THE ROLE OF UNIVERSITY RESEARCH ENTITIES IN INCREASING UNIVERSITY SCIENTIFIC RESEARCH PERFORMANCE

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Abstract

Universities represent important components of the national systems of research, development and innovation (RDI), ranging among the factors with a high research potential (Brătianu C. Ş. and others, 2007). The research activity in the universities involves firstly the teachers, but also the students, the PhD students and other categories of staff, while their scientific research is governed by the national laws and internal regulations. The increase in the role of research, development and innovation, in the present-day context of a society in development, characterized by quick rhythms of change, fierce competition, globalization and other phenomena with visible effects on the quality of the economic and social life, has required the development of the scientific and technological potential of the universities, especially the improvement of the performance in university scientific research.
Thus, *the organizational frame of scientific research is one of the elements in the management system which depend on the performance of scientific research in universities.* As in any field of activity, the management of scientific research undertaken in universities refers to the human factor and assume the establishment of the positions and departments involved in university research as well as the links between them. The analysis of the current situation regarding the forms of management of university scientific research reflects a diversity of solutions. In this study, the authors propose an analysis of the current research entities in universities.

Key words: university scientific research, entity of university research, performance

Scientific research means searching for the explanation of real or imaginary phenomena and processes, in a systematic and goal-oriented manner, searching for the solutions to the existing problems or specially created problems to be solved, presenting interest and importance in science or every day life (Zaiţ D., Spalanzani A., 2006).

Scientific research is part of the mission of universities, at least great universities, as the complementary part necessary in the learning process. A learning process based on the creation of knowledge is more valuable and more competitive than a learning process which is reduced to a mere transfer of information from teachers to students. The great universities consider that "*the development of scientific research as a fundamental competence is essential for their survival in the world context of growing competition and that is why, it should be a part of their mission*"(Hazelkorn E., 2006).

The increase in the role of research-development and innovation, in the present-day context of the development of the society, characterized by quick rhythms of change, fierce competition, globalization and other phenomena with visible effects on the quality of the economic and social life, has imposed the development of the scientific and technological potential of the universities and especially, the improvement of the university research performance. In relation to these demands, we could talk about scientific research excellence. The phrase *research excellence* was introduced during the last decade, having the meaning of high performance research.

The specific objectives of universities on achieving excellence in scientific research are the following (Helerea, E. (Coordinator), 2006):

- Increase the ability of the university to acquire knowledge, results and experience in the high-level technological and scientific fields and to insure their transfer and dissemination to society, so as to support the economic and social progress.
- Capitalize the results of scientific research in order to support and increase the quality of the educational process, as a defining element for the universities as environments of education and creation of knowledge.
- Adequate development and capitalization of human resources as well as the infrastructure for the activity of scientific research.

- Increase the visibility of scientific research in universities and their ability to integrate into the national and international networks.
- Protection of scientific and technical values in the university heritage.

MATERIAL AND METHOD

Considering the nature of the processes they integrate, there can be differentiated entities which take part directly into the creation of knowledge operational units, namely departments and positions for supporting processes and management. The main actors in the process of university research are the university teachers, belonging to certain academic structures – departments and faculties. In some universities, the structures of scientific research are not properly defined, as separate structures from the academic departments: the university teachers undertake individual or group studies, of higher or lower complexity, falling into the field of those departments or faculties. In the opinion of the authors, this situation is due to a research management of the „laisser faire“ type, when the research activity depends on the will of the teachers, the role of the management is limited to gathering and reporting the results. At present, most universities have departments specialized in scientific research, a structure which is in favour of the development of scientific research in universities. The names under which the operational structures of scientific research work are diverse: groups, laboratories, research centres, research departments, research institutes and so on.

In different parts of the world, there are different forms of organization and managament of the scientific research entities.

The establishment of the improvement directions is based on the management forms and the changes initiated by the universities in other parts of the world (Research Quality Framework: Assessing the Quality and Impact of Research in Australia, Issues Paper, March 2005). In *Monfort University from Leicester* – Great Britain, for example, there are organized research groups and centres in each faculty (De Montfort University Leicester, Research Structures, http://www.dmu.ac.uk/faculties). Also, there was created an institute of research to encourage interdisciplinary research, which includes interdisciplinary laboratories and a network connection interdisciplinary research centers in university . This network makes possible the connection to other universities and industrial units, on local, national and international level. At *Carleton University* – Canada, the operational entities, called research centres, are not subsidiaries of the faculties, but are created with the purpose to undertake research activities in collaboration and of interdiscplinary type. The accent is laid on the creation of certain management instruments and structures which could ensure the support of research by allocation resources and monitoring the flows up to a high level of research and especially by identifying certain research intiatives involving several faculties.

The analysis of the research structures in foreign universities, given as examples above, shows that the creation of optimum structures in order to accomplish excellence in research involves changes as regards the research entities as well as the division of the decision power. When creating research entities, there should be taken into consideration the creation of the management frame so as to increase the visibility and the efficiency of scientific research. Hence, it is important that the management of scientific research should ensure the concentration of resources in order to accomplish certain complex projects of scientific and technological research, in harmony with the strategic directions of scientific research on national and european level.

The actions undertaken to optimize the structures required by university scientific research fall into two directions:

- The first way aims to *increase the intellectual capital of the research* centres, often at the same time with *widening the expertise field.* In other words, the dividing of the structure is limited, creating entities which reach the critical mass (*fig. 1*).

The meaning given to the concept of critical mass, in this context, is of the limit level of intellectual capital which brings efficiency, visibility and duration to a research entity. The creation of these structures is based on initiatives of the departments / faculties, but the final decision is not or should be deprived of constraints; top management has an important role in the optimization of the structure, in the establishment of certain unitary evaluation criteria and support of high performance due to an adequated policy for the allocation of resources.

- *The associations in the field of scientific research, development and innovation represent the second direction of improvement in the management of the activities in this field.* They are accomplished under various forms, starting from collaborations, consortiums/partnerships with other organizations (universities, research institutes, economic and administrative organizations) to the creation of centers of excellence.

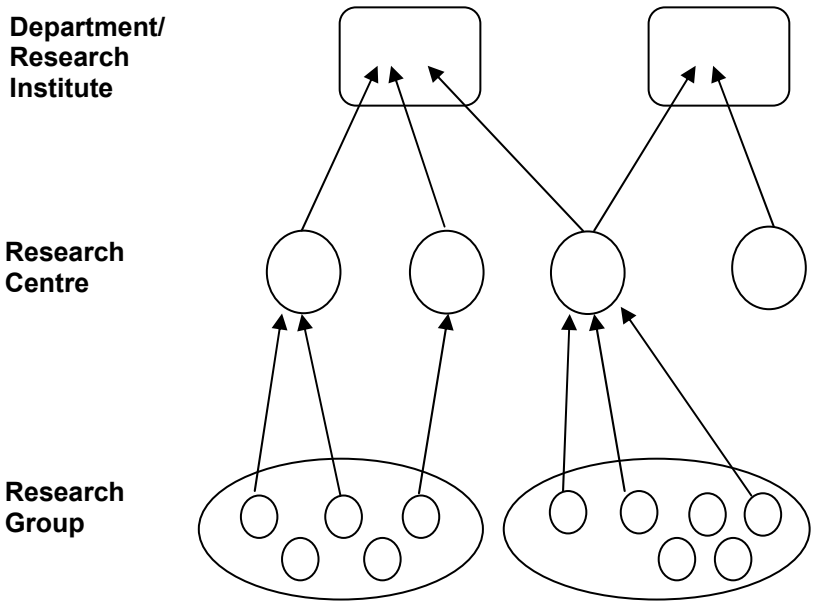

Figure 1 **Entities of scientific research, typology**

RESULTS AND DISCUSSIONS

The analysis of the present situation regarding the management forms of scientific research in universities reflects a diversity of solutions. The main criteria which differentiate the organizational structures are the creation methods used for the different entities and the degree of centralization / decentralization of power.

Table 1 presents the typology of the scientific research entities which are present in universities and the main criteria to differentiate them. Generally speaking, the research staff, laboratories and research centres belong to the departments or faculties, whereas the institutes and research centres cover wider areas, multi and interdisciplinary. Some of them are recognized on local level, others are visible on national and international level.

Table 1

Diversity of the research entities in universities

Research entities	Criteria		
	Complexity of the field	Relation of the structures	Recognition
Group/ Research team	Small: individual and group skills	Level of the department	Internal
Research laboratory	Average: skills specific to a study program	Level of the department/ faculty/ university	Internal/ External
Research centre	High: skills specific to a field of study	Level of the department/ faculty/ university	Internal/ External
Research institute	High or very high: specific skills in one or several fields	Level of the university	External
Research network	High or very high: specific skills in one or several fields	Several organizations	External

As a rule, their estalishment is based on internal or national regulations. For example, in Romania, a program coordinated by the National Council of Scientific Research in Universities (NCSRU) included a process of classification and acknowledgement of the research centres, with the purpose of increasing their scientific research competitiveness on european and world level.

According to the NCSRU methodology to identify, evaluate and acknowledge the research centres the following centres have stood out (Metodologia de identificare, evaluare şi recunoaştere a centrelor de cercetare noi şi de reevaluare a centrelor de cercetare recunoscute anterior de CNCSIS. www.cncsis.ro):

- *Centres of Excellence* – centres of research which are recognized as *national leaders* in their field of activity after the evaluation of their scientific results and they prove to be an *active partner*, in research, *on international level.*
- *Research Centres* – centres which have scientific results *acknowledged on national level and visible on international level*.

The Centres of Excellence have received a Diploma of Excellence and the Research Centres - a Certificate of Acknowledgement. The research

centres which do not answer to the categories mentioned above and which are not acknowledged are centres of research of local interest. Mention must be made here that the expression *research centre* is also used as a generic title for the structures with activities in scientific research – institute, university, company or parts of these.

During the last decades, collaborations, the consortiums / partnerships with other organizations (universities, research institutes, economic and administrative organizations and so on) have gained field, a situation which is related to the interest in quality and excellency in research. The maximum level of performance is associated to the network of excellency research centers, which might include: national institutes of research-development, research centres / departments from universities, experimenting and testing laboratories, entities for sampling and certification and so on (Metodologia de identificare, evaluare şi recunoaştere a centrelor de cercetare noi şi de reevaluare a centrelor de cercetare recunoscute anterior de CNCSIS. www.cncsis.ro).

CONCLUSIONS

The development of the network type structures for the university research makes it possible to expand the fields and the interdisciplinary character of research, avoiding the phenomena of bureaucracy and rigidity usually associated to the traditional, centralised structures. Nevertheless, should this association be made, there must be present some visible scientific research entities, which dispose of sufficient intellectual capital and present relevant results. In other words, the consortiums and the networks increase the performance of certain centres with a high potential in research.

In the context of increased interest in quality and excellency, it is necessary to have, at the level of the institutions, specialised structures which could support the management of scientific research in the accomplishment of certain helpful processes for research, such as: the relationship with the environment (information on the available programs, promotion of the results, technological transfer and protection of intellectual rights, develop partnerships), evaluate the potential and the performance of the entities of scientific research structure, ensure the resources (economic management of the projects, organize call for tenders for investments, develop human resources) and so on.

The accomplishment, on central level, of certain processes on which depends the performance of the research does not exclude the increase in responsibility of the scientific research entities in universities. On this level, there should also be made strategies and activity plans, there should be estimated the intellectual capital and its use, the activity should be monitored but, especially, there should be created a stimulating environment, favorable to increasing performance in research.

The management mechanisms and instruments created on the level of the institution do not limit, but come in support of the improvement of the activity undertaken in research centres. An important role is played by the strict regulations regarding the roles and functions as well as the structural entities. Also, it is essential to create a modern IT system, with data bases which could concentrate the information on scientific research and IT applications for the analysis and generating reports on different hirerarchical levels.

There are not universal solutions regarding the management of university research: the adopted structures should be adapted to the university strategy and continuously adjusted according to the demands.

The role of the research entities in universities is, besides the quality of the management instruments, an important factor on which depend the improvement of performance and reaching excellency in university scientific research.

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