increasing national and international mobilities for researchers
VI. Stimulating the creation of centres of excellence
VII. Improving RDI unities’ management.

This program has the following action channels:
1) The creation and perfection of researchers by master’s degree and post-master’s degree
2) Funding the integration projects of researchers from abroad in the Romanian system
3) Sustaining the excellence for researchers with scientific performances and excellence schools internationally recognized
4) Funding national and international mobilities for researchers
5) Training in research and innovation management
6) Awarding excellent results in research

The Program Capacitati (Capacities) has as a main objective the development of research capacities and the CDI opening system to the international scientific field and the national socio-economic field, and as secondary objectives:
I. Increasing the degree of the use of research infrastructure
II. Developing the research infrastructure
III. Developing the infrastructure of the information and scientific documentation
IV. Turning to account the potential and RDI’s resources in a regional plan
V. Sustaining the science-society dialog
VI. The participation of RDI entities to national and international scientific organisations
VII. The participation of RDI entities to international research programs

The acting channels of this program are the followings:
1) The creation and support of national interest infrastructures for research;
2) Fund assurance in order to stop and preserve some complex national interest installations;
The Program Idei (Ideas) has as main objective obtaining high scientific and technological results, similar to those on an international level, reflected by the development of the visibility and international recognition of Romanian research, and as secondary objectives:

I. The continuous improvement of visible performances on an international level in the domains in which Romania has a potential for research and in which there were results comparable to other EU countries;

II. The development of the domains in which Romania has an interest to develop research scientific activities with real contributions to the growth of the quality of knowledge, the technical and technological development and the improvement of life quality.

The acting channels of this program are the following:

1) Sustaining fundamental, frontier and exploratory scientific researches;
2) The organisation of “exploratory workshops” designed to identify the knowledge recesses unexplored;
3) Making calls for international collaborations for fundamental, frontier and exploratory research projects.

Partnerships in primary domains program’s objective is the growth of RD’s competitiveness by stimulating partnerships in primary domains, specific to technologies, products and innovative services in order to solve some complex problems and to create implementing mechanisms, and the secondary objectives are the followings:

I. The growth of the capacity of RDI’s sector for Technology of Information and Communication in order to sustain the society and the economy based on knowledge;
II. Increasing the technological competence and promoting the knowledge and technologies transfer in the energy field, according to conditions of quality, safety in supply, and following the principle of sustainable development;
III. Creating clean products, processes and technologies and taking into account the waste management system;
IV. The scientific substantiation and technology development in order to preserve, rebuilt and consolidate the ecological and biological diversity;

V. Knowledge development in the field of land use planning in a sustainable manner;

VI. The optimisation of methods of disease prevention, medical therapies development and the efficiency of the public health system;

VII. Promoting the sustainable agriculture, increasing alimentation security and safety of products;

VIII. Developing biotechnologies with an impact on the quality of life and the economic development;

IX. Developing new materials, products and high value added processes;

X. Increasing the competitiveness of Romania in the research and space technologies domain;

XI. Identifying and solving the primary social problems concerning education, living and workplace in order to obtain local, regional and national development;

XII. Increasing the competitiveness and creativity, the development of organisational culture in the economic systems, public administration, education and research, in the sanitary system and the military one;

XIII. Taking into account and developing the national culture patrimony;

XIV. Decreasing socio-human discrepancies/discriminations and regional disparities.

The acting channels of the program are the followings:
1) Supporting RDI projects on thematic directions;
2) Supporting RDI projects on primary themes established on the basis of consultation;
3) Supporting the research networks.

Innovation Program has as a main objective to increase the ability of innovation, technological development, and assimilation of the results of the research into production, in order to improve the national economy’s competitiveness and the growth of the quality of life, and the secondary objectives are the following:

I. Consolidating the ability for innovation of companies and consolidating their contribution to the creation of new products and markets based on the knowledge results value;

II. Stimulating partnerships between economic agents and research entities;

III. Developing technological transfer abilities in universities;

IV. Stimulating the capacity of absorption of RDI results by SMBs;

V. Implementing strategic agendas elaborated on the basis of technological platform;

VI. Creating and developing innovation infrastructures;

VII. Developing the infrastructure and quality management.

The acting channels are:
1) Creating products and technologies at the initiative of economic agents;
2) Creating and/or developing the innovation infrastructure: scientific and/or technological parks, centres of technological transfer, brokerage centres as well as knowledge stores, technological incubators;
3) Sustaining the offer of innovation services support;
4) Supporting the development of the infrastructure for quality attestation;
5) Supporting the accreditation of laboratories for essays and analysis;
6) Supporting the implementing and the development of the quality management system;
7) Supporting the creating and the development of innovative networks;
8) Supporting the activity for technological platforms;
9) Organising awarding contests by fields of activity with innovative potential on a national scale.

**Sustaining the institutional performance** Program has as main objective supporting this performance by assuring the continuity and the stability of RDI entities’ activities, with a view to implement personal development strategies, elaborated in agreement with the RDI National Strategy, and the main objectives are the following:

I. Sustaining the institutional development in order to achieve excellence;
II. Sustaining the international competitiveness of the Romanian RDI system.

The specific actions of this program are the guarantee of a multiannual finance, by competition, for activities without any economic degree/nature, which can allow the RDI unity to run the development program on a medium term and achieving a level of performance which contributes to the attraction of additional financing sources.

### 2.2 Nucleus

The nucleus Programs are settled by the GD no. 137/2003 regarding the scientific research and the contracting, financing, monitoring, and evaluating modalities of these programs are settled by the methodological Norm no. 6/2003.

This norm determines the fact that these programs are approved by the state authority for research – development, especially the National Authority for Scientific Research (art. 11). In these norms it’s also stipulated a 30% payment in advance of the payments that need to be done within the framework of the program (art. 16), but lately it’s often stipulated that this advance payment should be by 90%.

Also, this norm is settling that the value of the grant from the budget cannot surpass 50% of the revenues of the research-development activity, but some changes are made by legislation and, at the moment, the value of the grant from the budget can achieve 75% of the revenues of the research-development activity.

Every year, the values for nucleus programs are foreseen in the NASR budget, and these values can increase or decrease as part of budgetary rectifications which are made in one financial year.

### 2.3. Sectoral Programs

These sectoral programs are settled also by OG nr. 57/2002 and the applying methodological Norms are referred to HG nr. 1266/2004 which provides:

“Art. 1

(1) Sectoral plans are elaborated by the public financing authorities, so called contracting authorities, with the agreement of the Ministry of Education and Research, in quality of state authority for research-development.

..................

(3) Sectoral plans contain programs and projects for research-development of high interest for the domain in question, so called projects, which engages on the achievement of the objectives from the development strategy of the field coordinated by the contracting authority, and which are foreseen to be realised in a determined period of time, according to the public funds allocated in this purpose.
(4) for the final touch of the sectorial plans structure, the contracting authorities can demand project proposals from structures representatives of the coordinated field.”

This way, in 2004 appeared the Ordinance nr. 4728 of the Ministry of Education and Research which approves the sectorial Plan for research-development of the ministry in question, with the following general objectives: the development of the infrastructure of research-development and of the ministry’s ability to elaborate, implement and evaluate politics, strategies and programs on a national level in research, development and innovation.

The specific objectives are:

* improving the performance of the activity of research-development unities’ activity;
* developing the structure TIC for research;
* developing the ministry’s ability to ground, elaborate, update and to communicate politics, strategies and programs;
* developing the instruments used by the ministry for planning, following and evaluating the realisations of politics, strategies and programs on a national level in research, development and innovation.

Among the estimated results we mention:
- the increase of the number of projects realised in partnership;
- the assurance of some internal sources of high scientific competence and technological expertise, in the reference fields
- the elaboration, implementation and evaluation of politics, strategies and programs on a national level in the field of research-development and innovation (RDI);
- integrated information and operational system which will allow the efficiency of the main parts of the research projects progress: competition, evaluation, progress, finalisation, and technological transfer, as well as evaluating the research’s results in the zone of its final beneficiaries;
- the dissemination of the results with high degree of application and multiplication and of those of strategic interest;
- information in real time of the results obtained in the fields of research, development and innovation;
- the identification of the legislative instruments (laws, regulations, norms, codes) specific to RDI system;
- the identification of the specific indirect mechanisms (tax and income taxes system) of support in the RD domain and of encouragement of the RD results application;
- the growth of performances of national networks specialised for research-development.

In 2008, the Ordinance no. 668 of the Ministry of Work, Family and Equality of Chances appeared, and it also approves a sectoral plan for research-development for 2009-2012.

This sectoral plan is structured in 5 afferent programs to the main domains of responsibility of MMFES:

1. The program “Work Market”
2. The program “Pensions”
3. The program “Social Inclusion”
4. The program “Workers Mobility”
5. The program “Security and health in work”

The specific objectives of these programs were: increasing general administrative ability of the MMFES and the institutions in its suborder, under its authority or coordination, to develop
and apply strategies and integrated action plans designed to increase the level of the occupancy of the workforce on a national, regional and local level; the consolidation of the administrative ability of the public pension system; promoting some adequate politics for social inclusion in order to increase the degree of social cohesion; creating an integrated management system of the workers’ migration fluxes and perfecting the social protection systems for immigrant workers; the continuous improvement of the security and health level in work has as a purpose to develop security and health measurements at work in order to improve work conditions, as well as the assurance of cars and individual safe protection equipments for workers.

The estimated results of this sectoral plan were: the administrative ability consolidated for the elaboration, implementation, monitoring and evaluation of politics (strategies, programs, legislation) in the workforce, including the actualisation of the Classification of occupations in Romania on scientific basis, in function of the evolution of the workforce market; informatics statistical system developed for public pensions and prognosis regarding the finance sustainability evolution of the public scheme for pensions and alternative models of insurance of its sustainability; the consolidation of the national system of coordination and monitoring of social inclusion politics; research for estimating the dimensions, trends and migration effects on the workforce market and the development of the integrated management system of the migration of the fluxes of workers; the improvement of the legislative framework and the security and health level in work.

2.4. Romanian Academy’s fundamental research programs

In the framework of the Romanian Academy’s institutions there are fundamental research activities, especially as part of the master’s degree or post-master’s degree program. Basically, funding these research studies is made from funds from the Operational program for Human Resources Development as part of structural grants.

3. Conclusions

The economy based on knowledge is defined by the speed with which new knowledge turns into economic effects. For this to happen, the circuit research-education-innovation needs to be much more stressed on an institutional level, so that we arrive at a symbiosis between activities. In many advanced countries the interaction research-education is favourable by the fact that research is developed considerably in the university. In these conditions, big companies invest in universities (supplies, project funding), and small innovative companies gravitate around universities (scientific parks, technological centres). Even when there’s a system of applied research institutes, directed to the collaboration with the industry (like Fraunhofer institutes in Germany), the interaction with education is clear (professors manage the research laboratories “populated” mostly by PhD students.) Răzvan V. F. et al., 2006

There’s the immediate chance of collaboration between universities and institutes, using the research made by PhD students as linking points. The universities’ PhD students are often employees of the institutions, but their master degree’s activity doesn’t have any connection with their research at their workplace. What is significant is the orientation of foreign companies in production and research-development activities in Romania towards the collaboration with universities, most of all in order to insure their human resources. It’s a “timid” start, if we compare it with everything happening in the world. It would be necessary that research becomes a goal of the collaboration. (Paul Vass A., 2010)
Unfortunately, the Romanian industry was systematically demolished in the past 20 years (including by denationalisation), and small innovative companies – subscribed to public grants – don’t usually succeed to produce something or to provide competitive services. As a result, with small exceptions, “the internal market” for the research-development sector offer is very poor, and “the external market” is hardly approached. There are few institutes in Romania which collaborate with foreign important companies and this happens, usually, within European projects.

In the last couple of years, the institutes acquired last generation equipments, upgraded in comparison with the national companies’ equipments. However, the collaboration with the industry cannot limit itself to punctual services, but it has to take into consideration product development and advanced technologies, internationally competitive. And this is possible only by strategic orientation, sustained by public or private funds investments (for instance, the Renault investment, delayed because of the world crisis). The European approach puts into consideration INCDs who provide, basically like the branch industries, commercial services. (Curaj A., 2000)

4. Bibliography